



**RG-N18000 Series Switches**

**RGOS Command Reference, Release 11.0(4)B8**

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## Preface

Thank you for using our products. This manual matches the RGOS Release 11.0(4)B8.

## Audience

This manual is intended for:

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

## Obtaining Technical Assistance

- Ruijie Networks Website: <https://www.ruijienetworks.com/>
- Technical Support Website: <https://ruijienetworks.com/support>
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- 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.

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## System 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** Global configuration mode.

**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        goble 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 Description** N/A

## 1.2 privilege

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

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

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

Parameter Description	Parameter	Description
	<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 Mode** Global configuration mode.

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

Mode	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
<b>alias</b>	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
	<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 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** The following example configures a welcome message.

**Examples** 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>	
	<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** N/A

**Description**

## 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
<i>c</i>	Separator of the MOTD. Delimiters are not allowed in the MOTD.
<i>message</i>	Contents of an MOTD

**Defaults** N/A

**Command** Global configuration mode

**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 boot config

Use this command to modify the path for saving startup configurations and the corresponding file name.

```
boot config { flash:filename | usb0:filename }
```

```
no boot config
```

**Parameter Description**

Parameter	Description
<b>flash</b>	Saves the startup configuration file in the extensible Flash.
<b>usb0</b>	Saves the startup configuration file in USB0 device. The device must have a USB interface into which a USB device is inserted.


**Defaults**


By default, startup configuration file of a device is saved in **Flash:/config.text**


**Command Mode**

Privileged EXEC mode

**Usage Guide**

 The startup configuration file name follows a slash "/", for example, **Flash:/ruijie.text** and **Usb0:/ruijie.text**.

 The startup configuration file name consists of a path and a file name. The path is mandatory. Otherwise, configurations cannot be saved by using the **write** command. Take **Flash:/ruijie/ruijie.text** and **Usb0:/ruijie/ruijie.text** as examples, where the **Flash:/ruijie** and **Usb0:/ruijie** folders must exist. In master-slave mode, all device paths are required.

 To save the startup configuration file to a USB flash drive, the device must provide a USB interface with a USB flash drive inserted. Otherwise, configurations cannot be saved by using the **write** command. In master-slave mode, all devices must have USB flash drives connected.

**Configuration Examples** The following example sets the startup configuration file path to flash:/ruijie.text..

**Examples**

```
Ruijie(config)#boot config flash:/ruijie.text
```

**Related**

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



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

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

## 2.9 checkpoint

Use this command to create a checkpoint. Use the **no** form of this command to remove the setting.

**checkpoint** [ *cp-name* ] [ **description** *description* ]

**no checkpoint** *cp-name*

Parameter	Parameter	Description
<b>Description</b>	<i>cp-name</i>	(Optional) Specifies the checkpoint name. in the range from 1 to 80 characters.
	<b>description</b> <i>description</i>	(Optional) specifies the checkpoint description, in the range from 1 to 80 characters.

**Defaults** N/A

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

**Usage Guide** If you do not name a checkpoint, the system specifies a name automatically. The description is null by default. When a checkpoint is created, the copy of the current configuration is saved.

**Configuration** The following example creates a checkpoint with a default name.

**Examples**

```
Ruijie# checkpoint
...
user-checkpoint-1 created Successfully
```

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

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

## 2.10 clear checkpoint database

Use this command to clear the checkpoint statistics.

**clear checkpoint database**

<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 Examples</b>	The following example clears the checkpoint statistics.	
	<pre>Ruijie# clear checkpoint database</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	N/A	N/A
<b>Platform Description</b>	N/A	

## 2.11 configure

Use this command to enter global configuration mode.

**configure** [ terminal ]

<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 Examples</b>	The following example enters global configuration mode.	
	<pre>Ruijie# configure Ruijie(config)#</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>

N/A	N/A
-----	-----

**Platform**  
**Description**

N/A

## 2.12 disable

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

**disable** [ *privilege-level* ]

Parameter	Parameter	Description
<b>Description</b>	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** The following example lowers the current privilege level of the device to level 10.

**Examples**

```
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

## 2.13 disconnect

Use this command to disconnect the Telnet Client session.

**disconnect** *session-id*

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<i>session-id</i>	Telnet Client session ID.
<b>Defaults</b>	N/A	
<b>Command Mode</b>	User EXEC mode	
<b>Usage Guide</b>	This command is used to disconnect the Telnet Client session by setting the session ID.	
<b>Configuration Examples</b>	The following example disconnects the Telnet Client session by setting the session ID.	
<b>Examples</b>	<pre>Ruijie# disconnect 1</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	N/A	N/A
<b>Platform Description</b>	N/A	

## 2.14 do telnet

Use this command to login to Telnet server.

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

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<b>oob</b>	Connects to Telnet server through oob channel. This parameter is available only when the device has a MGMT port.
	<i>host</i>	IPv4, IPv6 or host name of Telnet server.
	<i>port</i>	Configures TCP port ID. The default is 23.
	<b>/source</b>	Specifies source IP or source port for Telnet client.
	<b>ip</b> <i>A.B.C.D</i>	Specifies source IPv4 address for Telnet client.
	<b>ipv6</b> <i>X:X:X::X</i>	Specifies source IPv6 address for Telnet client.
	<b>interface</b> <i>interface-name</i>	Specifies source port for Telnet client.
	<b>/vrf</b> <i>vrf-name</i>	Specifies VRF table.
	<b>via</b> <i>mgmt-name</i>	Specifies MGMT table.

**Defaults** N/A

**Command** User EXEC mode/Privileged EXEC mode/Interface configuration mode

**Mode****Usage Guide** N/A**Configuration Examples** The following example configures destination IPv4 address 192.168.1.1, uses default port ID, and specifies source port Gi 0/1 and VRF table vpn1.

```
Ruijie(config)# do telnet 192.168.1.1 /source interface gigabitEthernet 0/1
/vrf vpn1
```

The following example configures destination IPv6 address 2AAA:BBBB::CCCC.

```
Ruijie(config)# do telnet 2AAA:BBBB::CCCC
```

The following example configures destination IPv4 address 192.168.1.1 and specifies MGMT port Mgmt 0.

```
Ruijie(config)# do telnet oob 192.168.1.1 via mgmt 0
```

**Related Commands**

Command	Description
N/A	N/A

**Platform Description**

N/A

## 2.15 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

## 2.16 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
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<b>Platform</b>	N/A
<b>Description</b>	
<b>enable secret</b>	Sets the security password

## 2.17 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

<b>Defaults</b>	N/A
-----------------	-----

<b>Command Mode</b>	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** 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.

<b>Platform</b>	N/A
-----------------	-----

**Description**

## 2.18 enable service

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

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


**Parameter Description**

Parameter	Description
<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>web-server [ http   https   all ]</b>	Enables HTTP 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** N/A

**Command Mode** Global configuration mode

**Usage Guide** Use this command to enable or disable a specified service. Use the **no enable service** command to disable the specified service.

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

**Configuration** 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



## 2.19 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

## 2.20 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** LINE configuration mode  
**Mode**

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

**i** 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

## 2.21 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

## 2.22 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

## 2.23 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
lldp         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****Command****Description**

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

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

## 2.24 hostname

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

**hostname** *name*

<b>Parameter</b> <b>Description</b>	Parameter	Description
	<i>name</i>	Device hostname, string, number or hyphen, up to 63 characters.

**Defaults** The default is Ruijie.

**Command** Global configuration mode  
**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)#
```

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

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

## 2.25 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*

<b>Parameter</b> <b>Description</b>	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

## 2.26 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

## 2.27 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

## 2.28 login

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

**login**

**no login**

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults**

N/A

**Command  
Mode**

Line configuration mode

**Usage Guide**

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

**Configuration**

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

## 2.29 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

## 2.30 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**

<b>Parameter Description</b>	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>	Parameter	Description	N/A	N/A
Parameter	Description				
N/A	N/A				
<b>Defaults</b>	N/A				
<b>Command Mode</b>	Line configuration mode				
<b>Usage Guide</b>	If the AAA security server is inactive, this command is used for local user login authentication. The user is allowed to use the <b>username</b> command.				
<b>Configuration Examples</b>	<p>The following example sets local user authentication on VTY.</p> <pre>Ruijie(config)# no aaa new-model Ruijie(config)# username test password 0 test Ruijie(config)# line vty 0 Ruijie(config-line)# login local</pre>				
<b>Related Commands</b>	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><b>username</b></td> <td>Configures local user information.</td> </tr> </tbody> </table>	Command	Description	<b>username</b>	Configures local user information.
Command	Description				
<b>username</b>	Configures local user information.				
<b>Platform Description</b>	N/A				

## 2.31 login privilege log

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

**login privilege log**

**no login privilege log**

<b>Parameter Description</b>	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>	Parameter	Description	N/A	N/A
Parameter	Description				
N/A	N/A				
<b>Defaults</b>	This command is disabled by default.				
<b>Command Mode</b>	Global configuration mode				
<b>Usage Guide</b>	N/A				
<b>Configuration</b>	The following example enables the function of logging privilege change.				

**Examples**

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

The following example displays the log of privilege change failure.

```
Ruijie>enable 10
```

```
Password:
```

```
Password:
```

```
Password:
```

```
% Access denied
```

```
Ruijie>
```

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

The following example displays the log of privilege change success.

```
Ruijie>enable 10
```

```
Password:
```

```
Ruijie#
```

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

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 2.32 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.

- i** 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**

N/A

**Description**

## 2.33 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**

N/A

**Description**

## 2.34 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 rgnos.

**Examples**

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

**Related  
Commands**

Command	Description
N/A	N/A

**Platform**

N/A

**Description**

## 2.35 rollback

Use this command to roll back the checkpoint configuration.




**rollback running-config checkpoint *cp-name* [ **display-differences** | **ignore-results** ]**

Parameter Description	Parameter	Description
	<i>cp-name</i>	Specifies the checkpoint name, in the range from 1 to 80 characters.
	<b>display-differences</b>	Displays configuration difference after the rollback is complete. The configuration difference is displayed by default.
	<b>ignore-results</b>	Ignores results after the rollback is complete. The configuration difference is not displayed.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

### Usage Guide

-  Only one user is allowed to create a checkpoint and roll back configuration on the device.
-  If an "Increased configuration" message is displayed after the rollback is complete, it indicates that some command does not support reverse operation or the reverse operation fails. It is recommended to see the *Command Reference* for details and execute the reversion of the command manually.
-  If a "*Decreased configuration*" message is displayed after the rollback is complete, it indicates that it fails to execute some command during the rollback. It is recommended to see the *Command Reference* for details and execute the command manually.

**Configuration** The following example rolls back the configuration of checkpoint user-1.

**Examples**

```
Ruijie# rollback running-config checkpoint user-checkpoint-1 ignore-results
...
Rollback configuration successfully.
```

### Related Commands

Command	Description
N/A	N/A

**Platform Description** N/A

## 2.36 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**

## 2.37 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 device1 through session in VSU multiple-device environment (box-type device).

```
Ruijie# session device 1
```

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

## 2.38 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

## 2.39 show boot config

Use this command to display the path and file name of the startup configuration.

**show boot config**

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 path and file name of the startup configuration.**Examples**

```
Ruijie#show boot config
Boot config file: [flash:/ruijie.text]
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform****Description**

N/A

## 2.40 show checkpoint

Use this command to display information of a specified checkpoint or summary information of all checkpoints.

**show checkpoint** { *cp-name* [ **all** ] | **summary** }

**Parameter  
Description**

Parameter	Description
<i>cp-name</i>	Specifies the checkpoint name, in the range from 1 to 80 characters.
<b>all</b>	(Optional) Displays detailed information of all checkpoints.
<b>summary</b>	Displays summary information of all checkpoints.

**Defaults**

N/A

**Command**

Privileged EXEC mode

**Mode****Usage Guide**

N/A

**Configuratio  
n Examples**

The following example displays the summary information of all checkpoints.

```
Ruijie# show checkpoint summary
User Checkpoint Summary
-----
----
1) user-checkpoint-1:
Created at 16:08:30 30 May 2014
Size is 3,566 bytes
```

Description: None	
Field	Description
user-checkpoint-1	Checkpoint name.
Created at 16:08:30 30 May 2014	Checkpoint creation time.
Size is 3,566 bytes	Size of configuration copy.
Description: None	Checkpoint description.

Related Commands	Command	Description
	N/A	N/A

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

## 2.41 show debugging

Use this command to display debugging state.

**show debugging**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

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

```
Ruijie#show debugging
debug fw-group detect intf-state
```

Related Commands	Command	Description
	N/A	N/A

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

## 2.42 show line

Use this command to display the configuration of a line.

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

Parameter Description	Parameter	Description
	<b>console</b>	Display s the configuration of a console line.
	<b>vt</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

## 2.43 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

## 2.44 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** N/A

**Examples**

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description** N/A

## 2.45 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
web-server(https) : disabled
snmp-agent : enabled
ssh-server : enabled
telnet-server : disabled
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description** N/A

## 2.46 show sessions

Use this command to display the Telnet Client session information.

**show sessions**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** User EXEC mode

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

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

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

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 2.47 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

## 2.48 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** Use this command to display effective configuration on interface fastEthernet 0/1.

**Examples**

```
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

## 2.49 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>	

**Defaults** The default is 9600.

**Command Mode** Global configuration mode

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

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

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

Related Commands	Command	Description

N/A	N/A
-----	-----

**Platform**  
**Description**

N/A

## 2.50 telnet

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

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

**Parameter**  
**Description**

Parameter	Description
<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.
<b>via</b> <i>mgmt-name</i>	Specifies the MGMT port for the oob option used by the Telnet client.


**Defaults**

N/A

**Command**  
**Mode**

Privileged EXEC mode

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

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

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

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

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

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

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

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

**Related**  
**Commands**

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

<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

## 2.51 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** ] [ **web-auth** ] [ **pwd-modify** ] [ **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>web-auth</b>	Confines the account to web authentication.
<b>pwd-modify</b>	Allows the web authentication user of this account to change the password. It works only when the <b>web-auth</b> command is configured.
<b>nopassword</b>	The account is not configured with a password.
<b>password</b> [ <b>0</b>   <b>7</b> ] <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** The following example configures a username and password and binds the user to level 15.

**Examples**

```
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

## 2.52 username export

Use this command to export user information to the file.

**username export** *filename*

**Parameter Description**

Parameter	Description
<i>filename</i>	The file name.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

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

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

**Examples**

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

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 2.53 username import

Use this command to import user information from the file.

**username import** *filename*

Parameter Description	Parameter	Description
	<i>filename</i>	The file name.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

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

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

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

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 2.54 write

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

**write** [ **memory** | **terminal** ]

Parameter Description	Parameter	Description
	<b>memory</b>	Writes the system configuration (running-config) into NVRAM, which is equivalent to <b>copy running-config startup-config</b> .

<b>terminal</b>	Displays the system configuration, which is equivalent to <b>show running-config</b> .
-----------------	--

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** Despite the presence of alternative commands, these commands are widely used and accepted. Therefore, they are reserved to facilitate user operations.

The system automatically creates the specified file and writes it into system configuration if the device that stores the file exists;

The system will ask you whether to save the current configuration in default boot configuration file /config.text and perform an action as required if the device that stores the file does not exist possibly because the boot configuration file is stored on a removable storage device such as USB drive or SD card, and the device has not been loaded when you run the **write [ memory ]** command.

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

**Examples**

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

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 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	Parameter	Description
-----------	-----------	-------------

<b>Description</b>		
	<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** The following example enables user access accounting in line VTY 1.

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

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	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*

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<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 Mode** Line configuration mode

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

**Configuration** 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**

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

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

**Platform** N/A

**Description**

### 3.6 clear line

Use this command to clear connection status of the line.

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

<b>Parameter Description</b>	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
```

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

**Platform** N/A

**Description**

### 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
	<i>escape-value</i>	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** The following example sets the escape character for the line to 23 (**Ctrl+w**).

**Examples**

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

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

### 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** The following example bans line VTY 1 from entering the command line interface.

**Examples**

```
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</b> <i>size</i>	

**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 Description** N/A

### 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** The following example sets the screen length to 10.

**Examples**

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

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

### 3.13 line

Use this command to enter the specified LINE mode.

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

**Parameter Description**

Parameter	Description
<b>console</b>	Console port
<b>vtty</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 Mode** Global configuration 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	Parameter	Description
<b>Description</b>	<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 Examples** The following example increases the number of available VTY connections to 20. The available VTY connections are numbered 0 to 19.

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

Related Commands	Command	Description
	N/A	N/A

**Platform** 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
		<i>location</i>

**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

**Platform Description** N/A

### 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**

Parameter Description	Parameter	Description
		N/A

**Defaults** N/A

**Command Mode** Line configuration mode

**Usage Guide** N/A

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

**Examples**

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

Related Commands	Command	Description
	N/A	N/A

Platform N/A  
Description

### 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**

Parameter Description	Parameter	Description
	<i>level</i>	

Defaults The default is 1.

Command Line configuration mode  
Mode

Usage Guide N/A

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

#### Examples

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

Related Commands	Command	Description
	N/A	N/A

Platform N/A  
Description

### 3.18 show history

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

**show history**

Parameter Description	Parameter	Description

N/A	N/A
-----	-----

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** 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 Description** N/A

### 3.19 show line

Use this command to display line configuration.

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

**Parameter Description**

Parameter	Description
<b>console</b>	Displays configuration for the console line.
<b>vt</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, AUX, TTY, and VTY.
speed	Asynchronous speed.
Overruns	The number of overrun errors received by the flash.
Line 0	Terminal line number.
Location: ""	Line location configuration.
Type: "vt100"	Compatibility standard.
Special Chars	Special characters, including Escape, Disconnect, and Activation characters.
Timeouts	Timeout value; "never" indicates no timeout.
History	Whether to enable command history; the number of commands in the command history.
Total input	Data volume received from the drive.
Total output	Date volume sent to the drive.
Data overflow	Overflowing data volume.
stop rx interrupt	Data reception interruption times.

**Related Commands**

Command	Description
N/A	N/A

**Platform**

N/A

**Description**

## 3.20 show privilege

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

**show privilege**

Parameter Description	Parameter	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	Description
		N/A

**Platform Description** N/A

### 3.21 show users

Use this command to display the login user information.

**show users [ all ]**

Parameter Description	Parameter	Description
		all

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

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

**Examples**

```
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**

### 3.22 speed

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

**speed** *baudrate*  
**no speed**

**Parameter Description**

Parameter	Description
<i>baudrate</i>	Sets the baud rate, in the range from 9600 to 115200.

**Defaults** The default is 9600.

**Command Mode** LINE configuration mode

**Usage Guide** N/A

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



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

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

### 3.23 terminal escape-character

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

**terminal escape-character** *escape-value*

**terminal no escape-character**

Parameter Description	Parameter	Description
		<i>escape-value</i>

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

**Command Mode** Privileged EXEC mode

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

**Configuration** 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**

### 3.24 terminal history

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

the **no history size** command to restore the number of commands in the command history to the default setting.

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

**terminal no history**

**terminal no history size**

Parameter Description	Parameter	Description
	<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 Description** N/A

## 3.25 terminal length

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

**terminal length** *screen-length*

**terminal no length**

Parameter Description	Parameter	Description
	<i>screen-length</i>	Sets the screen length, in the range from 0 to 512.

**Defaults** The default is 24.

**Command** Privileged EXEC mode

**Mode****Usage Guide** N/A**Configuration** The following example sets the screen length for the current terminal to 10.**Examples** Ruijie# terminal length 10**Related  
Commands**

Command	Description
N/A	N/A

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

### 3.26 terminal location

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

**terminal location** *location***terminal no location****Parameter  
Description**

Parameter	Description
<i>location</i>	Configures location description of the current device.

**Defaults** N/A**Command** Privileged EXEC mode**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** N/A**Description**

## 3.27 terminal speed

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

**terminal speed** *baudrate*

**terminal no speed**

Parameter Description	Parameter	Description
	<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 Examples** The following example sets the baud rate for the current terminal to 115200,

```
Ruijie# terminal speed 115200
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 3.28 terminal width

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

**terminal width** *screen-width*

**terminal no width**

Parameter Description	Parameter	Description
	<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**

### 3.29 timeout login

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

**timeout login response** *seconds*

**no timeout login response**

Parameter Description	Parameter	Description
	<b>response</b>	
<i>seconds</i>		Timeout value, in the range from 1 to 300 in the unit of seconds.

**Defaults** The default is 30.

**Command Mode** Line configuration 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**

### 3.30 transport input

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

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

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

Parameter Description	Parameter	Description
	<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 Mode** Line configuration mode

**Usage Guide** N/A

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

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

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

**Platform Description** N/A

### 3.31 vacant-message

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

**vacant-message** [ *c message c* ]

**no vacant-message**

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

**Defaults** N/A

**Command Mode** Line configuration mode

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

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

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

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 3.32 width

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

**width** *screen-width*

**no width**

Parameter Description	Parameter	Description
	<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**

N/A

**Description**



## 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> , <b>sd:</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** Privileged EXEC mode.

**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: [via mgmt. {number}]</b>	The URL of TFTP network server connected with the Out-of-Band port, If there are multiple MGMT ports, you can specify one.
<b>xmodem:</b>	Files on the network device using the xmodem protocol.

**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
The file [flash:/netconfig] exists,override it? [Y/N]: y
Copying: !!!!!!!!

Accessing tftp://192.168.64.2/netconfig finished, 2399bytes prepared
Flushing data to flash:/netconfig..
Flush data done
```

**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** N/A

**Description**

## 4.3 delete

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

**delete** [ *filesystem:* ] *file-url* [ */force* | */recursive* ]

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> , <b>sd:</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.
	<b>/force</b>	Deletes the file without the user's confirmation.
	<b>/recursive</b>	Deletes all files in a directory recursively, including the directory itself.

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

**Command** Privileged EXEC mode.

**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** The following example deletes the `fstab` file on the FLASH disk.

**Examples**

```
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
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)
```

The following example deletes the non-null file on the FLASH disk recursively.

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

```

1 drwx          0 Thu Jan  1 02:02:25 1970 file
2 -rw-          610019 Tue Aug 14 02:21:13 2012 file-5.11.tar.gz
1 file, 1 directory
58,720,256 bytes total (28,577,792 bytes free)
Ruijie#delete /recursive flash:/file
Ruijie#dir
Directory of flash:/
 1 -rw-          610019 Tue Aug 14 02:21:13 2012 file-5.11.tar.gz
1 file, 0 directories
58,720,256 bytes total (31,358,976 bytes free)

```

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

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

## 4.4 dir

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

**dir** [ *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> , <b>sd:</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

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

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

## 4.5 eject

Use this command to remove the USB or SD disk.

**eject [ usb0 | sd0 ]**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example removes the USB disk.

**Examples**

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

```
Ruijie#eject usb0
Ruijie#
```

Related Commands	Command	Description
	N/A	N/A

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

## 4.6 erase

Use this command to erase the device or file that does'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 Commands	Command	Description
	N/A	N/A

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

## 4.7 file

Use this command to display the information about a file.

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

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> , <b>sd:</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** 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

## 4.8 file prompt

Use this command to set the prompt mode.

**file prompt [ noisy | quiet ]**

Parameter	Parameter	Description
Description	<b>noisy</b>	Displays prompt for all operation.
	<b>quiet</b>	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**

## 4.9 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> , <b>sd:</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**

## 4.10 more

Use this command to display the content of a file.

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

**Parameter Description**

Parameter	Description
<i>/ascii</i>	Displays the file content in the ASCII format.
<i>/binary</i>	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> , <b>sd:</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** Privileged EXEC mode**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> <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	Command	Description
Commands	N/A	N/A

Platform N/A  
Description

## 4.11 pwd

Use this command to display the working path.

**pwd**

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

Defaults N/A.

**Usage Guide** This command displays the present working path

**Configuration Examples**

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

Platform N/A.  
Description

## 4.12 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**

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

Related Commands	Command	Description
	<b>delete</b>	Deletes the file.
	<b>copy</b>	Copies the file.

**Platform Description** N/A

## 4.13 rmdir

Use this command to delete an empty directory.

**rmdir** [ *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> , <b>sd:</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** Privileged EXEC mode.

**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)
```

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

**Platform** N/A.

**Description**

## 4.14 show disk

Use this command to display sata/USB/Flash information.

**show disk** *usb/flash*

Parameter	Parameter	Description
Description		

<b>usb</b>	Displays USB information.
<i>flash</i>	Displays FLASH information.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays sata information.

**Examples**

```
Ruijie#show disk sata
Disk /dev/sda: 160.0 GB, 160039272960 bytes
255 heads, 63 sectors/track, 19457 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
```

The following example displays USB information.

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

The following example displays FLASH information.

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

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 4.15 show file systems

Use this command to display the file system information.

**show file systems**

Parameter	Parameter	Description
<b>Description</b>	N/A.	N/A.

**Defaults** N/A.

**Command** Privileged EXEC mode.

**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:
      NA         NA        xmodem  rw    xmodem:
      8192        2416         disk   rw    flash:
167772160      147772160     disk   rw    sata0:
   1048576       548576        disk   rw    usb0:
   262144        152144        disk   rw    sd0:
```

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**

N/A.

**Description**

## 4.16 show mount

Use this command to display the mounted information.

**show mount****Parameter****Description**

Parameter	Description
N/A	N/A

**Defaults**

N/A

**Command** N/A  
**Mode**

**Usage Guide** N/A

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

**Examples**

```
Ruijie#show mount
/dev/sda1 on / type ext4 (rw,errors=remount-ro,commit=0)
proc on /proc type proc (rw,noexec,nosuid,nodev)
sysfs on /sys type sysfs (rw,noexec,nosuid,nodev)
fusectl on /sys/fs/fuse/connections type fusectl (rw)
none on /sys/kernel/debug type debugfs (rw)
none on /sys/kernel/security type securityfs (rw)
udev on /dev type devtmpfs (rw,mode=0755)
devpts on /dev/pts type devpts (rw,noexec,nosuid,gid=5,mode=0620)
tmpfs on /run type tmpfs (rw,noexec,nosuid,size=10%,mode=0755)
none on /run/lock type tmpfs (rw,noexec,nosuid,nodev,size=5242880)
none on /run/shm type tmpfs (rw,nosuid,nodev)
/dev/sda3 on /hao-share type ext3 (rw,commit=0)
binfmt_misc on /proc/sys/fs/binfmt_misc type binfmt_misc
(rw,noexec,nosuid,nodev)
```

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

Related Commands	Command	Description
	N/A	N/A

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

## 4.17 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 Examples** The following example binds source IP address 192.168.23.236 with the TFTP client.

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

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

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

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

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

The following example removes the configuration.

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

The following example restores the default setting.

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

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 4.18 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> , <b>sd:</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** Privileged EXEC mode



**Mode****Usage Guide** N/A**Configuration** The following example displays the file tree of flash:/echo**Examples**

```
Ruijie#tree flash:/echo
+-- client_module
+-- client_userspace
+-- echo_cli.c
+-- echo_client.c
+-- echo_client.h
+-- echo_client.o
+-- echo_cli.o
+-- echo_flag.h
+-- echo.h
+-- echo.ko
+-- echo_server.h
+-- exec_set_echo.h
+-- exec_show_echo.h
+-- Makefile
+-- module
|   +-- echo.ko
|   +-- echo.mod.c
|   +-- echo.mod.o
|   +-- echo_module.c
|   +-- echo_module.o
|   +-- echo.o
|   +-- echo_server.c
|   +-- echo_server.o
|   +-- echo_sysfs.c
|   +-- echo_sysfs.h
|   +-- echo_sysfs.o
|   +-- Makefile
|   +-- modules.order
|   +-- Module.symvers
|   +-- msg_fd.c
|   +-- msg_fd.o
+-- readme
+-- server_module
+-- server_userspace
+-- sys_rgos.ko
+-- user_space
    +-- echo_server.c
    +-- echo_server.o
```

```
+-- Makefile
+-- msg_fd.c
+-- msg_fd.o 10,490,132 bytes total (13,192,656 bytes free)
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 4.19 verify

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

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

Parameter	Parameter	Description
<b>Description</b>	/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> , <b>sd:</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** Privileged EXEC mode.

**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**

## 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. If the day does not exist in the current month, the date is calculated backward.
	<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".
- If the value of parameter *day* is between 1 and 31, but the current month does not contain that day, the value will be calculated backward. For example, February 2012 has 29 days. If you use the **calendar set 11:30 2 31 2012** command to set the date to February 31, by default, the system adds two days backwards. Therefore, the current hardware time is "2012-03-02 11:30:23".

 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. If the day does not exist in the current month, the date is calculated backward.
	<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".

2. If the value of parameter *day* is between 1 and 31, but the current month does not contain that day, the value will be calculated backward.

 For example, February 2012 has 29 days. If you use the **clock set 11:30 2 31 2012** command to set the date to February 31, by default, the system adds two days backward. Therefore, the current hardware time is "2012-03-02 11:30:23".

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** -

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

**Defaults** -

**Command Mode** Global configuration mode

**Default Level** -

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

**Configuration Examples** 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** -

**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 limit 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 upper limit of CPU usage, in the range from 1 to 99.
	<b>down</b> <i>down-value</i>	Sets the lower limit of CPU usage, in the range from 1 to 99.
<b>Defaults</b>	The default limit is 75%-85%.	
<b>Command Mode</b>	Global configuration mode	
<b>Default Level</b>	-	
<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> <p>The following example enables CPU usage monitoring and sets the high watermark to 88% and fluctuation range to 3%.</p> <pre>Ruijie(config)# cpu high-watermark set high 88 range 3 Open cpu watermark monitor Set system cpu high-watermark up 90%, down 70%</pre> <p>In this case, the upper limit is 91% (88%+3%) and the lower limit is 85% (88%-3%).</p>	
<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(91%),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</p>	

message about warning release:

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

**Platform**

-

**Description**

## 5.8 memory history clear

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

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

**Parameter  
Description**

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

**Defaults**

-

**Command**

Global configuration mode

**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 1% to 100%.

**Defaults** The default memory usage is 90%.

**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.

**Configuration** The following example sets the low watermark threshold of the memory to 80%.

**Examples** Ruijie(config)#memory low-watermark set 80

**Check Method** -

**Prompt** When the system memory is less than the defined watermark value (such as 500000 KB), the system  
**Message** prints the following message:

```
Ruijie(config)#<187> Jan 1 00:18:59 syslog: Free Memory has dropped below 500000k
```

**Platform** -

**Description**

## 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(or 1970~2037).

**Defaults** -

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

**Default Level** -

**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**

Privileged EXEC mode/ global configuration mode

**Mode****Default Level**

-

**Usage Guide**

-

**Configuration**

The following example displays the hardware calendar.

**Examples**

```
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**

Privileged EXEC mode / global configuration mode

**Mode**



**Default Level** -**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 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** Privileged EXEC mode/ global configuration mode  
**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** The following example displays the information on the system task running on the control core instead of the non-virtual core.  
**Examples**

```
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**

## 5.14 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**

Privileged EXEC mode/ global configuration mode

**Mode****Default Level**

-

**Usage Guide**

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

**Configuration  
Examples**

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

```

Ruijie# show memory sorted
System Memory: 508324K total, 481560K used, 26764K free, 31.5% used rate
Used detail:  149112K active, 247776K inactive, 30460K mapped, 50460K slab, 3752K others

```

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

--More--

Description of some keywords in the command:

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

Description of the displayed information on each task:

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

**Prompt**

**Message**

**Platform**

**Description**

## 5.15 show memory vsd

Use this command to display memory information.

**show memory vsd** *vsd\_id*

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

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

**Mode**

**Default Level** -

### Usage Guide

 This command is supported only in VSD0 mode.

### Configuration

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

### Examples

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

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

--More--

**Prompt**  
**Message** -

**Platform**  
**Description** -

## 5.16 show pci-bus

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

**show pci-bus**

Parameter	Parameter	Description
Description	-	-

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

**Default Level** -

**Usage Guide** -

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

### Examples

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

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

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

**Prompt** -  
**Message** -  
**Platform** -  
**Description** -

### 5.17 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   1min   5min   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** -

**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| |||||
 10| |||||
  5| ||||| *****
  0| |||||
```

```

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

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

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

```

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]

```



**Default Level** -

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

**Configuration** The following example displays the information on the task of the specified task name.

**Examples**

```
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     : 209.6KB
```

 **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	CPU usage of the task within the last five seconds, one minute, five minutes, and 15 minutes. The value in the round brackets is the CPU usage that is not divided by the total number of cores where the task runs. For example, the demo task is running on No.0 core, which is the control core and the system has two control cores. In this case, the CPU usage is 0.3% (0.6%).
Tty	Tty ID, in the format of "Primary device ID, secondary device ID". If it is 0, the value is ?.
Code Usage	Size occupied by the task code segment

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**

## 5.19 show processes vsd

Use this command to display system task of the specified VSD.

**show process vsd** *vsd\_id* **cpu**

**Parameter****Description**

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

**Command**

Privileged EXEC mode/ global configuration mode

**Mode****Default Level**

-

**Usage Guide**

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

**Configuration**

The following example displays the system task information in VSD1 mode.

**Examples**

```
Ruijie#show processes vsd 1 cpu
```

**Prompt**

-

**Message****Platform**

-

**Description**

## 5.20 show reboot-reason

Use this command to display the reboot reason.

**show reboot-reason**

Parameter Description	Parameter	Description
	N/A	N/A
<b>Command Mode</b>	Privileged EXEC mode/ global configuration mode/ User EXEC mode	
<b>Default Level</b>	-	
<b>Usage Guide</b>	-	
<b>Configuration Examples</b>	The following example displays the reboot reason of the device.	
	<pre>Ruijie#show reboot-reason time: 1970-01-01 08:03:13 reason: reload cmd info: /sbin/rg-sysmon/3844  Ruijie#</pre>	
<b>Prompt Message</b>	-	
<b>Platform Description</b>	-	

## 5.21 show usb-bus

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

**show usb-bus**

Parameter Description	Parameter	Description
	-	-
<b>Command Mode</b>	Privileged EXEC mode/ global configuration mode	
<b>Default Level</b>	-	
<b>Usage Guide</b>	-	

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

**Examples**

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

**Prompt**

-

**Message****Platform**

-

**Description**

## 5.22 show version

Use this command to display the system version information.

**show version****Parameter****Description**

Parameter	Description
-	-

**Command**

Privileged EXEC mode/ global configuration mode

**Mode****Default Level**

-

**Usage Guide**

-

**Usage Guide** The following example displays the system version information.

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

**Prompt**

-

**Message****Platform**

-

**Description**



## 6 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 Examples** The following example creates a time range and enters time range configuration mode.

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

The following example configures an absolute time range.

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

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

**Prompt Message** -

**Platform Description** -

## 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	Parameter	Description
<b>Description</b>	<i>time-range-name</i>	Displays a specified time range.
<b>Command Mode</b>	Privileged EXEC mode	
<b>Default Level</b>	14	
<b>Usage Guide</b>	Use this command to check the time range configuration.	
<b>Configuration Examples</b>	The following example displays the time range configuration.	
	<pre>Ruijie# show time-range time-range entry: test (inactive)   absolute end 01:02 02 February 2012</pre>	
<b>Prompt Message</b>	-	
<b>Platform Description</b>	-	

## 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	Parameter	Description
<b>Description</b>	<i>time-range-name</i>	Time range name
<b>Defaults</b>	No time range is configured by default.	
<b>Command Mode</b>	Global configuration mode	
<b>Default Level</b>	2	
<b>Usage Guide</b>	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 HTTP Service Commands

### 7.1 enable service web-server

Use this command to enable the HTTP service function.

Use the **no** or **default** form of this command to disable the HTTP service function.

**enable service web-server [ http | https | all ]**

**no enable service web-server [ http | https ]**

**default enable service web-server [ http | https ]**

**Parameter Description**

Parameter	Description
<b>http</b>	Enables the HTTP service.
<b>https</b>	Enables the HTTPS service.
<b>all</b>	Enables both the HTTP service and the HTTPS service.

**Defaults** By default, the HTTP service function is disabled.

**Command mode** Global configuration mode.

**Usage Guide** If run a command ends with the keyword **all** or without keyword, it indicates enabling both the HTTP service and the HTTPS service; if run a command ends with keyword **http**, it indicates enabling the HTTP service; if run a command ends with keyword **https**, it indicates enabling the HTTPS service. Use the command **no enable service web-server** to disable the corresponding HTTP service.

**Configuration Examples** The following example enables both the HTTP service and the HTTPS service:

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#enable service web-server
```

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

### 7.2 http port

Use this command to configure the HTTP port number.

Use the **no** form of this command to restore the default HTTP port number.

**http port** *port-number*

**no http port**

Parameter Description	Parameter	Description
	<i>port-number</i>	Configures the HTTP port number. The value includes 80, 1025 to 65,535.

**Defaults** The default HTTP port number is 80.

**Command mode** Global configuration mode.

**Usage Guide** Use this command to configure the HTTP port number.

**Configuration Examples** The following example configures the HTTP port number as 8080:

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#http port 8080
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 7.3 http secure-port

Use this command to configure the HTTPS port number.

Use the **no** form of this command to restore the default HTTPS port number.

**http secure-port** *port-number*

**no http secure-port**

Parameter Description	Parameter	Description
	<i>port-number</i>	Configures the HTTPS port number. The value includes 443, 1025 to 65,535.

**Defaults** The default HTTP port number is 443.

**Command mode** Global configuration mode.

**Usage Guide** Use this command to configure the HTTPS port number.

**Configuration** The following example configures the HTTPS port number as 4443:

**Examples**

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#http secure-port 4443
```

**Related  
Commands**

Command	Description
<b>enable service web-server</b>	Enables the HTTP service.
<b>show web-server status</b>	Displays the configuration and status of the Web service.

**Platform** N/A

**Description**

## 7.4 show web-server status

Use this command to display the configuration and status of the Web service.

**show web-server status**

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults** N/A

**Command  
mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the configuration and status of the Web service:

**Examples**

```
Ruijie#show web-server status
http server status : enabled
http server port : 80
https server status: enabled
https server port: 443
```

**Related  
Commands**

Command	Description
<b>enable service web-server</b>	Enables the HTTP service.
<b>http port</b>	Configures the HTTP port number.

<b>http secure-port</b>	Configures the HTTPS port number.
-------------------------	-----------------------------------

**Platform** N/A

**Description**

## 7.5 upgrade web

Use this command to upgrade the Web package in local file system.

**upgrade web uri**

Parameter	Parameter	Description
<b>Description</b>	<i>uri</i>	The storage path of the Web package.

**Defaults** N/A

**Command mode** Privileged EXEC mode

**Usage Guide** Please use the **copy** command to copy the Web package into the file system before you use this command to upgrade the Web package.

**Configuration** The following example copies a Web package into the file system and upgrades the package.

**Examples**

```
Ruijie#copy tftp://192.168.23.24/web.upd flash:/web.upd
Ruijie#upgrade web flash:/web.upd
```

Related Commands	Command	Description
	<b>enable service web-server</b>	Enables the HTTP service.

**Platform** N/A

**Description**

## 7.6 upgrade web download

Use this command to download the Web package from the TFTP server and upgrade the package automatically.

**upgrade web download { oob\_tftp: path | tftp: path }**

Parameter	Parameter	Description
<b>Description</b>	<i>oob_tftp: path</i>	<i>path</i> indicates the storage path of the Web package on the TFTP server.



	<p><b>oob_tftp</b> indicates the system downloads the Web package from the TFTP server through the MGMT port and upgrades the Web package automatically.</p> <p>This parameter is supported only on the device supporting the MGMT port.</p>
<b>tftp: path</b>	<p><i>path</i> indicates the storage path of the Web package on the TFTP server.</p> <p><b>tftp</b> indicates the system downloads the Web package from the TFTP server through the physical port and upgrades the Web package automatically.</p>

**Defaults** N/A

**Command mode** Privileged EXEC mode.

**Usage Guide** N/A

**Configuration Examples** The following example downloads a Web package from the TFTP server and upgrade the package automatically.

```
Ruijie#upgrade web download tftp://192.168.23.24/web.upd
```

**Related Commands**

Command	Description
<b>enable service web-server</b>	Enables the HTTP service.

**Platform Description** N/A

## 7.7 webmaster level

Use this command to configure the username and password for Web login authentication. Use the **no** form of this command to restore the default setting.

**webmaster level** *privilege-level* **username** *name* **password** { *password* | [ **0** | **7** ] *encrypted-password* }

**no webmaster level** *privilege-level* [ **username** *name* ]

**Parameter Description**

Parameter	Description
<i>privilege-level</i>	Configures the user privilege-level.
<i>name</i>	Username.
<i>password</i>	Password.
<b>0</b>   <b>7</b>	Password type; 0 indicates plaintext, 7 indicates ciphertext.

<i>encrypted-password</i>	Password text.
---------------------------	----------------

**Defaults**

By default, two users are configured.

1. User1 is configured with privilege level 1, username of admin and plaintext password of admin.
2. User2 is configured with privilege level 2, username of guest and plaintext password of guest.

**Command mode**


Global configuration mode.

**Usage Guide**

When HTTP is enabled, users can log in to the Web interface only after being authenticated. Use this command to configure the username and password for Web login authentication.

Use the **no webmaster level** *privilege-level* command to delete all the usernames and passwords with a specified *privilege-level*.

Use the **no webmaster level** *privilege-level* **username** *name* command to delete the specified username and password.

-  Usernames and passwords come with three permission levels, each of which includes at most 10 usernames and passwords.

**Configuration**

The following example configures the username and password for Web login authentication,

**Examples**

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#webmaster level 0 username ruijie password admin
```

**Related Commands**

Command	Description
<b>enable service web-server</b>	Enables the HTTP service.

**Platform**

N/A

**Description**

## 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	Parameter	Description
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** Global configuration mode

**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** N/A

**Description**

## 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  
Description**

Parameter	Description
<i>buffer-size</i>	Size of the buffer is related to the specific device type: <ol style="list-style-type: none"> <li>1. For the kernel / aggregation switches, 4 K to 10 M bytes.</li> <li>2. For the access switches, 4 K to 1 M Bytes.</li> <li>3. For other devices, 4 K to 128 K Bytes.</li> </ol>

<i>level</i>	Severity of logs, from 0 to 7. The name of the severity or the numeral can be used.
--------------	---

**Defaults** The buffer size is related to the specific device type.

1. kernel switches: 1 M Bytes;
2. aggregation switches: 256 K Bytes;
3. access switches: 128 K Bytes;
4. other devices: 4 K Bytes

The log severity is 7.

## Command

**Mode** Global configuration mode

## Usage Guide

The memory buffer for log is used in recycled manner. That is, when the memory buffer with the specified size is full, the oldest information will be overwritten. To show the log information in the memory buffer, run the **show logging** command in privileged user mode.

The logs in the memory buffer are temporary, and will be cleared in case of device restart or the execution of the **clear logging** command in privileged user mode. To trace a problem, it is required to record logs in flash or send them to Syslog Server.


The log information is classified into the following 8 levels (Table 1):

**Table-1**

Keyword	Level	Description
Emergencies	0	Emergency case, system cannot run normally
Alerts	1	Problems that need immediate remedy
Critical	2	Critical conditions
Errors	3	Error message
warnings	4	Alarm information
Notifications	5	Information that is normal but needs attention
informational	6	Descriptive information
Debugging	7	Debugging messages

Lower value indicates higher level. That is, level 0 indicates the information of the highest level.

When the level of log information to be displayed on devices is specified, the log information at or below the set level will be allowed to be displayed.

 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** The following example allows logs at and below severity 6 to be recorded in the memory buffer sized 10,000 bytes.

**Examples**

```
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**

N/A

**Description**

## 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**

N/A

**Description**

## 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 or SD card. Use the **no** form of this command to restore the default setting, **logging file { flash:filename | usb0:filename | sd0: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>sd0</b>	Saves the log file in the SD card. This parameter is supported by the device with the SD card interface and the SD card 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 file numbers

Use this command to set the number of log files written into FLASH. Use the **no** form of this command to restore the default setting.

**logging file numbers** *numbers*

**no logging file numbers**

**Parameter Description**

Parameter	Description
<i>numbers</i>	Sets the number of log files written into FLASH, in the range from 2 to 32.

**Defaults** The default is 16.

**Command** Global configuration mode

**Mode**

**Usage Guide** The system does not delete previously generated log files even if you change this configuration, Therefore, you need to delete the log files manually to save FLASH size (you can send log files to the server through TFTP before that). For example, 16 log files are generated by default before you want to change the number to 2. New logs are overwritten constantly in log files indexed 0 to 1. However,

log files indexed from 2 to 16 remain. You can delete these log files manually as needed.

**Configuration** The following example sets the number of log files written into FLASH to 8.

**Examples**

```
Ruijie(config)# logging file numbers 8
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 8.9 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>
	<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 Mode** Global configuration mode

**Usage Guide** In general, log messages destined to all directions are filtered, including console, VTY terminal, log buffer, log file and log server. If you want to filter log messages destined to a certain direction, the terminal for instance, configure the **terminal** parameter.

**Configuration Examples** The following example filters log messages destined to the terminal (including the console and the VTY terminal).

```
Ruijie(config)# logging filter direction terminal
```

Related Commands	Command	Description
	N/A	N/A

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

## 8.10 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

N/A

#### Description

## 8.11 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**

## 8.12 logging flash flush

Use this command to write log messages in the system buffer into the flash file immediately.

**logging flash flush**


Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** N/A

**Command** Global configuration mode

**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** N/A

**Description**

## 8.13 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>

**Defaults** The default is 3600.

**Command Mode** Global configuration mode

**Usage Guide** This command is used to set the interval to write log messages into the flash file. The timer starts after configuration, If you want to restore the interval to 3600 seconds, use the **no logging flash interval** command.

 To avoid writing log messages into the flash file too frequently, it is not recommended to set a short interval.

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

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

Related Commands	Command	Description
		N/A

**Platform Description** N/A

## 8.14 logging life-time

Use this command to configure the preservation duration of logs in expanded FLASH. Use the **no** form of this command to restore the default setting.

**logging life-time level** *level days*


**no logging life-time level** *level*

Parameter Description	Parameter	Description	
		<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** 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

## 8.15 logging monitor

Use this command to set the severity of logs that are allowed to be displayed on the VTY window (telnet window, SSH window, etc.) in global configuration mode. Use the **no** form of this command to disable this function.

**logging monitor** [*level*]

**no logging monitor**

**Parameter  
Description**

Parameter	Description
<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 debugging (7).

**Command  
Mode** Global configuration mode

**Usage Guide** To print log information on the VTY window, run the **terminal monitor** command in privileged EXEC mode. The level of logs to be displayed is defined by **logging monitor**.  
The log level defined with "Logging monitor" is for all VTY windows.

**Configuration** The following example sets the severity of log that is allowed to be printed on the VTY window as 6:

**Examples**

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

**Related**

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



<b>Commands</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.

**Platform** N/A

**Description**

## 8.16 logging on

Use this command globally to allow logs to be displayed on different devices. Use the **no** form of this command to disable this function.

**logging on**

**no logging on**

<b>Parameter</b>	<b>Parameter</b>	<b>Description</b>
<b>Description</b>	N/A	N/A

**Defaults** Logs are allowed to be displayed on different devices.

**Command Mode** Global configuration mode

**Usage Guide** Log information can not only be shown in the Console window and VTY window, but also be recorded in different equipments such as the memory buffer, the expanded FLASH and the Syslog Server. This command is the total log switch. If this switch is turned off, no log will be displayed or recorded unless the severity level is greater than 1.

**Configuration** The following example disables the log switch on the device.

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

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

## 8.17 logging rate-limit

Use this command to enable log rate limit function to limit the output logs in a second in the global configuration mode. Use the **no** form of this command to disable this function.

**logging rate-limit** { *number* | **all** *number* | **console** { *number* | **all** *number* } } [ **except** *severity* ]

**no logging rate-limit**

Parameter	Parameter	Description
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
	<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 rate-limit msc data-flow

Use this command to enable rate limiting for the log on the service card. Use the **no** form of this

command to restore the default setting.

**logging rate-limit msc data-flow** *number* [ **except** [ *severity* ] ]

**no logging rate-limit msc data-flow**

Parameter Description	Parameter	Description
	<i>number</i>	Sets the maximum number of log packets to be processed every second, in the range from 1 to 30000.
	<b>except</b>	When the log severity is lower than this parameter, rate limiting is disabled.
	<i>severity</i>	Sets log severity level, in the range from 0 to 7. Higher the level is, severer the log is,

**Defaults** The default *number* is 1000 and *severity* is 3.

**Command Mode** Global configuration mode

**Usage Guide** This command is used to prevent the logs being sent to the Syslog Server in a large number.

**Configuration Examples** The following example sets the maximum number of log packets to be processed every second to 600.

```
Ruijie(config)#logging rate-limit msc data-flow 600 except warnings
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 8.19 logging rd on

Use this command in global configuration mode on the host to enable the log re-direction function and allow re-directing logs on slave or backup devices to the host in the VSU environment. Use **no** form of this command to disable this function.

**logging rd on**

**no logging rd on**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** The log re-direction function is enabled by default.

**Command** Global configuration mode

**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** The following example enables the log re-direction function on a device:

**Examples** 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** N/A  
**Description**

## 8.20 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	Parameter	Description
<b>Description</b>	<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.

**Platform  
Description**

N/A

## 8.21 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* } [ **via** *mgmt-name* ] [ **udp-prot** *port* ] [ **vrf** *vrf-name* ]

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

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

**Parameter  
Description**

Parameter	Description
<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>via</b> <i>mgmt-name</i>	Specifies the MGMT port for the oob option.
<b>udp-prot</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** The following example specifies a syslog server of the address 202.101.11.1:

**Examples** 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** N/A  
**Description**

## 8.22 logging server msc data-flow

Use this command to specify the Syslog Server for the service card. 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 msc data-flow** *ip-address* [ **udp-prot** *port* ] [ **vrf** *vrf-name* ]

**no logging server msc data-flow** *ip-address* [ **vrf** *vrf-name* ]

**no logging server msc data-flow** *ip-address* [ **vrf** *vrf-name* ] **udp-prot**

Parameter Description	Parameter	Description
	<i>ip-address</i>	Sets the IP address of the Syslog Server.
	<i>vrf-name</i>	Sets the VRF instance connected to the Syslog Server.
	<b>udp-port</b> <i>port</i>	Sets the port number of the Syslog Server (Default: 514).

**Defaults** The syslog is sent to the server through the supervisor module by default.

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

**Usage Guide** Only one Syslog Server is allowed to be configured.

**Configuration** The following example specifies the Syslog Server whose IP address is 202.101.11.1.

**Examples** Ruijie(config)# logging server msc data-flow 202.101.11.1

The following example specifies the Syslog Server whose IP address is 10.1.1.100 and port number 8099.

Ruijie(config)# logging server msc data-flow 202.101.11.1 udp-port 8099

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

**Platform Description** N/A

## 8.23 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** ]

<b>Parameter Description</b>	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 Examples** The following example specifies loopback 0 as the source address of the syslog messages:

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

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

**Platform Description** N/A

## 8.24 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

## 8.25 logging source msc data-flow ip

Use this command to configure the source IP address of the log packet for the service card, Use the **no** form of this command to restore the default setting.

**logging source msc data-flow** [ **device** *device-id* ] **slot** *slot-id* **ip** *ip-address*

**no logging source msc data-flow** [ **device** *device-id* ] **slot** *slot-id* **ip**

Parameter	Parameter	Description
Description		



<i>ip-address</i>	Specifies the source IPv4 address of the log packet.
<i>device-id</i>	Specifies the device ID.
<i>slot-id</i>	Specifies the slot ID.

**Defaults** No source IP address is set by default.

**Command Mode** Global configuration mode

**Usage Guide** By default, the source IP address of the log packet is the IP address of the sending port. This command is used to fix the IP address for the convenience of monitoring, enabling the administrator to identify the device which sends the log packet.

**Configuration Examples** The following example sets the source IP address of the log packet for the service card in slot 3 of device 1 to 192.168.1.1.

```
Ruijie(config)# logging source msc data-flow device 1 slot 3 ip 192.168.1.1
```

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 8.26 logging synchronous

Use this command to enable synchronization function between user input and log output in line configuration mode to prevent interruption when the user is keying in characters. Use the **no** form of this command to restore the default setting.

**logging synchronous**

**no logging synchronous**

**Parameter Description**

Parameter	Description
N/A	N/A

**Defaults** The synchronization function between user input and log output is disabled by default.

**Command Mode** Line configuration mode

**Usage Guide** This command enables synchronization function between user input and log output, preventing the user from interrupting when keying in the characters.

**Configuration** Ruijie(config)#**line console 0**

**Examples** Ruijie(config-line)#**logging synchronous**

Print UP-DOWN logs on the port when keying in the command, the input command will be output again:

```
Ruijie# configure terminal
Oct 9 23:40:55 %LINK-5-CHANGED: Interface GigabitEthernet 0/1, changed state
to down
Oct 9 23:40:55 %LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet 0/1, changed state to DOWN
Ruijie# configure terminal//----the input command by the user is output
again rather than being intererupted.
```

Related Commands	Command	Description
	<b>show running-config</b>	Displays the configuration.

**Platform Description** N/A

## 8.27 logging trap

Use this command to set the severity of logs that are allowed to be sent to the syslog server in global configuration mode. Use the **no** form of this command to prohibit sending log messages to the Syslog server.

**logging trap** [*level*]

**no logging trap**

Parameter Description	Parameter	Description
	<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** The following example enables logs at severity 6 to be sent to the Syslog Server with the address of

**Examples**

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**

N/A

**Description**

## 8.28 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**

## 8.29 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 Description** N/A

## 8.30 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** Global configuration mode

**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**

## 8.31 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** The following example adds serial numbers to the logs.

**Examples**

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

## 8.32 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** Global configuration mode

**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**

### 8.33 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>	

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

## 8.34 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	Parameter	Description
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*millisecond, 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	Command	Description
Commands	<b>logging on</b>	Turns on the log switch.
	<b>service sequence-numbers</b>	Enables serial numbers of logs.

**Platform Description** N/A

## 8.35 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	Parameter	Description
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**  
**Description** N/A

## 8.36 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**

## 8.37 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	Parameter	Description
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**

## 8.38 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

## 8.39 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**

	Command	Description
Related Commands	N/A	N/A

**Platform Description** N/A

	Version	Description
Command History	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 <i>level</i></b>	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.

### Configuring the Operating Mode of Fans

**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.

The mode switching fails for the device in the energy-saving mode.

Failed to change fan mode, please turn off energy-saving and retry again.

**Common** Fail to switch the operating mode for the energy-saving function is enabled.

**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.
	<b>interval</b> <i>seconds</i>	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
```

The following example shows the FE card in slot 1 with over temperature needs to be powered off for 10 minutes and dissipated for heat and then be powered on for work.

```
Ruijie#power cycle slot FE1 interval 600
```

```
Slot FE1 power off successfully, and will be on beyond 600 seconds.
```

**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 <i>deviid</i></b>	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 <i>slotid</i></b>	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 *devic*] 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 *devic*] slot *slotid***

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

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

Description	
<b>switch</b> <i>devi</i> d	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

**Defaults**

By default, the power-on priorities are as following:

- The supervisor modules have the highest priority.
- The priority of an FE card is higher than the priority of the VSL card and other line cards.
- The priority of the VSL card is higher than the priorities of the other line cards.
- The smaller the slot number of a line card or FE card, the higher the priority of the line card or FE card.

By default, the line card is not automatically powered off based on the power supply priorities in the case of insufficient system power.

**Command Mode**

Global configuration mode

**Level**

14

**Usage Guide**

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.

**Configuration Examples**

The following example uses slot 3 as a back-up link with lower priority in VSU mode.

```
Ruijie(config)#power priority switch 2 slot 3 1
```

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.

```
Ruijie(config)#no power priority slot 3
Ruijie(config)#power priority slot 3 16
```

The following example introduces configuration files into the device in standalone mode and saves the power-on priority configuration of the line card.

```
Ruijie(config)#power priority save
```

**Verification**

Use the **show power priority** 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.

**Prompt** The device does not exist.

**Messages** Device 2 does not exist.

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** *devId* ] **pwr** **enable**

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

**no power redundancy** [ **switch** *devId* ]

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

[ **switch** *devId* ]

Parameter Description	Parameter	Description
	<b>switch</b> <i>devId</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>pwr</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 Examples** The following examples displays that the S8605E chassis has two 1600 W DC power modules, but one power module is enough to supply power. Therefore, you can set the other power module as the redundant power module.

```
Ruijie(config)#power redundancy 1 enable
```

The following examples displays that the N18014 chassis is inserted with 5 power supplies configured with 3+2 redundancy and cancels redundancy for the system reports under power.

```
Ruijie(config)#no power redundancy
```

**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 Errors**

1. When power modules are intermixed, power redundancy cannot be configured.
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 [ { [ [ deviid ] fanid ] detail } | version ]
```


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

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** The following example displays the fan information in S8605E slave chassis.

```
Ruijie#show fan
Chassis-type: RG_S8605E
Fan-id: 1
  Fan-type:      M05_FAN
  Serial Number: 1234567890123
  Energy-saving: off

fan-id  status  mode      speed-level
-----  -
1       ok       normal    N/A
```

The following example displays the detailed fan information.

```
Ruijie#show fan detail
Chassis-type: RG_S8605E
Fan-id: 1
```

```

Fan-type:      M05_FAN
Serial Number: 1234567890123
Energy-saving: off
Status:        ok
Mode:          normal

sub-fan-id  status  speed
-----  -
1           ok      2700
2           ok      3000
3           ok      3000
4           ok      3150
5           ok      2850
6           ok      3000
7           ok      3000
8           ok      3150
    
```

The following example displays only the detailed information about Fan 1.

```

Ruijie#show fan 1 detail
Chassis-type:  RG_S8605E
Fan-id:  1
  Fan-type:      M05_FAN
  Serial Number: 1234567890123
  Energy-saving: off
  Status:        ok
  Mode:          normal

sub-fan-id  status  speed
-----  -
1           ok      2850
2           ok      3000
3           ok      3000
4           ok      3150
5           ok      3000
6           ok      3000
7           ok      3000
8           ok      3000
    
```

**Prompt** N/A  
**Messages**

**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.

**Command Mode** Privileged EXEC mode

**Level** 14

**Usage Guide** 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:

- Display the power redundancy mode and check whether power redundancy takes effect and the like.
- 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.
- Display the system's total power, allocated and occupied power and available power.
- Display the name, demanded power and allocated power of each board on every slot and power supply status of each slot.

**Configuration Examples** The following example displays the basic power information.

```
Ruijie#show power
Chassis-type: RG_S8605E
Power-redun: no
Energy-saving: off
power-id  power-type  supply(W)  status  vol-in/out(V)  cur-out(mA)  supply-out(W)
-----  -
1          PA600I          600        ok       231 /12        3500         42
2          PA600I          600        ok       232 /12        1000         12
3          PA1600I_P      1600       ok       N/A /55        0            0

slot  card_type  status  require(W)  allocate(W)
-----  -
1     N/A       N/A     N/A         N/A
```

2	M18000-48GT-CB	power-off	349	0
3	N/A	N/A	N/A	N/A
M1	M18010-CM	power-on	40	40
M2	M18010-CM	power-on	40	40

system_supply(W)	card_allocate(W)	fan-allocate(W)	free-supply(W)
-----	-----	-----	-----
1200	80	288	832

The following example displays the power version.

```
Ruijie#show power version
Chassis-type: RG_S8605E
Power-id: 1
  Serial Number:    ZH40274
  Type:             PA600I
  Hardware Version: 1
  Software Version: N/A
  Temperature(C):  44
Power-id: 2
  Serial Number:    ZJ47958
  Type:             PA600I
  Hardware Version: 2
  Software Version: N/A
  Temperature(C):  44
Power-id: 3
  Serial Number:    LBLNPW12CS33014774
  Type:             PA1600I_P
  Hardware Version: N/A
  Software Version: N/A
  Temperature(C):  37
```

The following example displays the power supply priority of the board.

```
Ruijie#show power priority
Chassis-type: RG_S8605E
Card Auto-down: off

slot  priority  status
-----  -
1     N/A        N/A
2     1          power-off
3     N/A        N/A
M1    N/A        power-on
M2    N/A        power-on
```

<b>Prompt</b>	N/A
<b>Messages</b>	
<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** The following example displays the temperature and threshold configuration of all boards.

```
Ruijie#show temperature
Chassis-type: RG_S8605E
slot  card_type          warning(C)  shutdown(C)  current(C)
-----
1      N/A                  N/A         N/A          N/A
2      M18000-48GT-CB       51          90 |100 |100  26|27|32|33|(N/A)|(N/A)
3      M18000-10QXS-CB     51          90 |100 |100  24|26|28|30|(35)|(64)
M1     M18010-CM            51          90 |100 |100  24|29|26|29|(35)|(N/A)
M2     M18010-CM            51          90 |100 |100  23|29|25|29|(34)|(N/A)
```

Field Description

Field	Description
Chassis-type	Type of the chassis
slot_id	Slot No. of the chassis
card_type	Type of the board in corresponding position and "N/A" represents no board plugged into the slot.

warning	Board alarm temperature (in degree Celsius) only includes the alarm threshold of the main board temperature (that of air inlet, air outlet and hottest pints on the board).
shutdown	The hazard threshold of the board, that is, the power-off threshold (in degree Celsius) . Three types of power-off threshold are listed as following : the main board temperature , CPU temperature, and MAC temperature.
current	Displays current board temperature. Displays "N/A" if the temperature cannot be gained. The temperatures from left to right are that of the following: air inlet, air outlet, and the hottest points (two on each board), CPU (two multi-service cards), and MAC ("N/A is displayed when the engine does not involve MAC. Some cards have several MAC temperature).

 When the main supervisor module is used to control all the modules, it will not automatically power off when its temperature reaches the hazard threshold. It's recommended to take actions for heat dissipation by users.

**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 <i>devid</i></b>	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 <code>cpu</code> or <code>mac</code> , 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.

**Defaults**

Only the main board temperature involves both an alarm threshold and a hazard threshold. 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.

**Command Mode**

Global configuration mode

**Level**

14

**Usage Guide**

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 `no` 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.

 The hazard threshold of the main board temperature cannot exceed 90C. The hazard thresholds of the CPU and MAC temperatures cannot exceed 110C.

 The hazard thresholds of the CPU and MAC temperatures cannot exceed 110C.

**Configuration Examples**

The following example configures the warning threshold of the main board as 75°C to stop high-temperature alerts .

```
Ruijie(config)#threshold set temperature board warning 75
```

The following example configures the temperature alarm threshold of the main board in the two chassis as 75°C in VSU mode.

```
Ruijie(config)#threshold set temperature switch 1 board warning 75
Ruijie(config)#threshold set temperature switch 2 board warning 75
```

---

<b>Verification</b>	Use the <b>show temperature</b> command to display the alarm and hazard thresholds of the current board.
<b>Prompt</b>	The device does not exist.
<b>Messages</b>	Device 2 does not exist.
	2. The alarm threshold set is higher than the hazard threshold.
	The warning temperature must be less than the shutdown temperature(80).
	Operating mistakes cause temperature threshold configuration failure.
	Failed to set temperature threshold, for device error.
<b>Common</b>	1. When the thresholds exceed the allowed values, the threshold settings are invalid.
<b>Errors</b>	2. When the alarm thresholds are excessively low, the system frequently generates alarm logs.
<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** 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.

**Examples**

```
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 authenticocode 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
775719468737BA269825589557F558657575B5D5D5D5D785782598859765A8355
855.
```

## 10.5 license uninstall

Use this command to remove a license file.


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


Parameter Description	Parameter	Description
	<b>all</b>	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** The following example removes the license file for VSD in the system.

**Examples**

```
Ruijie#license uninstall LIC-VSD
Uninstall LIC-VSD success.
```

**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 is successful (use VSD feature as an example).

```
Uninstall LIC-VSD success.
```

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** The license file has not been installed on the device.

**Errors** 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** The following example updates the temporary license file for VSD in the system to a permanent license file.

- Purchase the permanent license file `vsd_perm.lic` for VSD, store the `vsd_perm.lic` file in a USB flash drive, and connect the USB flash drive to the device.
- Update the license file for VSD.

```
Ruijie#license update usb0:vsd_perm.lic
License file update success, temporary license LIC-VSD changes into permanent.
```

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

**Configuration Examples**

```
Ruijie #show license all-license
Searching license in the system...
 1. Service name: LIC-VSD
Attribute: Permanent, Multiple instance, Releasable
Installed licenses(s): 123.lic
```

**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.
```

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

```
Update success, temporary license LIC-VSD changes into permanent.
```

**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 a license file for VSD.

```
Ruijie#show license file LIC-VSD
Service name: LIC-VSD
Attribute: Temporary, Single instance, Releasable
Left days: 362
Licensed serial number: LIC-VSD00000012268888
```

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)

2. Service name: LIC-VSD
   Attribute: Temporary, Releasable
   Left days: 362
   Licensed serial number: LIC-VSD00000012268888
```

Field Description:

Field	Description
Service name	The name of the feature of the license file
Attribute	Some features of the license file
Left days	The remaining days of the expiry time of the license file
Installed license	Installed license file
Licensed serial number	License code

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

**Examples**

```
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	Parameter	Description
Description	N/A	N/A

**Command** Privileged EXEC mode

**Mode**

**Default Level** 2

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

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

**Examples**

```
Ruijie#show license unbind-code
LICENSE                UNBINDING-CODE
LIC-VSD00000012264933
77571FF68737BFF69FF55FF557F55FF57575B595E58587857FF59FF59765AFF55FF5
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	Parameter	Description
Description	N/A	N/A

**Command** Privileged EXEC mode  
**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)

2. Service name: LIC-VSD
   Attribute: Temporary, Releasable
   Left days: 362
   Licensed serial number: LIC-VSD00000012268888
```

**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** Global configuration mode.

**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** N/A

**Description**

### 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** Global configuration mode  
**Mode**

**Usage Guide** This command is used to remove the configuration on a VSU device. It validates after the device is restarted.

**Configuration Examples** The following example clears the configuration on device 1.

```
Ruijie(config)# remove 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** Privileged EXEC mode  
**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 alarm

Use this command to display system alarm messages, concerning card startup failure, temperature, power, and fan alarms.

**show alarm**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays system alarm messages.

### Examples

```
Ruijie#show alarm
Dev  Module          Level  Info
---  -
-----
1   DEV              Warning Some fans are absent.
1   DEV              Critical Some cards are in cannot-startup state.
```

Field	Description
Dev	Device ID
Module	Service module
Level	Alarm level, including Critical and Warning
Info	Alarm cause, such as system power shortage fan absence and card startup failure

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 11.5 show manuinfo

Use this command to display asset information about all independent components in the system for asset management, including the chassis, fan, power, management board, and line card. The



information covers the ID, slot number, name, serial number (SN), software and hardware version, and MAC address. Not all devices support display of the same information and only supported information is printed.

### show manuinfo

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command 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

## 11.6 show sysmac

Use this command to display the MAC address of the current system.

**show sysmac**

Parameter  
Description

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

N/A	N/A
-----	-----

**Defaults** N/A

**Command Mode** Privileged EXEC mode.

**Usage Guide** N/A

**Configuration** The following example displays the MAC address of the current system.

**Examples**

```
Ruijie#show sysmac
00d0.f822.33e2
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

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

Use this command to display the details of the module.

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

Parameter Description	Parameter	Description
		<i>module-num</i>

**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>

**Platform** N/A

**Description**

### 11.8 show version slots [ slot-num ]

Use this command to display the details of the slot.

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

Parameter Description	Parameter	Description
		<i>num</i>

**Defaults** N/A

**Command Mode** Privileged EXEC mode.

**Usage Guide** N/A

```

Configuration Examples
Ruijie# show version slots
Dev Slot  Configured Module  Online Module  User Status  Software Status
-----  -
1 1      none              none
1 2  M8606-24SFP/12GT  M8606-24SFP/12GT  installed  none
1 3  M8606-2XFP       M8606-2XFP       uninstalled  cannot startup
1 4  M8606-24GT/12SFP M8606-24GT/12SFP installed  ok
1 M1  M8606-CM        M8606-CM                master
1  M2
    
```

Related Commands	Command	Description
		<b>show version moduel detail</b>

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

## 11.9 sysmac

Use this command to configure a MAC address for the system. Use the **no** form of this command to remove the setting.

**sysmac**  
**no sysmac**

Parameter	Description
<i>mac-address</i>	Configures a MAC address for the system.

**Defaults** N/A

**Command Mode** Global configuration mode

- Usage Guide**
1. In general, the MAC address is programmed on the management board or the chassis flash. In virtual switching unit (VSU) mode, the system saves the MAC address in use in the configuration file to avoid flow interruption caused by MAC address change. The valid MAC address saved in the configuration file validates in preference after the device is restarted,
  2. The MAC address of the gateway may be bound on some downstream devices. If the system is configured with the **auth-mode gateway** command, you can use the **sysmac** command to replace the MAC address of the gateway without changing the MAC address configuration on the downstream devices.
  3. The configuration takes effect after the device is restarted.

**Configuration Examples** The following example deletes the MAC address saved in the configuration file.

```
Ruijie#no sysmac
```

The following example configures MAC address 00d0.f822.33e2 for the system.

```
Ruijie#sysmac 00d0.f822.33e2
```

Related Commands	Command	Description
	N/A	N/A

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

## 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** The following example sets the automatic synchronization interval to 60 seconds.

**Examples**

```
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.

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

## 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.

**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
```

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.

**Related Commands**

Command	Description
N/A	N/A

**Platform Description**

N/A

## 13 USB&SD Commands

### 13.1 sd remove

Use this command to remove the SD device.

**sd remove** *device\_id*

Parameter Description	Parameter	Description
	<i>device_id</i>	Device ID of SD to be removed.

**Defaults** N/A

**Command Mode** Privileged EXEC mode.

**Usage Guide** Before pulling out the SD 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 SD device, so you have to wait a moment before removing it again.

**Configuration Examples** The following example removes the SD device. Ruijie# sd remove 1  
OK, now you can pull out the device 1.  
At this moment, the SD card can be plugged out.

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

### 13.2 show sd

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

**show sd**

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 SD device. Otherwise, there is no output.

**Configuration** The following example displays the information about the SD device:

**Examples**

```
Ruijie# show sd
Device: Mass Storage:
ID: 1
URL prefix: sd0
Disk Partitions:
SD(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 SD device.
Size	Accessible size of the SD device.
Available size	Available size of the SD device.

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 13.3 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** Privileged EXEC mode.

**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** N/A

**Description**

## 13.4 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 PoE Management Commands

### 14.1 poe alloc-power

Use this command to set the allocation power for the port. Use the **no** or **default** form of this command to restore the default allocation power.

**poe alloc-power** *int*

**no poe alloc-power**

**default poe alloc-power**

Parameter	Parameter	Description
Description	<i>int</i>	The maximum power, in the range from 0 to 30W.

**Defaults** The default is 0.

**Command Mode** Interface configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example sets the allocation power for port GigabitEthernet 0/1 to 20W.

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# poe alloc-power 20
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 14.2 poe class-lldp enable

Use this command to configure LLDP two-event classification. Use the **no** or **default** form of this command to restore the default setting.

**poe class-lldp enable**

**no poe class-lldp enable**

**default poe class-lldp enable**

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

<b>Description</b>		
	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 LLDP two-event classification.

```
Ruijie(config)# poe class-lldp enable
Ruijie(config)# end
Ruijie#write
```

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

**Platform Description** N/A

## 14.3 poe enable

Use this command to enable the power over Ethernet (PoE) function on the interface. Use the **no** form of this command to disable this function.

**poe enable**  
**no poe enable**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	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 the PoE function on port GigabitEthernet 0/1,

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# no poe enable
```

Related Commands	Command	Description
	N/A	N/A

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

## 14.4 poe enable pse [device device\_num] slot slot\_num

Use this command to enable PoE for the line card. Use the **no** or **default** form of this command to disable this function.

**poe enable pse** [device device\_num] slot slot\_num

**no poe enable pse** [device device\_num] slot slot\_num

**default poe enable pse** [device device\_num] slot slot\_num

Parameter Description	Parameter	Description
		<i>device_num</i>
	<i>slot_num</i>	The slot number.

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

**Command Mode** Global configuration mode

**Usage Guide** N/A

**Configuration** The following example disables PoE for line card 2.

### Examples

```
Ruijie# configure
Ruijie(config)# no poe enable pse slot 2
```

Related Commands	Command	Description
	N/A	N/A

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

## 14.5 poe legacy

Use this command to enable non-standard PD compatibility. Use the **no** or **default** form of this command to restore the default setting.

**poe legacy**

**no poe legacy**

**default poe legacy**

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 non-standard compatibility for port GigabitEthernet 0/1.

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# poe legacy
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 14.6 poe max-power

Use this command to set the maximum power for the port. Use the **no** or **default** form of this command to restore the default setting,

**poe max-power *int***

**no poe max-power**

**default poe max-power**

Parameter Description	Parameter	Description
	<i>int</i>	The maximum power, in the range from 0 to 30W. Note that this parameter is in the range from 0 to 15.4W on the system supporting 802.3af only. HPoE port ID is in the range from 0

	to 90.
--	--------

**Defaults** The maximum power is not set by default.

**Command Mode** Interface configuration mode

**Usage Guide** N/A.

**Configuration** The following example sets the maximum power for port GigabitEthernet 0/1 to 20W.

**Examples**

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# poe max-power 20
```

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 14.7 poe max-power *max-power* pse [ **device** *device\_num* ] slot *slot\_num*

Use this command to set the maximum PoE power for the line card. Use the **no** or **default** form of this command to restore the default setting.

```
poe max-power max-power pse [device device_num] slot slot_num
no poe max-power max-power pse [device device_num] slot slot_num
default poe max-power max-power pse [device device_num] slot slot_num
```

**Parameter Description**

Parameter	Description
<i>max-power</i>	The maximum power, in the range from 0 to 1440W.
<i>device_num</i>	In stand-alone mode, keyword <b>device</b> is not displayed; in VSU mode, this parameter indicates the corresponding chassis or device. If keyword <b>device</b> is displayed, this parameter indicates the master chassis or device.
<i>slot_num</i>	The slot number

**Defaults** The default *max-power* is 369.6W for the 24-port line card and 739.2W for the 48-port line card.

**Command Mode** Global configuration mode

**Usage Guide** N/A

**Configuration** The following example sets the maximum PoE power for line card 2 to 300W.

**Examples**

```
Ruijie(config)# poe max-power 300 pse slot 2
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 14.8 poe mode

Use this command to set the PoE management mode. Use the **no** or **default** form of this command to restore the default setting.

**poe mode { auto | energy-saving | static }**

**no poe mode**

**default poe mode**

**Parameter  
Description**

Parameter	Description
<b>auto</b>	Sets the power management mode to auto mode, the default mode.
<b>energy-saving</b>	Sets the power management mode to energy-saving mode, the optional mode,
<b>static</b>	Sets the power management mode to static mode, the optional mode,

**Defaults** The default mode is auto.

**Command  
Mode** Global configuration mode

**Usage Guide** N/A

**Configuration** The following example sets the PoE management mode to energy-saving mode.

**Examples**

```
Ruijie# configure
Ruijie(config)# poe mode energy-saving
Ruijie(config)# end
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 14.9 poe notification-control enable

Use this command to enable Trap notification in PoE MIB(RFC3621). Use the **no** or **default** form of this command to restore the default setting.

**poe notification-control enable**

**no poe notification-control enable**

**default poe notification-control enable**

Parameter Description	Parameter	Description
	N/A	N/A

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

**Command Mode** Global configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example enables Trap notification in PoE MIB(RFC3621).

```
Ruijie(config)# poe notification-control enable
Ruijie(config)# end
Ruijie#write
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 14.10 poe pd-description

Use this command to set the PD descriptor for the port. Use the **no** or **default** form of this command to restore the default setting.

**poe pd-description** *pd-name*

**no poe pd-description**

**default poe pd-description**

Parameter Description	Parameter	Description
	<i>pd-name</i>	PD descriptor name, a string no more than 32 characters.

**Defaults** N/A

**Command Mode** Interface configuration mode

**Usage Guide** N/A

**Configuration** The following example sets the PD descriptor for port GigabitEthernet 0/1.

**Examples**

```
Ruijie# configure
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# poe pd-description ap220
Ruijie(config-if-GigabitEthernet 0/1)# end
```

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 14.11 poe power-off time-range name

Use this command to configure scheduled power-on for the port. Use the **no** or **default** form of this command to restore the default setting.

**poe power-off time-range** *name*

**no poe power-off time-range**

**default poe power-off time-range**

**Parameter Description**

Parameter	Description
<i>name</i>	Time-range name.

**Defaults** N/A

**Command Mode** Interface configuration mode

**Usage Guide** N/A

**Configuration** The following example sets the port GigabitEthernet 0/1 to be disabled from 8:30 to 17:30 every day.

**Examples**

```
Ruijie# configure
Ruijie(config)# time-range poe-time
Ruijie(config-time-range)# periodic weekdays 8:30 to 17:30
Ruijie(config-time-range)# exit
```



```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# poe power-off time-range poe-time
```

**Related  
Commands**

Command	Description
N/A	N/A

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

## 14.12 poe priority

Use this command to set the PoE priority for the port. Use the **no** or **default** form of this command to restore the default setting.

**poe priority { low | high | critical }**

**no poe priority**

**default poe priority**

**Parameter  
Description**

Parameter	Description
{ low   high   critical }	Priority level.

**Defaults** The default is low.**Command  
Mode** Interface configuration mode**Usage Guide** N/A**Configuration** The following example sets the PoE priority for port GigabitEthernet 0/1 to critical.**Examples**

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# poe priority critical
Ruijie(config-if-GigabitEthernet 0/1)# end
```

**Related  
Commands**

Command	Description
N/A	N/A

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

## 14.13 poe priority { critical | high | low } pse [ device device\_num ] slot slot\_num

Use this command to set the PoE priority for the line card. Use the **no** or **default** form of this command to restore the default setting,

**poe priority { low | high | critical } pse [device device\_num] slot slot\_num**

**no poe priority { low | high | critical } pse [device device\_num] slot slot\_num**

**default poe priority { low | high | critical } pse [device device\_num] slot slot\_num**

Parameter Description	Parameter	Description
	{ low   high   critical }	Priority level.
	device_num	In stand-alone mode, keyword <b>device</b> is not displayed; in VSU mode, this parameter indicates the corresponding chassis or device. If keyword <b>device</b> is displayed, this parameter indicates the master chassis or device.
	slot_num	The slot number.

**Defaults** The default is low.

**Command Mode** Global configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example sets the PoE priority for line card 2 to high.

```
Ruijie(config)# poe priority high pse slot 2
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 14.14 poe reserve-power

Use this command to set the reserve power for the system in energy-saving mode. Use the **no** or **default** form of this command to restore the default setting,

**poe reserve-power int**

**no poe reserve-power**

**default poe reserve-power**

<b>Parameter Description</b>	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><i>int</i></td> <td>Reserve power percentage, in the range from 0 to 50.</td> </tr> </tbody> </table>	Parameter	Description	<i>int</i>	Reserve power percentage, in the range from 0 to 50.
Parameter	Description				
<i>int</i>	Reserve power percentage, in the range from 0 to 50.				
<b>Defaults</b>	N/A				
<b>Command Mode</b>	Global configuration mode				
<b>Usage Guide</b>	N/A				
<b>Configuration Examples</b>	<p>The following example sets the reserve power for the system to 10%.</p> <pre>Ruijie(config)# poe reserve-power 10 Ruijie(config)# end</pre>				
<b>Related Commands</b>	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>	Command	Description	N/A	N/A
Command	Description				
N/A	N/A				
<b>Platform Description</b>	N/A				

## 14.15 poe uninterruptible-power

Use this command to configure uninterruptible warm start, Use the **no** or **default** form of this command to restore the default setting.

**poe uninterruptible-power**

**no poe uninterruptible-power**

**default no poe uninterruptible-power**

<b>Parameter Description</b>	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>	Parameter	Description	N/A	N/A
Parameter	Description				
N/A	N/A				
<b>Defaults</b>	This function is disabled by default.				
<b>Command Mode</b>	Global configuration mode				
<b>Usage Guide</b>	This function takes effect when the device is started after the configuration is saved.				
<b>Configuration Examples</b>	<p>The following example enables uninterruptible PoE for warm start and saves configuration.</p> <pre>Ruijie(config)# poe uninterruptible-power</pre>				

```
Ruijie(config)# end
Ruijie#write
```

**Related  
Commands**

Command	Description
N/A	N/A

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

## 14.16 poe warning-power

Use this command to set the power alarm threshold for the system. Use the **no** or **default** form of this command to restore the default setting,

**poe warning-power** *int*

**no poe warning-power**

**default poe warning-power**

**Parameter  
Description**

Parameter	Description
<i>int</i>	Power alarm threshold (percentage), in the range from 0 to 99.

**Defaults** The default is 99.

**Command Mode** Global configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example sets the power alarm threshold for the system to 80%.

**Examples**

```
Ruijie(config)# poe warning-power 80
Ruijie(config)# end
Ruijie#write
```

**Related  
Commands**

Command	Description
N/A	N/A

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

## 14.17 show poe interface

Use this command to display PoE configuration and status of the specified port.

**show poe interface** *interface-name*

Parameter Description	Parameter	Description
	<i>interface-name</i>	Interface name

**Defaults** N/A

**Command Mode** Privileged EXEC mode.

**Usage Guide** N/A

**Configuration** The following example displays the PoE configuration and status in interface GigabitEthernet 0/1.

**Examples** Ruijie#show poe interface GigabitEthernet 0/1

```

Interface           : Gi0/1
Power enabled       : enable
Power status        : on
Max power           : N/A
Allocate power      : N/A
Current power       : 14.8 W
Average power       : 14.8 W
Peak power          : 14.8 W
Voltage             : 53.5 V
Current             : 278 mA
PD class            : 4
Trouble cause       : None
Priority             : critical
Legacy              : off
Power-off time-range : N/A
Power management    : auto
4pair status        : normal
  
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 14.18 show poe interfaces

Use this command to display PoE status or configuration of all ports.

**show poe interfaces status**

**show poe interfaces configuration**

Parameter Description	Parameter	Description
	<b>status</b>	Displays PoE status of all ports.
	<b>configuration</b>	Displays PoE configuration of all ports.

**Defaults** N/A

**Command** Privileged EXEC mode

**Mode**

**Usage Guide** This command is used to display PoE status or configuration of all ports.

**Configuration** The following example displays PoE status of all ports.

**Examples**

```
Ruijie#show poe interfaces status
Interface Power   Power   Curr  Avg   Peak  Curr   Trouble PD   Port
          Control Status Power Power Power Current Cause  Class Voltage
-----
Gi0/1    enable  on     14.8W 14.8W 14.8W 278mA  0     4    53.5V
Gi0/2    enable  on     28.4W 28.4W 28.4W 531mA  0     4    53.5V
Gi0/3    enable  on     14.9W 14.9W 14.9W 279mA  0     4    53.5V
Gi0/4    enable  off    0.0W  0.0W  0.0W  0mA    6     N/A  0.0V
Gi0/5    enable  on     14.8W 14.8W 14.8W 278mA  0     4    53.5V
Gi0/6    enable  on     15.0W 15.0W 15.0W 281mA  0     4    53.5V
Gi0/7    enable  on     6.1W  6.1W  6.1W  115mA  0     4    53.5V
Gi0/8    enable  on     14.8W 14.8W 14.8W 277mA  0     4    53.5V
Gi0/9    enable  on     14.7W 14.7W 14.7W 276mA  0     4    53.5V
Gi0/10   enable  on     14.8W 14.8W 14.8W 278mA  0     4    53.5V
Gi0/11   enable  on     14.7W 14.7W 14.7W 275mA  0     4    53.5V
Gi0/12   enable  off    0.0W  0.0W  0.0W  0mA    6     N/A  0.0V
Gi0/13   enable  on     14.8W 14.8W 14.8W 278mA  0     4    53.5V
Gi0/14   enable  on     0.3W  0.3W  0.3W  7mA    0     4    53.5V
Gi0/15   enable  off    0.0W  0.0W  0.0W  0mA    6     N/A  0.0V
Gi0/16   enable  off    0.0W  0.0W  0.0W  0mA    6     N/A  0.0V
Gi0/17   enable  off    0.0W  0.0W  0.0W  0mA    6     N/A  0.0V
Gi0/18   enable  off    0.0W  0.0W  0.0W  0mA    6     N/A  0.0V
Gi0/19   enable  off    0.0W  0.0W  0.0W  0mA    6     N/A  0.0V
Gi0/20   enable  off    0.0W  0.0W  0.0W  0mA    6     N/A  0.0V
Gi0/21   enable  off    0.0W  0.0W  0.0W  0mA    6     N/A  0.0V
```

```

Gi0/22  enable off    0.0W 0.0W 0.0W 0mA   6   N/A  0.0V
Gi0/23  enable off    0.0W 0.0W 0.0W 0mA   6   N/A  0.0V
Gi0/24  enable off    0.0W 0.0W 0.0W 0mA   6   N/A
0.0V

```

The following example displays PoE configuration of all ports.

```

Ruijie#show poe interfaces configuration
Interface Power      Power Max   Alloc Port      Port      Power-off
          Control  Status Power Power Power Priority Legacy Time-range
-----
Gi0/1    enable  on    N/A   N/A   critical off    N/A
Gi0/2    enable  on    N/A   N/A   critical off    N/A
Gi0/3    enable  on    N/A   N/A   critical off    N/A
Gi0/4    enable  off   N/A   N/A   critical off    N/A
Gi0/5    enable  on    N/A   N/A   critical off    N/A
Gi0/6    enable  on    N/A   N/A   high    off    N/A
Gi0/7    enable  on    N/A   N/A   high    off    N/A
Gi0/8    enable  on    N/A   N/A   high    off    N/A
Gi0/9    enable  on    N/A   N/A   high    off    N/A
Gi0/10   enable  on    N/A   N/A   high    off    N/A
Gi0/11   enable  on    N/A   N/A   high    off    N/A
Gi0/12   enable  off   N/A   N/A   high    off    N/A
Gi0/13   enable  on    N/A   N/A   low     off    N/A
Gi0/14   enable  on    N/A   N/A   low     off    N/A
Gi0/15   enable  off   N/A   N/A   low     off    N/A
Gi0/16   enable  off   N/A   N/A   low     off    N/A
Gi0/17   enable  off   N/A   N/A   low     off    N/A
Gi0/18   enable  off   N/A   N/A   low     off    N/A
Gi0/19   enable  off   N/A   N/A   low     off    N/A
Gi0/20   enable  off   N/A   N/A   low     off    N/A
Gi0/21   enable  off   N/A   N/A   low     off    N/A
Gi0/22   enable  off   N/A   N/A   low     off    N/A
Gi0/23   enable  off   N/A   N/A   low     off    N/A
Gi0/24   enable  off   N/A   N/A   low     off    N/A

```

#### Related Commands

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 14.19 show poe powersupply

Use this command to display the PoE power supply status.

**show poe powersupply**

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 PoE power supply status.

```

Ruijie#show poe powersupply
Device member           : 1
Power management       : auto
PSE total power        : 1000W
PSE total power consumption : 300W
PSE total remain power : 700W
PSE total powered port : 0
PSE disconnect mode    : dc
PSE reserve power      : 0%
PSE warning power      : 99%
PSE class lldp         : disable
PSE uninterruptible-power : disable
  PSE member           : 1
    PSE Power status   : normal      PSE Power
Enabled               : enable
  PSE max power       : 300W
  PSE priority        : low
  PSE alloc power     : 300W
  PSE available power : 300W
  PSE total power consumption : 0 W
  PSE total remain power : 300W
  PSE peak power      : 0 W
  PSE average power   : 0 W
  PSE powered port    : 0

```

Related Commands	Command	Description
	N/A	N/A



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

## 15 UFT Commands

### 15.1 show switch-mode status

Use this command to display the UFT mode of a switch.

**show switch-mode status**

Parameter Description	Parameter	Description
	N/A	N/A

**Command Mode** Privileged EXEC mode, global configuration mode, interface configuration mode

**Default Level** 14

**Usage Guide** N/A

**Configuration Examples** The following example displays the UFT mode of the switch in stand-alone mode.

```
Ruijie(config)#show switch-mode status
Slot No          Switch-Mode
3                bridge
```

2The following example displays the UFT mode of the switch in VSU mode.

```
Ruijie(config)#show switch-mode status
Slot No          Switch-Mode
switch 1 slot 3  bridge
```

Field Description:

Field	Description
Slot No	Displays only slot No. in stand-alone mode; displays both device No. and slot No. in VSU mode.
Switch-Mode	Indicates the UFT operating mode.

**Prompt Messages** N/A

**Platforms** N/A

## 15.2 switch-mode mode\_type slot slot\_num

Use this command to switch the UFT operating mode for a line card in stand-alone mode.

**switch-mode** *mode\_type slot slot\_num*

Use this command to restore the Default UFT operating mode for the specified line card in stand-alone mode.

**no switch-mode** *mode\_type slot slot\_num*

**Parameter Description**

Parameter	Description
<i>mode_type</i>	<p>Indicates the UFT operating mode.</p> <p>In stand-alone mode, the line card can operate in the following modes:</p> <p><b>Default:</b> Default mode, which is applied to most of application scenarios.</p> <p><b>bridge:</b> Bridge mode, which is applied to the application scenarios where pure Layer 2 services dominate.</p> <p><b>gateway:</b> Gateway mode, which is applied to the application scenario in which Layer 3 services dominate.</p> <p><b>gateway-max:</b> Gateway-max mode, which is applied to the application scenarios in which a large number of terminals are deployed.</p> <p><b>gateway-ndmax:</b> Gateway-ndmax mode, which is applied to the application scenarios in which a large number of IPv6 terminals are deployed.</p> <p><b>label:</b> Label mode, which is applied to the application scenarios that require a great amount of MPLS labels.</p> <p><b>route-v4max:</b> IPv4 routing mode, which is applied to the application scenarios that require a great number of IPv4 routes.</p> <p><b>route-v6max:</b> IPv6 routing mode, which is applied to the application scenarios that require a great number of IPv6 routes.</p> <p><b>acl:</b> acl mode, which is applied to the application scenarios that require ACL and other security functions.</p> <p><b>acl-ipv4:</b> acl-ipv4 mode, which is applied to the application scenarios that require many ACLs and some IPv6 routes.</p> <p><b>mc:</b> multicast mode, which is applied to the application scenarios that require a great number of multicast routes.</p>
<i>slot_num</i>	Indicates the corresponding line card installed in the chassis.

**Defaults** The Default UFT operating mode is **Default**.

**Command Mode** Global configuration mode

**Default Level** 14

**Usage Guide** N/A

**Configuration Examples** The following example switches the UFT operating mode of the line card in slot 3 of the switch to bridge mode in stand-alone mode.

```
Ruijie(config)#switch-mode bridge slot 3
Please save current config and restart your device!
Ruijie(config)#show run

Building configuration...
Current configuration : 1366 bytes

version 11.0(1B2)
!
cwmmp
!
install 3 M8600E-24XS4QXS-DB
!
sysmac 1414.4b34.5624
!
nfpp
!
switch-mode bridge slot 3
```

**Verification** Use the **show switch-mode status** command to display the current operating mode.

```
Ruijie(config)#show switch-mode status
Slot No          Switch-Mode
3                bridge
```

**Prompt Messages** N/A

**Common Errors** N/A

**Platforms** N/A

## 15.3 switch-mode mode\_type switch switch\_num slot slot\_num

Use this command to switch the UFT mode for a line card in VSU mode.

**switch-mode mode\_type switch switch\_num slot slot\_num**

Use this command to delete the UFT mode for the specified line card in VSU mode.

**no switch-mode mode\_type switch switch\_num slot slot\_num**

Parameter Description	Parameter	Description
	<i>mode_type</i>	<p>Indicates the UFT operating mode.</p> <p>In VSU mode, the line card can operate in the following modes:</p> <p><b>Default:</b> Default mode, which is applied to most of application scenarios.</p> <p><b>bridge:</b> Bridge mode, which is applied to the application scenarios where pure Layer 2 services dominate.</p> <p><b>gateway:</b> Gateway mode, which is applied to the application scenarios in which Layer 3 services dominate.</p> <p><b>gateway-max:</b> Gateway-max mode, which is applied to the application scenarios in which a large number of terminals are deployed.</p> <p><b>gateway-ndmax:</b> Gateway_ndmax mode, which is applied to the application scenarios in which a large number of IPv6 terminals are deployed.</p> <p><b>label:</b> Label mode, which is applied to the application scenarios that require a great amount of MPLS labels.</p> <p><b>route-v4max:</b> IPv4 routing mode, which is applied to the application scenarios that require a great number of IPv4 routes.</p> <p><b>route-v6max:</b> IPv6 routing mode, which is applied to the application scenarios that require a great number of IPv6 routes.</p> <p><b>acl:</b> acl mode, which is applied to the application scenarios that require ACL and other security functions.</p> <p><b>acl-ipv4:</b> acl-ipv4 mode, which is applied to the application scenarios that require many ACLs and some IPv6 routes.</p> <p><b>mc:</b> multicast mode, which is applied to the application scenarios that require a great number of multicast routes.</p>
	<i>switch_num</i>	Indicates the chassis or box device number in VSU mode.
	<i>slot_num</i>	Indicates the line card installed in the chassis device.

**Defaults** The default UFT operating mode is **default configuration**.

**Command Mode** Global configuration mode

**Default Level** 14

**Usage Guide** N/A

**Configuration Examples** The following example switches the UFT operating mode of the line card in slot 3 of switch1 to bridge mode in VSU mode.

```
Ruijie(config)#switch-mode bridge switch 1 slot 3
Please save current config and restart your device!
Ruijie(config)#show run
```

```
Building configuration...
Current configuration : 1485 bytes

version 11.0(1B2)
!
cswmp
!
install switch 1 RG-S7805E
install 1/3 M8600E-24XS4QXS-DB
!
sysmac 1414.4b34.5624
!
nfpp
!
switch-mode bridge switch 1 slot 3
```

**Verification** Use the **show switch-mode status** command to display the UFT mode.

```
Ruijie(config)#show switch-mode status
Slot No          Switch-Mode
switch 1 slot 3  bridge
```

**Prompt Messages** N/A

**Common Errors** N/A

**Platforms** N/A

## 16 PKG\_MGMT Commands

### 16.1 clear storage

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

**clear storage** [ *url* ]

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<i>url</i>	A local <i>url</i> directory or full path name indicates where the installation package is stored
<b>Command Mode</b>	Privileged EXEC mode	
<b>Default Level</b>	2	
<b>Usage Guide</b>	This command is used to remove an installation package or all packages in a directory and all installation packages on the local device.	
<b>Configuration Examples</b>	<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>	
<b>Verification</b>	Check specified <i>url</i>	
<b>Platforms</b>	N/A	

### 16.2 patch active

Use this command to activate a patch to take effect.

**patch active** [ **slot** { *num* | **M1** | **M2** | **all** } ]

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<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.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Default Level** 2

**Usage Guide** Activating operation can be performed only on the device already installed with a patch, after which the patch really takes effect. This command can be used to activate a hot patch temporarily. The activated patch becomes invalid after device restart.

**Configuration Examples** The following example activates a patch on the box device.

```
Ruijie#patch active
Active the patch package success
```

The following example activates a patch on the chassis device.

```
Ruijie#patch active slot 8
[Slot 8]:
Active the patch package success
```

**Verification** Use the **show patch** command to display patch information.

**Prompt** The patch is activated successfully.

**Messages** Active the patch package success

The running fails and a patch package needs to be installed at first.

```
Patch not installed
```

There is no need to run the command for the patch in the activated or running status.

```
The patch status is already active or running
```

Contact the service center to solve the package problem.

```
Cannot find the package's scripts file
```

**Common** There is no hot patch installed on current device.

**Errors** The hot patch on current device is already activated.



**Platforms** N/A

## 16.3 patch deactivate

Use this command to deactivate a patch.

**patch deactivate** [ slot {*num* | **M1** | **M2** | **all** } ]

Parameter Description	Parameter	Description
	<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.
	<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.

**Command Mode** Privileged EXEC mode

**Default Level** 2

**Usage Guide** This command can be performed to deactivate a patch only after the patch is in the activated status.

**Configuration** The following example deactivates a patch on the box device.

**Examples**

```
Ruijie#patch deactivate
Deactivate the patch package success
```

The following example deactivates a patch on the chassis device.

```
Ruijie#patch deactivate slot 8
[Slot 8]:
Deactivate the patch package success
```

**Verification** Use the **show patch** command to display patch information.

**Prompt** The patch is deactivated successfully.

**Messages**

```
Deactivate the patch package success;
```

The running fails and a patch package needs to be installed at first.

```
Patch not installed
```

There is no need to run the command for the patch in the deactivated status.

```
The patch is not in active or running status
```

Contact the service center to solve the package problem.

```
Cannot find the package's scripts file
```

**Common** There is no hot patch installed on current device.  
**Errors** The hot patch on current device is already invalid.

## 16.4 patch delete

Use this command to uninstall a patch.

```
patch delete[ slot {num | M1 | M2 | all } ]
```

Parameter Description	Parameter	Description
	slot num	This parameter is used on a chassis device. It indicates a corresponding line card based on the slot number.
	slot all	This parameter is used on a chassis device. It indicates all devices.
	slot M1	This parameter is used on a chassis device. It specifies that the operation is performed on supervisor module M1.
	slot M2	This parameter is used on a chassis device. It specifies that the operation is performed on supervisor module M2.

**Command Mode** Privileged EXEC mode

**Default Level** 2

**Usage Guide** This command is used to remove the existing hot patch package on the device.

**Configuration** The following example removes the installed hot patch package from the box device.

**Examples**

```
Ruijie# patch delete
Clear the patch patch_bridge success
Clear the patch success
```

The following example removes the installed hot patch package from the chassis device.

```
Ruijie# patch delete slot M1
[Slot M1]:
Clear the patch patch_bridge success
Clear the patch success
```

**Verification** Use the **show patch** command to display patch status.

**Prompt** The patch is uninstalled successfully.

**Messages**

```
Clear the patch success
```

A hot patch package should be installed at first for it has not been installed.

```
Patch not installed
```

**Common  
Errors**

There is no hot patch installed on current device.

## 16.5 patch running

Use this command to activate a patch permanently.

**patch running**[ slot {*num* | **M1** | **M2** | **all** } ]

Parameter Description	Parameter	Description
	<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.
	<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.

**Command  
Mode** Privileged EXEC mode

**Default Level** 2

**Usage Guide** Activating operation can be performed only on the device already installed with a patch, after which the patch really takes effect. This command can be used to activate a hot patch permanently.

**Configuration  
Examples** The following example activates a patch on the box device.

```
Ruijie#patch running
The patch on the system now is in running status
```

The following example activates a patch on the chassis device.

```
Ruijie#patch running slot M1
[Slot M1]:
The patch on the system now is in running status
```

**Verification** Use the **show patch** command to display the patch information.

**Prompt** The patch is activated permanently.

**Messages**

The patch on the system now is in running status

The running fails and a patch package needs to be installed at first.

Patch not installed

There is no need to run the command for the patch is in the deactivated status.

The patch is not in active or running status

Contact the service center to solve the package problem.

Cannot find the package's scripts file

**Common**

There is no hot patch on current device.

**Errors**

The hot patch is already activated on current device.

## 16.6 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
<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> all	This parameter is used on a chassis device. It indicates all devices.
<b>slot</b> M1	This parameter is used on a chassis device. It specifies that the operation is performed on supervisor module M1.
<b>slot</b> M2	This parameter is used on a chassis device. It specifies that the operation is performed on supervisor module M2.
<i>component_name</i>	Name of the components When this parameter value is N/A, the command is used to display all components already installed on the device and basic information of these components. When this parameter value is not N/A, the command is used to display detailed information of the corresponding component, check whether the component is intact, and check whether this component works properly.

**Command**

Privileged EXEC mode


**Mode****Default Level**

2

**Usage Guide**

This command includes one with *component\_name* and one without *component\_name*. During

upgrade, it requires users to understand all components installed on current device and their version information before components deletion. This needs to use the **show component** command without *component\_name*. The **show component** command with *component\_name* is used to obtain details of the corresponding component. The detailed information enables users to easily realize components' operation and damage. It is significant to insure their troubleshooting, security and reliability.

-  Some components in use will change their defaults files. Though this is more possibly normal than malicious, the **show component** command is used only to judge whether component files change in use. It is unable to distinguish natural damage from malicious one. It depends on users to make a further judgment.

**Configuration Examples** The following example displays all components already installed on the box device and their information.

```
Ruijie# show component
Package :sysmonit
    Version:1.0.1.23cd34aa      Build time: Wed Dec 7 00:58:56 2013
    Size:12877  Install time :Wed Mar 5 14:23:12 2012
    Description: this is a system monit package
    Required packages: None
-----
Package:bridge
    Version:2.0.1.37cd5cda      Build time: Wed Dec 7 00:54:56 2013
    Size:23245  Install time :Wed Mar 5 14:30:12 2012
    Description: this is a bridge package
    Required packages: None
-----
```

This command is used to obtain all components already installed on the device and their basic information. The information offers a basis for users to decide whether to upgrade or delete components.

Field	Description
Package	Name of the component
Version	Version number of the component
Build time	Compilation time of the component on the server
Size	Content size of the component
Install time	Installation time of the component
Description	Simple functional description of the component
Required packages	Name of required packages

The following example displays the information of all feature components already installed on the chassis device.

```
Ruijie#show component slot 8
Ruijie#*
```

```
[Slot 8]:
Package : utils-system
  Version: 1.0.0.433ef8d      Build time: Sun May 19 19:22:54 2013
  Size: 823936   Install time: Sun May 19 19:27:04 2013
  Description: utils system compile
  Required packages: None
-----
Package : tcl-expect
  Version: 1.0.0.433ef8d      Build time: Sun May 19 19:19:18 2013
  Size: 3474153   Install time: Sun May 19 19:27:04 2013
  Description: tcl & expect packages
  Required packages: None
-----
```

The following example displays the information of specified components already installed on the box device.

```
Ruijie# show componentbridge
package:bridge
  Version: 2.3.1.1252ea      Build time: Wed Dec 7 00:54:56 2013
  Size:26945   Install time : Wed Mar 19:23:15 2012
  Description:this is a bridge package
  Required packages: None
  Package files:
    /lib64
    /lib64/libbridge.so
    /sbin
    /sbin/bridge

  Package file validate: [OK]
  Required relationship verify: [OK]
```

The other information except the basic information of components is listed as follows.

Field	Description
Package file validate	Checks whether the component files are intact. "OK" is displayed when all component files work properly; "ERR" is displayed together with their names when some component files are lost or revised.
Required package	Lists all required packages of the component. "OK" is labeled if required components are already installed; "ERR" is labeled if not together with detailed description about their names and versions.
Package files	Lists all files contained in the package.

**Prompt** 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
-----
```

## 16.7 show patch

Use this command to display the information of a hot patch package already installed on the device.

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

**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.
<i>patch_name</i>	Name of the patches When this parameter value is N/A, the command is used to display all components already installed on the device and basic information of these components. When this parameter value is not N/A, the command is used to display detailed information of the corresponding component, check whether the component is intact, and check whether this component works properly.

**Command** Privileged EXEC mode

**Mode**

**Default Level** 2

**Usage Guide** This command is used to check all patches already installed on the device and their information.

**Configuration** The following example displays all patches already installed on the box device.

**Examples**

```
Ruijie# show patch
patch package patch_install installed in the system, version:pal
Package : patch_bridge
status:running
Version: pal          Build time: Mon May 13 09:03:07 2013
Size: 277            Install time: Tue May 21 03:07:17 2013
    Description: a patch for bridge
    Required packages: None
```

This command is used to obtain the basic information of all patches already installed on the device.

Field	Description
Package	Name of the patch
status	Status of the patch
Version	Version of the patch
Build time	Compilation time of the patch on the server
Size	Content size of the patch
Install time	Installation time of the patch
Description	Simple functional description of the patch

The following example displays the information of all patches installed on the chassis device.

```
Ruijie#show patch slot 8
[Slot 8]:
Patch package patch_install installed in the system, version:pal
Package : patch_test
Status: running
    Version: 1.0.0.05151504
    Build time: Wed May 15 07:04:28 2013
    Size: 1804
    Install time: Thu Jan 1 00:56:43 1970
    Description: Experimentation
    Required packages: None
-----
```

The following example displays the information of particular patches installed on the box device.

```
Ruijie# show componentbridge
package:bridge
    Version: 2.3.1.1252ea          Build time: Wed Dec 7 00:54:56 2011
    Size:26945 Install time : Wed Mar 19:23:15 2012
    Description:this is a bridge package
    Required packages: None
    Package files:
        /lib64
```



```

/lib64/libbridge.so
/sbin
/sbin/bridge

Package file validate: [OK]

```

The other information except the basic information of the patch is listed as follows:

Field	Description
Package file validate	Checks whether the patch files are intact. "OK" is displayed when all patch files work properly; "ERR" is displayed together with their names when some files are lost or revised.
Package files	Lists all files contained in the patch package.

**Prompt**

The information of the patch is displayed after successful running.

**Messages**

```

Patch package patch_install installed in the system, version:pa1
Package : patch_bridge
Status:running
Version: pa1      Build time: Mon May 13 09:03:07 2013
Size: 277      Install time: Tue May 21 03:07:17 2013
Description: a patch for bridge
Required packages: None

```

## 16.8 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
```

## 16.9 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    : 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
```

## 16.10 show upgrade history

Use this command to display the upgrade history.

**show upgrade history**

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Command** Privileged EXEC mode

**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
```

<b>Prompt Messages</b>	N/A
<b>Platforms</b>	N/A

## 16.11 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 Examples** The following example displays the upgrade status of all line cards on the chassis device.

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

**Prompt Messages** The upgrade status of various line cards is displayed.

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

**Platforms**

## 16.12 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 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 including VSU system.
	<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.
	<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 and hot patches. Before its use, run the **copy** command to copy feature packages into the file system in the device.

When there is no specified range of parameters, the command is used to upgrade the matched system components according to the auto-sync configuration.

**Configuration** The following example upgrades the main package on the device.

**Examples**

```
Ruijie#upgrade usb0:/eg1000m_main_1.0.0.0f328e91.bin
Upgrade processing is 10%
Upgrade processing is 60%
Upgrade processing is 90%
Upgrade info [OK]
Kernel version[2.6.32.91f9d21->2.6.32.9f8b56f]
Rootfs version[1.0.0.2ad02537->1.0.0.1bcc12e8]
Upgrade processing is 100%
Reload system to take effect!
```

The following example upgrades the chassis package on the device.

```
Ruijie# upgrade usb0:/ 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

Run the **show patch** command to check whether the upgrade of a hot patch 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
```

The existing patch package needs to be uninstalled before upgrade.

```
Already exist patch, please uninstall before upgrade
```

The patch package is not applicable to this system and needs to be changed.

```
Patch compatibility err
```

The upgrade of a patch package is not available on this device and needs to be regained.

```
some origin cmpnt has change
```

## 16.13 upgrade auto

Use this command to upgrade an installation package automatically without interrupting services on a dual-device VSU system. While either in VSU mode or in standalone mode, one single device will restart after this configuration, thus interrupting services.

**upgrade auto** *url* [ **force** ]

Parameter Description	Parameter	Description
	<i>url</i>	Installation package directory
	<b>force</b>	Enforces upgrade.

**Command Mode** Privileged EXEC mode

**Default Level** 2

**Usage Guide** Use this command to upgrade the VSU system.  
 Download the program of the latest version to the device before running this command (by using the **copy tftp** command).  
 During one upgrade, do not use the **upgrade auto** command and other upgrade commands (such as the **upgrade** command) at the same time. If auto-upgrade fails, follow the system prompt to restore

the version.

Do not update the installation package (by running the copy tftp command/U disk copy) or perform other upgrade operation (running the upgrade /upgrade auto command) repetitively.

During auto-upgrade, do not unplug the card, perform hot backup switchover, power off chassis or change VSU software/hardware configuration.

**Configuration** The following example upgrades the main package automatically without interrupting the service.

**Examples**

```

2015-04-09_09-56-23 Ruijie#upgrade auto usb0:S6220_RGOS11.0(5)B1_install.bin
2015-04-09_09-56-24 Ruijie#*Jan 1 00:23:40: %7:
2015-04-09_09-56-24 *Jan 1 00:23:40: %7: [Slot 1/0]:Upgrade processing is 10%
2015-04-09_09-56-26 Ruijie#show upgrade status
2015-04-09_09-56-26 [Slot 1/0]
2015-04-09_09-56-26         dev_type: s6k
2015-04-09_09-56-26         status  : upgrading
2015-04-09_09-56-26 [Slot 2/0]
2015-04-09_09-56-26         dev_type: s6k
2015-04-09_09-56-26         status  : transmission
2015-04-09_09-58-20 *Jan 1 00:25:36: %7: [Slot 2/0]:Upgrade processing is 10%
2015-04-09_09-58-30 Ruijie#show upgrade status
2015-04-09_09-58-30 [Slot 1/0]
2015-04-09_09-58-30         dev_type: s6k
2015-04-09_09-58-30         status  : upgrading
2015-04-09_09-58-30 [Slot 2/0]
2015-04-09_09-58-30         dev_type: s6k
2015-04-09_09-58-30         status  : upgrading
2015-04-09_09-58-39 *Jan 1 00:25:56: %7:
2015-04-09_09-58-39 *Jan 1 00:25:56: %7: [Slot 2/0]:Upgrade processing is 60%
2015-04-09_09-59-19 *Jan 1 00:26:35: %7:
2015-04-09_09-59-19 *Jan 1 00:26:35: %7: [Slot 2/0]:Upgrade processing is 90%
2015-04-09_09-59-19 *Jan 1 00:26:35: %7:
2015-04-09_09-59-19 *Jan 1 00:26:35: %7: [Slot 2/0]:
2015-04-09_09-59-19 *Jan 1 00:26:35: %7: Upgrade info [OK]
2015-04-09_09-59-19 *Jan 1 00:26:36: %7:   Kernel
version[2.6.32.6b311610a8eb91->2.6.32.6b31161115502c]
2015-04-09_09-59-19 *Jan 1 00:26:36: %7:   Rootfs
version[1.0.0.eb75cd01->1.0.0.3d978b6c]
2015-04-09_09-59-19 *Jan 1 00:26:36: %7:
2015-04-09_09-59-19 *Jan 1 00:26:36: %7: [Slot 2/0]:Reload system to take
effect!
2015-04-09_09-59-21 *Jan 1 00:26:37: %7:
2015-04-09_09-59-21 *Jan 1 00:26:37: %7: [Slot 2/0]:Upgrade processing is 100%
2015-04-09_10-00-28 Ruijie#show upgrade status
2015-04-09_10-00-28 [Slot 1/0]
2015-04-09_10-00-28         dev_type: s6k

```



```
2015-04-09_10-00-28      status  : upgrading
2015-04-09_10-00-28 [Slot 2/0]
2015-04-09_10-00-28      dev_type: s6k
2015-04-09_10-00-28      status  : success
2015-04-09_10-01-39 *Jan 1 00:28:56: %7:
2015-04-09_10-01-39 *Jan 1 00:28:56: %7: [Slot 1/0]:Upgrade processing is 60%
2015-04-09_10-02-17 *Jan 1 00:29:33: %7:
2015-04-09_10-02-17 *Jan 1 00:29:33: %7: [Slot 1/0]:Upgrade processing is 90%
2015-04-09_10-02-17 *Jan 1 00:29:33: %7:
2015-04-09_10-02-17 *Jan 1 00:29:33: %7: [Slot 1/0]:
2015-04-09_10-02-17 *Jan 1 00:29:34: %7: Upgrade info [OK]
2015-04-09_10-02-17 *Jan 1 00:29:34: %7: Kernel
version[2.6.32.6b311610a8eb91->2.6.32.6b31161115502c]
2015-04-09_10-02-17 *Jan 1 00:29:34: %7: Rootfs
version[1.0.0.eb75cd01->1.0.0.3d978b6c]
2015-04-09_10-02-17 *Jan 1 00:29:34: %7:
2015-04-09_10-02-18 *Jan 1 00:29:34: %7: [Slot 1/0]:Reload system to take
effect!
2015-04-09_10-02-19 *Jan 1 00:29:35: %7:
2015-04-09_10-02-19 *Jan 1 00:29:35: %7: [Slot 1/0]:Upgrade processing is 100%
2015-04-09_10-02-19 *Jan 1 00:29:36: %7: %PKG_MGMT:auto-sync config
synchronization, Please wait for a moment....
2015-04-09_10-02-20 *Jan 1 00:29:36: %7:
2015-04-09_10-02-20 [ 1784.116069] rtc-pcf8563 6-0051: retrieved date/time is
not valid.
2015-04-09_10-02-20 *Jan 1 00:29:36: %7: [Slot 2/0]:auto sync config: space
not enough left 57229312, need 114597815
2015-04-09_10-02-20 *Jan 1 00:29:36: %7:
2015-04-09_10-02-20 *Jan 1 00:29:36: %7: [Slot 2/0]:auto sync package config
err
2015-04-09_10-02-20 *Jan 1 00:29:37: %7: [Slot 1/0]
2015-04-09_10-02-21 *Jan 1 00:29:37: %7: device_name: s6k
2015-04-09_10-02-21 *Jan 1 00:29:37: %7: status: SUCCESS
2015-04-09_10-02-21 *Jan 1 00:29:37: %7: [Slot 2/0]
2015-04-09_10-02-21 *Jan 1 00:29:37: %7: device_name: s6k
2015-04-09_10-02-21 *Jan 1 00:29:37: %7: status: SUCCESS
2015-04-09_10-02-21 *Jan 1 00:29:38: %7: %Do with dtm callback....
2015-04-09_10-02-21 *Jan 1 00:29:38: %VSU-5-DTM_AUTO_UPGRADE:
Upgrading the system, wait a moment please.
```

## 16.14 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
```

## 16.15 Upgrade auto-sync policy

Use this command to set an auto-sync policy for the system.

**upgrade auto-sync policy** [ **none** | **compatible** | **coordinate** ]

Parameter Description	Parameter	Description
	<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** **coordinate**

<b>Command Mode</b>	Privileged EXEC mode
<b>Default Level</b>	2
<b>Usage Guide</b>	Check whether the upgrade package is ready before using the command.
<b>Configuration Examples</b>	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>
<b>Verification</b>	Display the current policy for auto-sync upgrade by running the <b>show upgrade auto-sync</b> command.
<b>Prompt Messages</b>	The prompt message of successful running is displayed.
	<pre>Upgrade auto-sync policy is set as coordinate.</pre>

## 16.16 upgrade auto-sync range

Use this command to set the range of auto-sync upgrade.

**upgrade auto-sync range [ chassis | vsu ]**

Parameter Description	Parameter	Description
	<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.

**Defaults** vsu

<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>

## 16.17 upgrade download tftp

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

**upgrade download tftp:***path* [ **force** ]

**upgrade download oob\_tftp:***path*[**via mgmt** {*number*}] [ **force** ]

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>via mgmt</b> <i>number</i>	If the transfer mode is <i>oob_tftp</i> and there are multiple MGMT ports, you can select a specific port.
	<b>force</b>	Enforces upgrade.

**Command Mode** Privileged EXEC mode

**Default Level** 2

**Usage Guide** This command is applicable to installation packages of all subsystem components, chassis devices, feature components and hot patches. This command is used to perform automatic installation, copy and upgrade of files.

**Configuration Examples** The following example upgrades the main package.

```
Ruijie# upgrade download
tftp://192.168.201.98/eg1000m_main_1.0.0.0f328e91.bin
Accessing tftp://192.168.201.98/eg1000m_main_1.0.0.0f328e91.bin...
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
Transmission finished, file length 21525888 bytes.
Upgrade processing is 10%
Upgrade processing is 60%
Upgrade processing is 90%
Upgrade info [OK]
      Kernel version[2.6.32.91f9d21->2.6.32.9f8b56f]
      Rootfs version[1.0.0.2ad02537->1.0.0.1bcc12e8]
Upgrade processing is 100%
Reload to take effect!
```

**Verification** Run the **show version detail** command to check whether the upgrade of a subsystem component is successful.

Run the **show component** command to check whether the upgrade of a feature component is successful.

Run the **show patch** command to check whether the upgrade is successful of a hot patch package.

**Prompt**

The prompt message of successful running is displayed.

**Messages**

```
Upgrade info [OK];
```

The installation package is invalid or damaged and needs to be regained for upgrade command.

```
Invalid package file
```

The installation package is not available on the device and needs to be regained for upgrade command.

```
Device don't support
```

There is no need to upgrade the device.

```
The version in device is newer or the same
```

When there is insufficient space for upgrade, check USB flash disk attached on the device.

```
No enough space for decompress
```

Contact the service center to solve the system problem.

```
No enough space,rootfs been destroyed. Please upgrade in uboot
```

The existing patch package needs to be deleted.

```
Already exist patch, please uninstall before upgrade
```

The patch package is not compatible on this device. Replace the package..

```
Patch compatibility err
```

The upgrade of the patch package is not applied to the device. Regain the package.

```
Some origin component has change
```

## 16.18 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</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.
<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 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 box device.

```
Ruijie#upgrade rollback
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!
```

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 Messages** The prompt message of successful running is displayed.

```
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, hot patch packages and so on.  
Run the rollback command for subsystem once.

## 17 OpenFlow Commands

### 17.1 of controller-ip

Use this command to enable OpenFlow.

**of controller-ip** *ip-address* [ **port** *port-id* ] **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. (OpenFlow1.0 supports connection to one single controller).
	<b>port</b> <i>port-id</i>	Controller access port ID. The default for OpenFlow1.0 is 6633.
	<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** Global configuration mode

**Mode**

**Default** OpenFlow is disabled by default.

**Usage Guide** N/A

**Configuration** The following example enables OpenFlow.

**Examples**

```
Ruijie(config)#of controller-ip 192.168.21.57 interface gigabitEthernet 0/1
The following example disables OpenFlow.
Ruijie#no of controller-ip
```

### 17.2 of mode

Use this command to configure the controller mode.

**of mode** [ **single** | **multiple** ]

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

**no of mode**

Parameter Description	Parameter	Description
	N/A	N/A

**Command** Global configuration mode

**Mode**



- Default** The default mode is multiple.
- Usage Guide** Configure this command before enabling the controller.

**Configuration** The following example enables the single mode.

**Examples**

```
Ruijie(config)#of mode single
```

The following example enables the multiple mode.

```
Ruijie(config)#of mode multiple
```

The following example restores the default setting.

```
Ruijie(config)#no of mode
```

## 17.3 of packet table-lookup

Use this command to enable table-lookup mode or disable table-lookup mode.

**of packet table-lookup [ enable | disable ]**

**no of packet table-lookup**

Parameter Description	Parameter	Description
	N/A	N/A

**Command Mode** Global configuration mode

**Default** The table-lookup mode is enabled by default.

**Usage Guide** N/A

**Configuration** The following example enables the table-lookup mode.

**Examples**

```
Ruijie(config)#of packet table-lookup enable
```

The following example disables the table-lookup mode.

```
Ruijie(config)#of packet table-lookup disable
```

The following example restores the default setting.

```
Ruijie(config)#no of packet table-lookup
```

## 17.4 of packet vlantag

Use this command to determine whether to contain the VLAN tag in the packet sent by the OpenFlow device.

**[ no ] of packet vlantag**

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

	N/A	N/A
<b>Command</b>	Global configuration mode	
<b>Mode</b>		
<b>Default</b>	The VLAN tag is contained in the packet sent by the OpenFlow device by default.	
<b>Usage Guide</b>	N/A	
<b>Configuration</b>	The following example contains the VLAN tag in the packet sent by the OpenFlow device.	
<b>Examples</b>	<pre>Ruijie(config)#of packet vlantag</pre>	
	The following example does not contain the VLAN tag in the packet sent by the OpenFlow device..	
	<pre>Ruijie(config)#no of packet vlantag</pre>	

## 17.5 of source-ip

Use this command to configure the source IP address of the controller.

### of source-ip

<b>Parameter</b>	<b>Parameter</b>	<b>Description</b>
<b>Description</b>	<i>ip-address</i>	Source IP address
<b>Command Mode</b>	Global configuration mode	
<b>Default</b>	The default source IP address is the interface IP address.	
<b>Usage Guide</b>	N/A	
<b>Configuration</b>	The following example configures the source IP address of the controller.	
<b>Examples</b>	<pre>Ruijie(config)#of source-ip 192.168.197.25</pre>	

## 17.6 show of

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

### show of

<b>Parameter</b>	<b>Parameter</b>	<b>Description</b>
<b>Description</b>	N/A	N/A
<b>Command</b>	Global configuration mode	
<b>Mode</b>		
<b>Default</b>	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#show of
```

## 17.7 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
<b>Command Mode</b>	Global configuration mode	
<b>Default</b>	N/A	
<b>Usage Guide</b>	Running the <b>of controller-ip</b> command before configuring this command. Otherwise, the flow table entries are not displayed.	
<b>Configuration</b>	The following example display flow table entries.	
<b>Examples</b>	<pre>Ruijie#show of flowtable</pre>	

## 17.8 show of port

Use this command to display port information of OpenFlow device.

### show of port

Parameter Description	Parameter	Description
	N/A	N/A
<b>Command Mode</b>	Global configuration mode	
<b>Default</b>	N/A	
<b>Usage Guide</b>	Running the <b>of controller-ip</b> command before configuring this command. Otherwise, the port information is not displayed.	
<b>Configuration</b>	The following example displays port information of OpenFlow device.	
<b>Examples</b>	<pre>Ruijie#show of port</pre>	



## Ethernet Configuration Commands

---

1. Interface Commands
2. MAC Address Commands
3. Aggregate Port Commands
4. VLAN Commands
5. MAC VLAN Commands
6. Super-VLAN Commands
7. Protocol VLAN Commands
8. Private VLAN Commands
9. Voice VLAN Commands
10. MSTP Commands
11. GVRP Commands
12. LLDP Commands
13. QinQ Commands
14. ERPS 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** The following example clears the counters on interface gigabitethernet 1/1.

**Examples** 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** Interface configuration mode.

### Mode

**Usage Guide** The duplex mode is associated with the interface type. Use **show interfaces** to display the duplex mode of the interface

**Configuration** The following example specifies the duplex mode for the interface.

**Examples**

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

**Examples**

```
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 flowcontrol

Use this command to enable or disable the flow control. Use the **no** form of this command to restore the default setting.

**flowcontrol { auto | off | on }**  
**no flowcontrol**

**Parameter Description**

Parameter	Description
<b>auto</b>	Self-negotiates the flow control.
<b>off</b>	Disables the flow control.
<b>on</b>	Enables the flow control.

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

**Command** Interface configuration mode.  
**Mode**

**Usage Guide** Use the **show interfaces** command to display the flow control configuration.

**Configuration** The following example enables flow control on fastEthernet port 1/1.

**Examples**

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# flowcontrol on
```

**Related**

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

Commands	
<b>show interfaces</b>	Displays the interface information.

**Platform** N/A

**Description**

## 1.9 interface

Use this command to enter the interface configuration mode.

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

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

**Defaults** N/A

**Command** Interface configuration mode

**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)#
```

Related Commands	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** N/A

**Description**

## 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..

```
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 copper
```

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** Global configuration mode

**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** The following example enables oscillation protection on the port.

**Examples**

```
Ruijie(config)# physical-port dither protect
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 1.18 protected-ports route-deny

Use this command to configure L3 routing between the protected ports. Use the **no** form of this command to restore the default setting.

**protected-ports route-deny**

**no protected-ports route-deny**

Parameter Description	Parameter	Description
	N/A	N/A

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

**Command Mode** Global configuration mode.

**Usage Guide** The ports that are set as the protected ports can route on L3. Use this command to deny the L3 communication between protected ports. Use the **show running-config** command to display configuration.

**Configuration Examples** The following example configures L3 routing between the protected ports.

```
Ruijie(config)# protected-ports route-deny
```

Related Commands	Command	Description
	show running-config	Displays the protected ports route-deny configuration.

**Platform Description** N/A

## 1.19 show interfaces

Use this command to display the interface information and optical module information.

**show interfaces** [ *interface-type interface-number* ] [ **description** | **switchport** | **trunk** ]

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.
	<b>trunk</b>	Trunk port, applicable for physical port and aggregate port.

**Defaults** All interface information is displayed by default.

**Command Mode** Privileged EXEC mode.

**Usage Guide** This command is used to show all basic information if no parameter is specified.

**Configuration** 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**

## 1.20 show interfaces counters

Use this command to display the received and transmitted packet statistics.

**show interfaces** [ *interface-type interface-number* ] **counters** [ **increment** | **error** | **rate** | **summary** ]  
[ *up* | *down* ]

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.
	<i>up</i>	(Optional) Displays the port up statistics.
	<i>down</i>	(Optional) Displays the port down statistics.

**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 Examples** The following example displays packet statistics on interface GigabitEthernet 0/1.

```
Ruijie#show interfaces GigabitEthernet 0/1 counters
Interface : GigabitEthernet 0/1
5 minute input rate : 9144 bits/sec, 9 packets/sec
5 minute output rate : 1280 bits/sec, 1 packets/sec
Rxload           : 1%
InOctets         : 17310045
InPkts          : 1000 (Unicast: 10%, Multicast: 10%, Broadcast: 80%)
InUcastPkts     : 100
InMulticastPkts : 100
InBroadcastPkts : 800
Txload           : 1%
OutOctets        : 1282535
```

```

OutPkts          : 1000 (Unicast: 10%, Multicast: 10%, Broadcast: 80%)
OutUcastPkts     : 100
OutMulticastPkts : 100
OutBroadcastPkts : 800
Undersize packets : 0
Oversize packets : 0
collisions       : 0
Fragments        : 0
Jabbers          : 0
CRC alignment errors : 0
AlignmentErrors  : 0
FCSErrors        : 0
dropped packet events (due to lack of resources): 0
packets received of length (in octets):
  64:46264
  65-127: 47427
  128-255: 3478
  256-511: 658
  512-1023: 18016
  1024-1518: 125
Packet increment in last sampling interval(5 seconds):
  InOctets        : 10000
  InPkts          : 1000 (Unicast: 10%, Multicast: 10%, Broadcast: 80%)
  InUcastPkts     : 100
  InMulticastPkts : 100
  InBroadcastPkts : 800
  OutOctets       : 10000
  OutPkts         : 1000 (Unicast: 10%, Multicast: 10%, Broadcast: 80%)
  OutUcastPkts    : 100
  OutMulticastPkts : 100

```

- i** 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

```

- i** 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

```

- i** 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

**i** 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** N/A  
**Description**

## 1.21 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

## 1.22 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**

## 1.23 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> <i>interface-number</i>	(Optional) The interface type and ID.

**Defaults**


**Command Mode** Any CLI 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**

## 1.24 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 Examples** 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** N/A  
**Description**

## 1.25 show interfaces usage

Use this command to display bandwidth usage of the interface.

**show interfaces** [ *interface-type interface-number* ] **usage** [ *up | down* ]

Parameter Description	Parameter	Description
		<i>interface-type</i> <i>interface-number</i>
	<i>up</i>	(Optional) Displays the port up statistics.
	<i>down</i>	(Optional) Displays the port down statistics.

**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**

## 1.26 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** Interface configuration mode

**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**

## 1.27 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

## 1.28 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** The following example enables the interface index persistence.

**Examples**

```
Ruijie(config)# snmp-server if-index persist
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 1.29 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>100G</b>	The transmission rate of the interface is 100Gbps.
	<b>40G</b>	The transmission rate of the interface is 40Gbps.
	<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>

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

## 1.30 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>

**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>

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

## 1.31 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** Interface configuration mode.

### 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** The following example configures a Layer 3 interface.

### Examples

```
Ruijie(config-if) # switchport
```

### Related Commands

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

**Platform** N/A

### Description

## 1.32 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** Interface configuration mode.

**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** N/A

**Description**

## 1.33 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** Interface configuration mode.

**Mode**

**Usage Guide** If a switch port mode is access port, it can be the member port of only one VLAN. Use **switchport access vlan** to specify the member of the VLAN.

A trunk port can be the member port of various VLANs defined by the allowed-VLAN list. The allowed VLAN list of the interface determines the VLANs to which the interface may belong. The trunk port is the member of all the VLANs in the allowed VLAN list. Use **switchport trunk** to define the allowed-VLANs list.

**Configuration** The following example specifies a L2 interface (switch port) mode.

**Examples**

```
Ruijie(config-if)# switchport mode trunk
```

**Related Commands**

Command	Description
<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** N/A

**Description**

## 1.34 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
```

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

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

### 1.35 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 }**

<b>Parameter Description</b>	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 Mode** Interface configuration mode.

**Usage Guide** Native VLAN:  
 A trunk port belongs to one native VLAN. A native VLAN means that the untagged packets received/sent on the trunk port belong to the VLAN. Obviously, the default VLAN ID of the interface (that is, the PVID in the IEEE 802.1Q) is the VLAN ID of the native VLAN. In addition, when frames belonging to the native VLAN are sent over the trunk port, they are untagged.  
 Allowed-VLAN List:

By default, a trunk port sends traffic to and received traffic from all VLANs (ID 1 to 4094). However, you can prevent the traffic from passing over the trunk by configuring allowed VLAN lists on a trunk. Use `show interfaces switchport` to display configuration.

**Configuration** 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**

## 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	Command	Description
Commands	<b>show mac-address-table dynamic</b>	Displays dynamic MAC address.

**Platform Description** N/A

### 2.2 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	Parameter	Description
-----------	-----------	-------------



<b>Description</b>	N/A					
<b>Defaults</b>	The address learning function is enabled.					
<b>Command Mode</b>	Interface configuration mode.					
<b>Usage Guide</b>	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.					
<b>Configuration Examples</b>	The following example disables the port address learning function.					
<b>Examples</b>	<pre>Ruijie(config-if) # no mac-address-learning</pre>					
<b>Related Commands</b>	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>	Command	Description	N/A	N/A	
Command	Description					
N/A	N/A					
<b>Platform Description</b>	N/A					

## 2.3 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**

<b>Parameter Description</b>	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><b>enable</b></td> <td>Enables MAC address learning globally.</td> </tr> <tr> <td><b>disable</b></td> <td>Disables MAC address learning globally.</td> </tr> </tbody> </table>	Parameter	Description	<b>enable</b>	Enables MAC address learning globally.	<b>disable</b>	Disables MAC address learning globally.
Parameter	Description						
<b>enable</b>	Enables MAC address learning globally.						
<b>disable</b>	Disables MAC address learning globally.						
<b>Defaults</b>	The <b>mac-address-learning enable</b> command is enabled by default.						
<b>Command Mode</b>	Global configuration mode						
<b>Usage Guide</b>	When this function is enabled, the MAC address is learned in global configuration mode the same as learned in interface configuration mode.						
<b>Configuration Examples</b>	The following example disables MAC address learning globally.						
<b>Examples</b>	<pre>Ruijie(config) # mac-address-learning disable</pre>						

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 Mode** Global configuration mode.

**Usage Guide** Use **show mac-address-table aging-time** to display configuration.

**Configuration Examples** The following example sets the aging time of the dynamic MAC address to 500 seconds.

```
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.

```
Ruijie(config)#mac-address-table filtering 0000.0202.0303 vlan 3
```

Related Commands	Command	Description
	<b>clear mac-address-table filtering</b>	Clears the filtering MAC address.

**Platform Description** N/A

## 2.6 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	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 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	Command	Description
Commands	N/A	N/A

Platform N/A  
Description

## 2.7 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	Command	Description
Commands	<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**

## 2.8 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	Parameter	Description
<b>Description</b>	<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 Commands	Command	Description
	<b>show mac-address-table static</b>	Displays the static MAC address.

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

## 2.9 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 Description** N/A

## 2.10 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 Mode** VLAN configuration mode / Interface configuration mode

**Usage Guide** This command is used to set the action if the dynamic MAC address learned on the VLAN or interface exceeds the limit.

**Configuration Examples** The following example sets the maximum number of MAC addresses dynamically learned on VLAN 1.

```
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

## 2.11 show mac-address-learning

Use this command to display the MAC address learning.

**show mac-address-learning**

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 Examples</b>	The following example displays the MAC address learning.					
<b>Examples</b>	<pre>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</pre>					
<b>Related Commands</b>	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>	Command	Description	N/A	N/A	
Command	Description					
N/A	N/A					
<b>Platform Description</b>	N/A					

## 2.12 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* ]

<b>Parameter Description</b>	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><b>address</b> <i>mac-addr</i></td> <td>The MAC address.</td> </tr> <tr> <td><b>interface</b> <i>interface-id</i></td> <td>The Interface ID.</td> </tr> <tr> <td><b>vlan</b> <i>vlan-id</i></td> <td>The VLAN ID, in the range from 1 to 4094.</td> </tr> </tbody> </table>	Parameter	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.
Parameter	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.								
<b>Defaults</b>	N/A								
<b>Command Mode</b>	All modes								
<b>Usage Guide</b>	N/A								
<b>Configuration Examples</b>	The following example displays the MAC address.								
<b>Examples</b>	<pre>Ruijie# show mac-address-table address 00d0.f800.1001 Vlan      MAC Address      Type      Interface</pre>								



```

-----
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**

## 2.13 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
<b>Description</b>	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**

## 2.14 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
<b>Description</b>	<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 Examples** 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**

## 2.15 show mac-address-table dynamic

Use this command to display the dynamic MAC address.

```
show mac-address-table dynamic [ address mac-addr ] [ interface interface-id ] [ vlan vlan-id ]
```

Parameter Description	Parameter	Description
	<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 Examples** The following example displays the dynamic MAC address.

```
Ruijie# show mac-address-table dynamic
Vlan  MAC Address      Type      Interface
-----
1     0000.0000.0001     DYNAMIC  gigabitethernet 1/1
1     0001.960c.a740     DYNAMIC  gigabitethernet 1/1
1     0007.95c7.dff9     DYNAMIC  gigabitethernet 1/1
1     0007.95cf.eee0     DYNAMIC  gigabitethernet 1/1
1     0007.95cf.f41f     DYNAMIC  gigabitethernet 1/1
1     0009.b715.d400     DYNAMIC  gigabitethernet 1/1
```

```
1 0050.bade.63c4 DYNAMIC gigabitethernet 1/1
```

Related	Command	Description
Commands	<b>clear mac-address-table dynamic</b>	Clears the dynamic MAC address.

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

## 2.16 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
<b>Description</b>	<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 Examples** The following example displays the filtering MAC address.

```
Ruijie# show mac-address-table filtering
Vlan  MAC Address  Type  Interface
-----
1     0000.2222.2222  FILTER Not available
```

Related	Command	Description
Commands	<b>mac-address-table filtering</b>	Configures the filtering MAC address.

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

## 2.17 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	Parameter	Description
-----------	-----------	-------------

<b>Description</b>	<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..
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Privileged EXEC mode.	
<b>Usage Guide</b>	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**

## 2.18 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 Description	Parameter	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 notification

Use this command to display the MAC address notification configuration and the MAC address notification table.

**show mac-address-table notification [ interface [ *interface-id* ] | history ]**

Parameter Description	Parameter	Description
	<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 Mode** Privileged EXEC mode.

**Usage Guide** N/A

**Configuration Examples** The following example displays the MAC address notification configuration and the MAC address notification table.

```
Ruijie# show mac-address-table notification interface
Interface      MAC Added Trap  MAC Removed Trap
-----
GigabitEthernet1/14  Disabled      Disabled
Ruijie# show mac-address-table notification
MAC Notification Feature: Disabled
Interval between Notification Traps: 1 secs
```

```

Maximum Number of entries configured in History Table:1
Current History Table Length: 0
Ruijie# show mac-address-table notification history
History Index: 0
MAC Changed Message:
Operation:ADD Vlan: 1 MAC Addr: 00f8.d012.3456 GigabitEthernet 3/1

```

Related Commands	Command	Description
	<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**

## 2.20 show mac-address-table static

Use this command to display the static MAC address.

**show mac-address-table static** [**addr** *mac-add r*] [**interface** *interface-Id*] [**vlan** *vlan-id*]

Parameter Description	Parameter	Description
	<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 Examples** The following example displays the static MAC addresses

```

Ruijie# show mac-address-table static
Vlan   MAC Address      Type   Interface
-----
1      00d0.f800.1001   STATIC gigabitethernet 1/1
1      00d0.f800.1002   STATIC gigabitethernet 1/1
1      00d0.f800.1003   STATIC gigabitethernet 1/1

```

Related Commands	Command	Description
	<b>mac-address-table static</b>	Configures the static MAC address.



**Platform** N/A

**Description**

## 2.21 show mac-address-table vlan

Use this command to display all addresses of the specified VLAN.

**show mac-address-table vlan** [ *vlan-id* ]

Parameter	Parameter	Description
<b>Description</b>	<i>vlan-id</i>	VLAN ID of the entry, within the range from 1 to 4094.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** 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**

## 2.22 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
Description	<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 Mode** Interface configuration mode.

**Usage Guide** Use **show mac-address-table notification interface** to display configuration.

**Configuration Examples** The following example enables the MAC address trap notification on interface gigabitethernet 1/1.

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# snmp trap mac-notification added
```

Related Commands	Command	Description
	<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 Description** N/A

## 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
<b>Description</b>	<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 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** | **src-dst-ip-l4port** | **enhanced profile profile-name** }  
**no aggregateport load-balance**

Parameter	Parameter	Description
<b>Description</b>	<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

**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/Interface configuration mode

**Usage Guide** You can run aggregateport load-balance in interface configuration mode of an AP port on devices that support load balancing configuration on a specific AP port. The configuration in interface configuration mode prevails. To disable the load balancing algorithm, run no aggregateport load-balance in interface configuration mode of the AP port. After that, the load balancing algorithm configured in global configuration mode takes effect.

**Configuration Examples** The following example configures a load-balance algorithm globally based on the destination MAC address.

```
Ruijie(config)# aggregateport load-balance dst-mac
```

Related Commands	Command	Description
	<b>show aggregateport load-balance</b>	Displays aggregate port configuration.

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

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

### 3.5 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	Parameter	Description
Description	<b>src-id</b>	Load balance based on the source ID of FCOE packets.
	<b>dst-id</b>	Load balance based on the destination ID 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 Examples** The following example sets the load balance mode for FCOE packets to **src-id**.

```
Ruijie(config)# load-balance-profile apl
Ruijie(config-load-balance-profile)# fcoe field src-id
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 3.6 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	Parameter	Description
<b>Description</b>	<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 Examples** The following example creates AP 5 and enters its interface configuration mode.

```
Ruijie# configure terminal
Ruijie(config)# interfaces aggregateport 5
Ruijie(config-if-Aggregateport 5)# end
```

Related Commands	Command	Description
	N/A	N/A

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

### 3.7 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** ] [ **vlan** ] [ **src-port** ]  
**no ipv4 field**

Parameter	Parameter	Description
<b>Description</b>	<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>vlan</b>	Load balance based on the VLAN ID 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** N/A  
**Description**



### 3.8 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** ] [ **I4-src-port** ] [ **I4-dst-port** ] [ **vlan** ] [ **src-port** ]  
**no ipv6 field**

Parameter	Parameter	Description
Description	<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>I4-src-port</b>	Load balance based on the L4 source port numbers of the IPv6 packets.
	<b>I4-dst-port</b>	Load balance based on the L4 destination port numbers of the IPv6 packets.
	<b>vlan</b>	Load balance based on the VLAN ID 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** You need to configure the load balance profile first.

**Guide**

**Configuration** The following example sets the load balance mode of IPv6 packets to **src-ip**.

```
Ruijie(config)# load-balance-profile apl
Ruijie(config-load-balance-profile)# ipv6 field src-ip
```

Related	Command	Description
Commands	N/A	N/A

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

### 3.9 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**

Parameter	Parameter	Description
Description	<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>l2-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** Load balance profile configuration mode

**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	Command	Description
Commands	N/A	N/A

**Platform** N/A

**Description**

### 3.10 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	Parameter	Description
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
```

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

**Platform Description** N/A

### 3.11 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**

<b>Parameter Description</b>	Parameter	Description
	N/A	N/A

**Defaults** The default is long-timeout mode.

**Command Mode** Interface configuration mode

**Usage Guide** In long-timeout mode, the port sends an LACP packet every 30 seconds. If the packet is not received in 90 seconds, the connection times out.  
 In short-timeout mode, the port sends an LACP packet every 1 second. If the packet is not received in 3 seconds, the connection times out.

**Configuration Examples** The following example configures the short-timeout mode for the LACP AP member port.

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# lacp short-timeout
```

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

**Platform Description** N/A

### 3.12 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**

#### Parameter Description

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 mode</i> { <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

### 3.13 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	Parameter	Description
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 Examples** The following example creates a load balance profile named **apl**.

```
Ruijie(config)# load-balance-profile apl
Warning: The profile default has been used, and this command will rename it. Continue? [Y/N]:y
Ruijie(config-load-balance-profile)#
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 3.14 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** ] [ **src-ip** ] [ **dst-ip** ] [ **vlan** ] [ **src-port** ]  
**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>src-ip</b>	Load balance based on the source IP addresses of the MPLS packets.
	<b>dst-ip</b>	Load balance based on the destination IP addresses of the MPLS packets.
	<b>vlan</b>	Load balance based on the VLANs of the MPLS packets.
	<b>src-port</b>	Load balance based on the source port numbers 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** The following example sets the load balance mode of MPLS packets to **src-port**.

**Examples**

```
Ruijie(config)# load-balance-profile apl
Ruijie(config-load-balance-profile)# mpls field src-port
```

Related Commands	Command	Description
	N/A	N/A

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

### 3.15 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
<b>Description</b>	<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**

### 3.16 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 Mode** Any mode

**Usage Guide** If the aggregate port number is not specified, all the aggregate port information will be displayed.

**Configuration Examples** The following example displays the aggregate port configuration.

```
Ruijie# show aggregateport 1 summary
AggregatePort  MaxPorts      SwitchPort Mode    Load balance      Ports
-----
-----
Agl             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**

### 3.17 show aggregateport capacity

Use this command to display the AP capacity mode and the AP number.

**show aggregateport capacity**

<b>Parameter</b>	<b>Parameter</b>	<b>Description</b>
<b>Description</b>	N/A	N/A
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Any mode	
<b>Usage Guide</b>	N/A	
<b>Configuration</b>	The following example displays the AP capacity mode and the AP number.	
<b>Examples</b>	<pre>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.</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	N/A	N/A
<b>Platform Description</b>	N/A	

### 3.18 show lacp summary

Use this command to display the LACP aggregation information.

**show lacp summary** [ *key* ]

<b>Parameter</b>	<b>Parameter</b>	<b>Description</b>
<b>Description</b>	<i>key</i>	Specifies the aggregation group id to show. If it is not specified, all aggregation group information is displayed by default.
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Any mode.	
<b>Usage Guide</b>	N/A	
<b>Configuration</b>	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 key mode</b>	Enables the LACP on the port and specifies the aggregation group ID and operation mode.
----------------------------	---

**Platform** N/A

**Description**

### 3.19 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** Any mode.

**Mode**

**Usage Guide** All enhanced profiles are displayed if the profile name is not specified.

**Configuration** The following example displays the enhanced profile of LACP AP 3..

**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
```

**Related**

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

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

**Platform** N/A

**Description**

## 3.20 trill field

Use this command to configure the load balance mode of TRILL packets for a specified profile. Use the **no** form of this command to restore the default setting.

**trill field [ vlan ] [ src-mac ] [ dst-mac ]**

**no mpls field**

Parameter	Parameter	Description
<b>Description</b>	<b>vlan</b>	Load balance based on the VLAN ID of the TRILL packet.
	<b>src-mac</b>	Load balance based on the source MAC address of the TRILL packet.
	<b>dst-mac</b>	Load balance based on the destination MAC address of the TRILL packet.

**Defaults** The default load balance mode is **src-mac**, **dst-mac** and **vlan**.

**Command Mode** Load balance template configuration mode

**Usage Guide** You need to configure the load balance profile first.

**Configuration Examples** The following example sets the load balance mode of TRILL packets for profile apl to **src-mac**.

```
Ruijie(config)# load-balance-profile apl
Ruijie(config-load-balance-profile)# trill field src-mac
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 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 <i>interface-id</i> switchport</b>	Displays the layer-2 interfaces.

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

## 4.2 name

Use this command to specify the name of a VLAN. Use the **no** or **default** form of this command to restore the default setting.

- name** *vlan-name*
- no name**
- default name**

**Parameter Description**

Parameter	Description
<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**

### 4.3 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**

## 4.4 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 Examples** Ruijie(config)# interface gigabitethernet 1/1

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**

## 4.5 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** N/A  
**Description**

### 4.6 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>	

**Defaults** The default is VLAN 1.

**Command mode** Interface configuration mode

**Usage Guide** Native VLAN packets going out on the hybrid port are not tagged with VLAN ID. Packets not tagged with VLAN ID coming in on the hybrid port are taken as native VLAN packets.

**Configuration Examples** The following example configures VLAN 20 as the native VLAN for hybrid port GigabitEthernet 0/1.

```
Ruijie(config-if-GigabitEthernet 0/1)#interface gigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)#switchport mode hybrid
Ruijie(config-if-GigabitEthernet 0/1)#switchport hybrid native
vlan 20
```

Related Commands	Command	Description
	N/A	N/A

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

## 4.7 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 mode** Interface configuration mode.

**Usage Guide** If a switch port is an access port, the port can be added only to one VLAN. You can run the **switchport access vlan** command to specify the VLAN to which the port belongs. If a switch port is a trunk port, the port is added to all VLANs by default. You can also run the **switchport trunk allowed** command to add the port to or remove the port from a specified VLAN. If a switch port is an uplink port, the port is added to all VLANs by default. Different from the trunk port, the uplink port sends packets with a tag carried, that is, the tag of packets from default VLANs will not be deleted. You can run the **switchport trunk allowed** command to add the port to or remove the port from a specified VLAN. If a switch port is a hybrid port, the port is added to all VLANs by default. Different from a trunk port, a hybrid port can be added to a VLAN in tag or untag mode by running the **switchport hybrid allowed** command.

**Configuration Examples** The following example configures port 1 as an access port.

```
Ruijie(config)#int g 0/1
Ruijie(config-if-GigabitEthernet 0/1)#switchport mode access
```

The following example configures port 1 as a trunk port.

```
Ruijie(config)#int g 0/1
Ruijie(config-if-GigabitEthernet 0/1)# switchport mode trunk
```

The following example configures port 1 as an uplink port.

```
Ruijie(config)#int g 0/1
Ruijie(config-if-GigabitEthernet 0/1)# switchport mode uplink
```

The following example configures port 1 as a hybrid port.

```
Ruijie(config)#int g 0/1
Ruijie(config-if-GigabitEthernet 0/1)# switchport mode hybrid
```

#### Related Commands

Command	Description
<b>switchport access</b>	Configures an interface as a static 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

## 4.8 switchport trunk allowed vlan

Use this command to add the trunk/uplink port to the VLAN or remove a trunk/uplink port from the VLAN. Use the **no** or **default** form of the command to restore the default setting.

**switchport trunk allowed vlan** { **all** | { **add** *vlan-list* | **remove** *vlan-list* | **except** *vlan-list* | **only** *vlan-list* } }

**no switchport trunk allowed vlan**

**default switchport trunk allowed vlan**

#### Parameter 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/uplink 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** N/A  
**Description**

## 4.9 switchport trunk native vlan

Use this command to configure the native VLAN for the trunk/uplink port. Use the **no** or **default** form of this command to restore the default setting.

- switchport trunk native vlan *vlan-id***
- no switchport trunk native vlan**
- default switchport trunk native vlan**

**Parameter Description**

Parameter	Description
<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 unlink port GigabitEthernet 0/10.

```
Ruijie(config)#interface gigabitEthernet 0/10
Ruijie(config-if-GigabitEthernet 0/10)# switchport mode uplink
Ruijie(config-if-GigabitEthernet 0/10)# switch trunk native vlan 10
```

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

### 4.10 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** Global configuration mode.

**mode****Usage Guide** N/A**Configuration** The following example creates VLAN 10.**Examples**

```
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 MAC VLAN Commands

### 5.1 mac-vlan enable

Use this command to enable the MAC VLAN function on the port.

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

**mac-vlan enable**

**no mac-vlan enable**

**default mac-vlan enable**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** By default, MAC VLAN is disabled.

**Command mode** Interface configuration mode

**Usage Guide** The MAC VLAN entries configured globally will not take effect on the port unless the MAC VLAN function is enabled on this port.  
The MAC VLAN function can be enabled on the hybrid port only.

**Configuration** The following example enables MAC VLAN.

**Examples** Ruijie(config-if-interface-id)# mac-vlan enable

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 5.2 mac-vlan mac-address

Use this command to configure the static MAC VLAN entries.

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

**mac-vlan mac-address** *mac-address* [ **mask** *mac-mask* ] **vlan** *vlan-id* [ **priority** *pri\_val* ]

**no mac-vlan mac-address** *mac-address* [ **mask** *mac-mask* ] **vlan** *vlan-id* [ **priority** *pri\_val* ]

**default mac-vlan mac-address** *mac-address* [ **mask** *mac-mask* ] **vlan** *vlan-id* [ **priority** *pri\_val* ]

Parameter Description	Parameter	Description
	<i>mac-address</i>	Specifies the MAC address.
	<i>mac-mask</i>	Specifies the MAC address mask, with the high bits being all 1 in binary. This field is full of F by default.
	<i>vlan-id</i>	Specifies the VLAN corresponding to the MAC address. The range is from 1 to 4,094.
	<i>pri_val</i>	Specifies the 802.1p priority of the VLAN corresponding to the MAC address. The range is from 0 to 7. The default value is 0.

**Defaults** No static MAC VLAN entry is configured by default.

**Command mode** Global configuration mode

**Usage Guide** Use this command to configure a static MAC VLAN entry including the MAC address, VLAN ID and VLAN priority. Use the **no** form of this command to remove the static MAC VLAN entry.

**Configuration** The following example configures a static MAC VLAN entry.

```
Examples
Ruijie(config)# mac-vlan mac-address 0001.0001.0001 vlan 100 priority 3
Ruijie(config)# mac-vlan mac-address 0002.0002.0000 mask ffff.ffff.0000 vlan 200 priority 5
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 5.3 show mac-vlan

Use this command to display the MAC VLAN entries.

```
show mac-vlan { all | dynamic | static | vlan vlan-id | mac-address mac-address [ mask mac-mask ] }
```

Parameter Description	Parameter	Description
	<b>all</b>	Displays all MAC VLAN entries.
	<b>dynamic</b>	Displays the dynamic MAC VLAN entries.
	<b>static</b>	Displays the static MAC VLAN entries.
	<b>mac-address mac-address</b>	Displays the MAC VLAN entry of the specified MAC address.
	<b>mask mac-mask</b>	Displays the MAC VLAN entry of the specified MAC address range.



<b>vlan</b> vlan-id	Displays the MAC VLAN entries of the specified VLAN.
---------------------	--

**Defaults** N/A

**Command mode** All configuration modes

**Usage Guide** If the **mac-address** parameter is specified without the **mask** parameter, the MAC-VLAN entry of the single MAC address is displayed.  
 If parameters both of **mac-address** and **mask** are specified, the MAC-VLAN entries in the specified MAC address range are displayed.

**Configuration** The following example displays all MAC VLAN entries.

```

Examples
Ruijie# show mac-vlan all
The following MAC VLAN addresses exist:
S: Static D: Dynamic
MAC ADDR          MASK                VLAN ID  PRIO  STATE
-----
0011.1100.0000    ffff.ff00.0000     100      1     S
0022.2222.0000    ffff.ffff.0000     200      2     S
0000.0000.0003    ffff.ffff.ffff     300      3     D
0000.0000.0004    ffff.ffff.ffff     400      4     D
0000.0000.0005    ffff.ffff.ffff     500      5     S&D
0000.0000.0006    ffff.ffff.ffff     600      6     S
0000.0000.0007    ffff.ffff.ffff     700      7     S&D
Total MAC VLAN address count: 7
    
```

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

**Platform Description** N/A

## 5.4 show mac-vlan interface

Use this command to display the interfaces which are enabled with MAC VLAN.

**show mac-vlan interface**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
		N/A

**Defaults** N/A

**Command mode** All configuration modes

**Usage Guide** Use this command to verify whether the MAC VLAN function is enabled on the interface.

**Configuration** The following example displays the interfaces which are enabled with MAC VLAN.

**Examples**

```
Ruijie# show mac-vlan interface
MAC VLAN is enabled on following interface:
-----
fastethernet 0/3
fastethernet 0/10
```

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 6 Super-VLAN Commands

### 6.1 proxy-arp

Use this command to enable the proxy ARP function for a VLAN. Use the **no** form of this command to disable this function. Use the **default** form of this command to restore the default setting.

**proxy-arp**  
**no proxy-arp**  
**default proxy-arp**

Parameter Description	Parameter	Description
	N/A	N/A

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

**Command mode** VLAN configuration Mode.

**Usage Guide** Super VLAN and sub VLAN must be both enabled with proxy ARP.

**Configuration Examples** The following example enables the proxy ARP function for VLAN 3.

```
Ruijie(config)# vlan 3
Ruijie(config-vlan)# proxy-arp
```

The following example disables the proxy ARP function for VLAN 3.

```
Ruijie(config)# vlan 3
Ruijie(config-vlan)# no proxy-arp
```

Related Commands	Command	Description
	<b>show supervlan</b>	Displays the super VLAN information.

**Platform Description** N/A

### 6.2 show supervlan

Use this command to display the configuration of the super VLAN and its sub VLANs.

**show supervlan**  
**show supervlan id *vlan-id***

Parameter Description	Parameter	Description
	<i>vlan-id</i>	VLAN ID

**Defaults** N/A

**Command mode** Any mode

**Usage Guide** N/A

**Configuration** The following example displays the configuration of super VLAN 2.

**Examples**

```
SwitchA(config-if-range)# show supervlan 2
supervlan id  supervlan arp-proxy  subvlan id  subvlan arp-proxy  subvlan ip
range
-----
          2          ON          10          ON          192.168.196.10 -
192.168.196.50
                                20          ON          192.168.196.60 -
192.168.196.100
                                30          ON          192.168.196.110 -
192.168.196.150
```

The following example displays the configuration of all super VLANs.

```
SwitchA(config-if-range)# show supervlan
supervlan id  supervlan arp-proxy  subvlan id  subvlan arp-proxy  subvlan ip
range
-----
          2          ON          10          ON          192.168.196.10 -
192.168.196.50
                                20          ON          192.168.196.60 -
192.168.196.100
                                30          ON          192.168.196.110 -
192.168.196.150
          6          ON          7          ON
                                8          ON
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 6.3 subvlan

Use this command to set the sub VLAN for the super VLAN. Use the **no** form of this command to disable this function. Use the **default** form of this command to restore the default setting.

**subvlan** *vlan-id-list*

**no subvlan** [ *vlan-id-list* ]

**default subvlan** [ *vlan-id-list* ]

Parameter Description	Parameter	Description
	<i>vlan-id-list</i>	Sub VLAN ID of the VLAN. Multiple VLANs are supported.

**Defaults** No super VLAN is set by default.

**Command mode** VLAN configuration Mode.

**Usage Guide** Use the **no subvlan** command to delete all sub VLANs of this super VLAN.

**Configuration** The following example sets the sub VLAN.

```
SwitchA(config)#vlan 2
SwitchA(config-vlan)#supervlan
SwitchA(config-vlan)#subvlan 10,20,30
```

Related Commands	Command	Description
	<b>show supervlan</b>	Displays the super VLAN information.

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

## 6.4 subvlan-address-range

Use this command to set the IP address range of the sub VLAN. Use the **no** form of this command to disable this function. Use the **default** form of this command to restore the default setting.

**subvlan-address-range** *start-ip end-ip*

**no subvlan-address-range**

**default subvlan-address-range**

Parameter Description	Parameter	Description
	<i>start-ip</i>	The start IP address of this sub VLAN
	<i>end-ip</i>	The end IP address of this sub VLAN

**Defaults** No IP address range is set by default.

**Command mode** VLAN configuration Mode.

**Usage Guide** N/A

**Configuration** The following example sets the IP address range for the sub VLAN.

**Examples**

```
Ruijie(config)# vlan 2
Ruijie(config-vlan)#subvlan-address-range 192.168.23.1 192.168.23.5
```

Related Commands	Command	Description
	<b>show supervlan</b>	Displays the super VLAN information.

**Platform** N/A

**Description**

## 6.5 supervlan

Use this command to set the VLAN as a super VLAN. Use the **no** form of this command to disbale this function. Use the **default** form of this command to restore the default setting.

- supervlan**
- no supervlan**
- default supervlan**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** No super VLAN is set by default.

**Command mode** VLAN configuration Mode.

**Usage Guide**

By default, the super VLAN function is disabled.

No physical port can be added to a super VLAN.

Once a VLAN is not a super VLAN, all its sub VLANs become common static VLANs.

**Configuration** The following example configures a Sub VLAN.

**Examples**

```
Ruijie(config)# vlan 2
Ruijie(config-vlan)#supervlan
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show supervlan</b>	Displays the super VLAN information.

**Platform  
Description** N/A

## 7 Protocol VLAN Commands

### 7.1 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 Description** N/A

### 7.2 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.

```
Ruijie(config)# protocol-vlan ipv4 192.168.100.3 mask 255.255.255.0 vlan 100
```

**Platform** N/A

**Description**

### 7.3 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** The configured entries can not be changed to new entries. Old entries should be deleted before new ones are configured.

The protocol VLAN based on DUNE chip only supports the rule delivery of Ethernet type and has no message type. Other products support the rule delivery of Ethernet type and message type, and the Ethernet type and message type are required.

**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**

## 7.4 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**

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

Commands	
<code>show protocol-vlan profile</code>	N/A
<code>show protocol-vlan profile num</code>	N/A
<code>no protocol-vlan profile</code>	N/A
<code>no protocol-vlan profile num</code>	N/A

**Platform** N/A

**Description**

## 7.5 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.

```

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**

## 8 Private VLAN Commands

### 8.1 debug bridge pvlan

Use this command to enable private VLAN debugging. Use the **no** or **default** form of this command to restore the default setting.

**debug bridge pvlan**


**no debug bridge pvlan**


Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** Debugging is disabled by default.

**Command mode** Privileged EXEC mode

**Usage Guide** Debugging information includes error and prompt messages appearing during private VLAN configuration.  
This command can be used to troubleshoot VLAN and interface configuration failure.

 With private VLAN debugging enabled, all super VLAN configuration and packet processing on SVI is displayed.

 Debugging information helps troubleshooting and fault location.

**Configuration Examples** The following example enables private VLAN debugging.

```
Ruijie# debug bridge pvlan
```

The following example disables private VLAN debugging.

```
Ruijie# no debug bridge pvlan
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 8.2 private-vlan

Use this command to configure the private VLAN feature. Use the **no** or **default** form of this

command to restore the default setting.

**private-vlan { community | isolated | primary }**

**no private-vlan { community | isolated | primary }**

**default private-vlan { community | isolated | primary }**

**Parameter Description**

Parameter	Description
<b>community</b>	Sets the community VLAN.
<b>isolated</b>	Sets the isolated VLAN.
<b>primary</b>	Sets the primary VLAN.

**Defaults** No private VLAN feature is configured by default.

**Command mode** VLAN configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example configures the private VLAN feature.

```
Ruijie(config)#vlan 90
Ruijie(config-vlan)#private-vlan primary
Ruijie(config-vlan)#vlan 91
Ruijie(config-vlan)#private-vlan isolated
Ruijie(config-vlan)#vlan 92
Ruijie(config-vlan)#private-vlan community
```

The following example disables the private VLAN feature using the **no private-vlan** command.

```
Ruijie(config)#vlan 90
Ruijie(config-vlan)#no private-vlan primary
Ruijie(config-vlan)#vlan 91
Ruijie(config-vlan)#no private-vlan isolated
Ruijie(config-vlan)#vlan 92
Ruijie(config-vlan)#no private-vlan community
```

The following example disables the private VLAN feature using the **default private-vlan** command.

```
Ruijie(config)#vlan 90
Ruijie(config-vlan)#default private-vlan primary
Ruijie(config-vlan)#vlan 91
Ruijie(config-vlan)#default private-vlan isolated
Ruijie(config-vlan)#vlan 92
Ruijie(config-vlan)#default private-vlan community
```

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 8.3 private-vlan association

Use this command to associate the secondary VLAN with the primary VLAN on layer 2. Use the **no** or **default** form of this command to restore the default setting.

**private-vlan association** { *svlist* | **add** *svlist* | **remove** *svlist* }

**no private-vlan association**

**default private-vlan association**

Parameter Description	Parameter	Description
	<i>svlist</i>	The secondary VLAN list
	<b>add</b> <i>svlist</i>	Adds the associated secondary VLAN.
	<b>remove</b> <i>svlist</i>	Removes the associated secondary VLAN.

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

**Command mode** VLAN configuration Mode.

**Usage Guide** N/A

**Configuration Examples** The following example associates the secondary VLAN with the primary VLAN on layer 2.

```
Ruijie(config)# vlan 22
Ruijie(config-vlan)# private-vlan association add 24-26
```

The following example removes the association between the secondary VLAN with the primary VLAN.

```
Ruijie(config)# vlan 22
Ruijie(config-vlan)# private-vlan association remove 24
```

Related Commands	Command	Description
	<b>show vlan private-vlan</b>	N/A

**Platform** N/A

**Description**

## 8.4 private-vlan mapping

Use this command to associate the secondary VLAN with the primary VLAN on layer 3. Use the **no** or

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

**private-vlan mapping** { *svlist* | **add** *svlist* | **remove** *svlist* }

**no private-vlan mapping**

**default private-vlan mapping**

Parameter Description	Parameter	Description
	<i>svlist</i>	Secondary VLAN list.
	<b>add</b> <i>svlist</i>	Adds the associated secondary VLAN.
	<b>remove</b> <i>svlist</i>	Removes the associated secondary VLAN.

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

**Command mode** Interface configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example associates the secondary VLAN with the primary VLAN on layer 3.

```
Ruijie(config)# interface vlan 22
Ruijie(config-if)# private-vlan mapping add 24-26
```

Related Commands	Command	Description
	<b>show vlan private-vlan</b>	N/A

**Platform Description** N/A

## 8.5 show vlan private-vlan

Use this command to display the private VLAN configuration.

**show vlan private-vlan** [ **community** | **primary** | **isolated** ]

Use this command to display all the private VLANs configuration.

**show vlan private-vlan**

Parameter Description	Parameter	Description
	<b>primary</b>	Displays the primary VLAN information.
	<b>community</b>	Displays the community VLAN information.
	<b>isolated</b>	Displays the isolated VLAN information.



**Defaults** N/A

**Command mode** All modes

**Usage Guide** N/A

**Configuration** The following example displays the private VLAN configuration.

**Examples**

```
Ruijie# show vlan private-vlan
VLAN  Type      Status  Routed  Ports  Associated VLANs
-----
30    primary  inactive Enabled
31    isolated inactive Disabled  No Association
90    primary  active  Disabled 91-92
91    isolated active  Disabled 90
92    community active  Disabled Gi0/1 90
```

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 8.6 switchport mode private-vlan

Use this command to declare the private VLAN mode of the interface. Use the **no** or **default** form of this command to restore the default setting.

**switchport mode private-vlan { host | promiscuous }**

**no switchport mode**

**default switchport mode**

**Parameter Description**

Parameter	Description
<b>host</b>	Host mode of the private VLAN
<b>promiscuous</b>	Promiscuous mode of the private VLAN

**Defaults** The port is an access port by default.

**Command mode** Interface configuration mode.

**Usage Guide** Before a port is configured as an isolated port or promiscuous port, and the port mode must be configured as the host port mode.

The port mode must be configured as the promiscuous mode.

**Configuration** The following example applies the private host mode to the interface.

```
Examples Ruijie(config)# interface gigabitEthernet0/2
Ruijie(config-if)# switchport mode private-vlan host
```

The following example applies the promiscuous mode to the interface.

```
Ruijie(config)# interface gigabitEthernet 0/2
Ruijie(config-if-GigabitEthernet 0/2)#sw mode private-vlan promiscuous
```

**Related Commands**

Command	Description
show vlan private-vlan	N/A

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

## 8.7 switchport private-vlan host-association

Use this command to associate the primary VLAN, which is associated with the private VLAN mode of the interface, with the secondary VLAN. Use the **no** or **default** form of this command to restore the default setting.

```
switchport private-vlan host-association p_vid s_vid
no switchport private-vlan host-association
default switchport private-vlan host-association
```

**Parameter Description**

Parameter	Description
p_vid	Primary VID.
s_vid	Secondary VID

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

**Command mode** Interface configuration mode.

**Usage Guide** Before a port is configured as an isolated port or promiscuous port, and the port mode must be configured as the host port mode.  
 Whether a port is configured as an isolated port or community port depends on the s\_vid parameter. p\_vid and s\_vid must be respectively the IDs of the primary VLAN and secondary VLAN in a PVLAN

pair, on which Layer-2 association is performed.

One host port can be associated with only one PVLAN pair.

**Configuration** The following example associates the secondary VLAN with the primary VLAN on the host port.

**Examples**

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport mode private-vlan host
Ruijie(config-if)# switchport private-vlan host-association 22 23
Ruijie(config-if)# default switchport private-vlan host-association
Ruijie(config-if)# switchport private-vlan host-association 22 25
```

**Related  
Commands**

Command	Description
<b>show vlan private-vlan</b>	N/A

**Platform** N/A

**Description**

## 8.8 switchport private-vlan mapping

Use this command to configure the secondary VLAN for the promiscuous port. Use the **no** or **default** form of this command to restore the default setting.

**switchport private-vlan mapping** *p\_vid* { *svlist* | **add** *svist* | **remove** *svlist* }

**no switchport private-vlan mapping**

**default switchport private-vlan mapping**

**Parameter  
Description**

Parameter	Description
<i>p_vid</i>	Indicates the primary VLAN ID in a PVLAN pair.
<i>svlist</i>	Indicates the secondary VLAN associated with a promiscuous port. Layer-2 association must be performed between it and <i>p_vid</i> .
<b>add</b>	Adds a secondary VLAN to be associated with a port.
<b>remove</b>	Cancels the secondary VLAN associated with a port.

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

**Command mode** Interface configuration mode

**Usage Guide** The port mode must be configured as the promiscuous mode.

Layer-2 association must be performed between the primary and secondary VLAN.

**Configuration** The following example configures the secondary VLAN for the promiscuous port.

**Examples**

```
Ruijie(config)# interface gigabitEthernet 0/1
```

```
Ruijie(config-if)# switchport mode private-vlan
promiscuous
Ruijie(config-if)# switchport private-vlan mapping 22 add 23-25
```

**Related  
Commands**

Command	Description
<b>show vlan private-vlan</b>	N/A

**Platform  
Description**

N/A

## 9 Voice VLAN Commands

### 9.1 show voice vlan

Use this command to display the Voice VLAN configurations and the current state, including the working mode of the port with Voice VLAN enabled.

**show voice vlan**

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 Voice VLAN configurations and the current state.

**Examples**

```
Ruijie(config)# show voice vlan
Voice VLAN status: ENABLE           //Voice VLAN is enabled
Voice VLAN ID: 2                    //Voice VLAN ID
Voice VLAN security mode: Security  //Security Mode
Voice VLAN aging time: 5 minutes    //Aging Time
Voice VLAN cos: 6                   //Voice VLAN CoS
Voice VLAN dscp: 46                 //Voice VLAN DSCP
Current voice vlan enabled port mode: // Voice VLAN Enabled Port & Mode
PORT                                MODE
-----
Fa0/1                                Auto
```

**Related Commands**

Command	Description
<b>voice vlan</b> <i>vlan-id</i>	Set a voice vlan.
<b>voice vlan aging</b> <i>minutes</i>	Set the Voice VLAN aging time.
<b>voice vlan cos</b> <i>cos-value</i>	Set the CoS value for the Voice VLAN.
<b>voice vlan dscp</b> <i>dscp-value</i>	Set the DSCP value for the Voice VLAN.
<b>voice vlan enable</b>	Enable the Voice VLAN.
<b>voice vlan mode auto</b>	Set the Voice VLAN working mode.
<b>voice vlan security enable</b>	Enable the Voice VLAN security mode.

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

## 9.2 show voice vlan oui

Use this command to display the OUI address, OUI mask and the description information.

**show voice vlan oui**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** All modes.

**Command mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the OUI address.

```

Examples Ruijie (config) # show voice vlan oui
OUI           Mask           Description
-----
0001.e300.0000 ffff.ff00.0000 Siemens phone
0003.6b00.0000 ffff.ff00.0000 Cisco phone
0004.0d00.0000 ffff.ff00.0000 Avaya phone
0060.b900.0000 ffff.ff00.0000 Philips/NEC phone
00d0.1e00.0000 ffff.ff00.0000 Pingtel phone
00e0.7500.0000 ffff.ff00.0000 Polycom phone
00e0.bb00.0000 ffff.ff00.0000 3com phone
    
```

The following lists the field description .

Field	Description
OUI	The OUI address, the source MAC address for the voice packet.
Mask	The OUI mask. The valid length for the OUI address.
Description	The description information for the OUI address.

Related Commands	Command	Description
	<b>voice vlan mac-address</b> <i>mac-addr</i> <b>mask</b> <i>oui-mask</i> [ <b>description</b> <i>text</i> ]	Set the OUI address for the voice packet recognized by the Voice VLAN.

**Platform** N/A

**Description**

### 9.3 voice vlan

Use this command to enable Voice VLAN in the global configuration mode. Use the **no** form of this command to restore the default setting.

**voice vlan** *vlan-id*

**no voice vlan**

**Parameter Description**

Parameter	Description
<i>vlan-id</i>	The Voice VLAN ID.

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

**Command mode** Global configuration mode

**Usage Guide** Use this command to enable the Voice VLAN and specify the Voice VLAN ID.

- 1. The corresponding VLAN shall be created before configuring the Voice VLAN;
- 2. The default VLAN is VLAN1 and cannot be set as the Voice VLAN;
- 3. A VLAN is not allowed to be set as the Voice VLAN and the Super VLAN at the same time;
- 4. With 802.1x VLAN auto-switching function enabled, the assigned VID shall not be set as the Voice VLAN ID;
- 5. RSPAN Remote VLAN and Voice VLAN cannot be the same VLAN, or it influences the remote port mirror and the Voice VLAN function.

**Configuration Examples** The following example sets the VLAN2 as the Voice VLAN.

```
Ruijie(config)# vlan 2
Ruijie(config-vlan)# exit
Ruijie(config)# voice vlan 2
```

**Related Commands**

Command	Description
<b>show voice vlan</b>	Display Voice VLAN configurations and the current state.

**Platform** N/A

**Description**

## 9.4 voice vlan aging

Use this command to set the Voice VLAN aging time in the global configuration mode. Use the **no** form of this command to restore the default setting.

**voice vlan aging** *minutes*

**no voice vlan aging**

Parameter Description	Parameter	Description
	<i>minutes</i>	The Voice VLAN aging time. Range: 5 to 10,000. Unit: minute.

**Defaults** The default is 1440 minutes.

**Command mode** Global configuration mode

**Usage Guide** If the device has not received any voice packets from the port within the aging time, this Voice VLAN will be removed from this port.

 The aging time is valid for the auto-mode only.

**Configuration Examples** The following example sets the Voice VLAN aging time to 10 minutes.

```
Ruijie(config)# voice vlan aging 10
```

Related Commands	Command	Description
	<b>show voice vlan</b>	Display Voice VLAN configurations and the current state.

**Platform** N/A

**Description**

## 9.5 voice vlan cos

Use this command to set the Voice VLAN CoS value in the global configuration mode. Use the **no** form of this command to restore the default setting.

**voice vlan cos** *cos-value*

**no voice vlan cos**

Parameter Description	Parameter	Description
	<i>cos-value</i>	The Voice VLAN CoS value. Range: 0 to 7.



**Defaults** The default is 6.

**Command mode** Global configuration mode

**Usage Guide** You can improve the Voice VLAN priority level and the session quality, by modifying the Voice VLAN CoS and DSCP value.

**Configuration** The following example sets the Voice VLAN CoS value to 5.

**Examples**

```
Ruijie(config)# voice vlan cos 5
```

Related Commands	Command	Description
		<b>show voice vlan</b>

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

## 9.6 voice vlan dscp

Use this command to set the Voice VLAN DSCP value in the global configuration mode. Use the **no** form of this command to restore the default setting.

**voice vlan dscp** *dscp-value*  
**no voice vlan dscp**

Parameter Description	Parameter	Description
		<i>dscp-value</i>

**Defaults** The default is 46.

**Command mode** Global configuration mode

**Usage Guide** You can improve the Voice VLAN priority level and the session quality, by modifying the Voice VLAN CoS and DHCP value.

**Configuration** The following example sets the Voice VLAN DSCP value to 40.

**Examples**

```
Ruijie(config)# voice vlan dscp 40
```

Related Commands	Command	Description

<b>show voice vlan</b>	Display Voice VLAN configurations and the current state.
------------------------	--

**Platform** N/A

**Description**

## 9.7 voice vlan enable

Use this command to enable the Voice VLAN DSCP value in the interface configuration mode. Use the **no** form of this command to restore the default setting.

**voice vlan enable**


**no voice vlan enable**

Parameter Description	Parameter	Description
	N/A	N/A

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

**Command mode** Interface configuration mode

**Usage Guide** Use this command to enable the Voice VLAN on the physical port only. The Voice VLAN can be enabled on the Access Port, Trunk Port, Hybrid Port, Private VLAN host port, Private VLAN promiscuous port and Uplink port on the Ruijie products.

 With the global Voice VLAN disabled, although the Voice VLAN can be enabled on the port, it is invalid.

**Configuration Examples** The following example enables the Voice VLAN function on the interface FastEthernet 0/1.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# voice vlan enable
```

Related Commands	Command	Description
	<b>show voice vlan</b>	Display Voice VLAN configurations and the current state.

**Platform** N/A

**Description**

## 9.8 voice vlan mac-address

Use this command to set the recognizable Voice VLAN OUI address. Use the **no** form of this command to restore the default setting.

**voice vlan mac-address** *mac-addr* **mask** *oui-mask* [ **description** *text* ]

**no voice vlan mac-address** *mac-addr*


### Parameter Description

Parameter	Description
<i>mac-addr</i>	In the format of <i>H.H.H</i> . The source MAC address for the voice packets.
<i>oui-mask</i>	In the format of <i>H.H.H</i> . The valid length for the OUI address.
<i>text</i>	The description for the OUI address.

**Defaults** By default, no OUI has been configured.

**Command mode** Global configuration mode

**Usage Guide** Use this command to identify the voice packets from different manufacturers. The first three bytes of the MAC address for the voice device are used to identify the manufacture. Voice VLAN determines whether the packets are voice packets or not through the OUI address obtained from the source MAC address and the OUI mask for the received packets.

 The Voice VLAN OUI address cannot be the multicast address and the configured mask shall be continuous.

**Configuration Examples** The following example sets the OUI address 0012.3400.0000 as the valid address for the Voice VLAN.

```
Ruijie(config)# voice vlan mac-address 0012.3400.0000 mask ffff.ff00.0000
description Company A
```

### Related Commands

Command	Description
<b>show voice vlan oui</b>	Display the OUI address, OUI address mask and the descriptions.

**Platform Description** N/A

## 9.9 voice vlan mode auto

Use this command to set the Voice VLAN auto mode. Use the **no** form of this command to disable

this function.

**voice vlan mode auto**

**no voice vlan mode auto**

**Parameter Description**

Parameter	Description
N/A	N/A

**Defaults**


This function is in auto mode by default.


**Command mode**

Interface configuration mode

**Usage Guide**

The Voice VLAN working mode can be classified into the auto-mode and the manual-mode, and configured on the port. The working modes for the Voice VLAN on each port are independent, and different ports can work in different working modes. In different working modes, the methods of enabling the Voice VLAN function on the port are different. The working mode can be set according to the IP phone type connected downward the port or the port type.

 1. With the Voice VLAN enabled on the port and in the manual mode, this port must be added to the Voice VLAN manually to ensure the function validity. 2. When the port works in the auto-mode, note that the native VLAN of the port cannot be set as the Voice VLAN for the normal function performance. 3. The Trunk Port/Hybrid Port on the Ruijie product can transmit the packets in all VLANs by default. First remove the Voice VLAN from the allowed VLAN list for the port, then enable the Voice VLAN to ensure that the port disconnecting with the voice device cannot be added to the Voice VLAN, or the port not used for a long time can be still in the Voice VLAN.

 1. With the Voice VLAN enabled on the port, the auto and manual modes switchover is disallowed. Disable the Voice VLAN first if it is necessary to switch the modes. 2. In the auto mode, it fails to add/remove the port to/from the Voice Vlan by using the command.

**Configuration Examples**

The following example sets the Voice VLAN on the interface FastEthernet 0/1 to work in the auto mode.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-vlan)# voice vlan mode auto
```

**Related Commands**

Command	Description
<b>show voice vlan</b>	Display Voice VLAN configurations and the current state.

**Platform**

N/A

**Description**

## 9.10 voice vlan security enable

Use this command to enable the Voice VLAN security mode in the global configuration mode. Use the **no** form of this command to disable this function.

**voice vlan security enable**

**no voice vlan security enable**

**Parameter Description**

Parameter	Description
N/A	N/A

**Defaults**


This function is enabled by default.


**Command mode**

Global configuration mode

**Usage Guide**

The Voice VLAN working mode can be classified into the auto-mode and the manual-mode, and configured on the port. The working modes for the Voice VLAN on each port are independent, and different ports can work in different working modes. In different working modes, the methods of enabling the Voice VLAN function on the port are different. The working mode can be set according to the IP phone type connected downward the port or the port type.

 You are not recommended to transmit the voice and service data in the Voice VLAN at the same time. But if it is necessary for you, you shall ensure that the Voice VLAN security mode has been disabled.

 In the security mode, only the source MAC addresses for the untagged packets and the packets carried with Voice VLAN tag are checked. For other packets carried with non-voice vlan tag that free from the Voice VLAN security/normal mode, the devices forward or discard those packets according to the VLAN rule.

**Configuration** The following example enables the Voice VLAN security mode.

**Examples**

```
Ruijie(config)# voice vlan security enable
```

**Related Commands**

Command	Description
<b>show voice vlan</b>	Display Voice VLAN configurations and the current state.

**Platform**

N/A

**Description**

## 10 MSTP Commands

### 10.1 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** Interface configuration mode.

**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

## 10.2 bridge-frame forwarding protocol bpdu

Use this command to enable BPDU transparent transmission. Use the **no** form of this command to restore the default setting.

**bridge-frame forwarding protocol bpdu**  
**no bridge-frame forwarding protocol bpdu**

Parameter Description	Parameter	Description
	N/A	N/A

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

**Command Mode** Global configuration mode

**Usage Guide** In the IEEE 802.1Q standard, 01-80-C2-00-00-00, the destination MAC address of BPDU frames, is reserved. Devices following the IEEE 802.1Q standard don't forward BPDU frames. In real network deployment, devices may be required to support BPDU transparent transmission. For example, when a device is not enabled with STP, BPDU transparent transmission can help implement STP calculation.  
 BPDU transparent transmission works only when STP is disabled.

**Configuration Examples** The following example enables BPDU transparent transmission.

```
Ruijie(config)# bridge-frame forwarding protocol bpdu
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 10.3 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
<b>show spanning-tree counters</b>	<b>Displays the statistics of STP transceived packets.</b>

**Platform Description** N/A

## 10.4 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**

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



Commands	
<b>show spanning-tree interface</b>	<b>Displays the STP configuration of the interface.</b>

**Platform** N/A

**Description**

## 10.5 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

**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**

## 10.6 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

MST configuration mode

### 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
```

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

**Platform Description** N/A

## 10.7 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**

<b>Parameter Description</b>	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 Examples** The following example enables BPDU TUNNEL globally.

```
Ruijie(config)# l2protocol-tunnel stp
Ruijie(config)# show l2protocol-tunnel stp

L2protocol-tunnel: stp Enable
L2protocol-tunnel destination mac address: 01d0.f800.0005
```

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

**Platform Description** N/A

## 10.8 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**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Interface configuration mode

**Usage Guide** If you want to BPDU TUNNEL globally, enable BPDU TUNNEL on the interface first.

**Configuration Examples** The following example enables BPDU TUNNEL on the interface.

```
Ruijie(config-if-interface-id)# l2protocol-tunnel stp enable
Ruijie(config-if-interface-id)# show l2protocol-tunnel stp

L2protocol-tunnel: stp Enable
L2protocol-tunnel destination mac address: 01d0.f800.0005
GigabitEthernet 0/1 l2protocol-tunnel stp enable
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 10.9 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**

Parameter Description	Parameter	Description
	<i>mac-address</i>	The STP address for transparent transmission.

**Defaults** The default is 01d0.f800.0005.

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

**Usage Guide** The available STP address includes 01d0.f800.0005, 011a.a900.0005, 010f.e200.0003, 0100.0ccd.cdd0, 0100.0ccd.cdd1, and 0100.0ccd.cdd2.

**Configuration Examples** The following example configures the STP address for transparent transmission through BPDU TUNNEL.

```
Ruijie(config)# l2protocol-tunnel stp tunnel-dmac 011a.a900.0005
```

**Related Commands**

Command	Description
N/A	N/A

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

### 10.10 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** MST configuration mode  
**Mode**

**Usage Guide** **name** *name*: Sets the MST name, up to 32 characters.  
**show spanning-tree mst configuration**: Displays MST region information.

**Configuration Examples** This example sets 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**

## 10.11 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 Mode**

MST configuration mode

**Usage Guide**

**revision** *version*: Sets the MST version, in the range from 0 to 65535.

**show spanning-tree mst configuration**: Displays MST region information.

**Configuration Examples**

This example sets revision number to 1.

**Examples**

```
Ruijie(config)# spanning-tree mst configuration
Ruijie(config-mst)# revision 1
Ruijie(config-mst)# show spanning-tree mst configuration
Multi spanning tree protocol : Enable
Name      :
Revision : 1
Instance  Vlans Mapped
-----
0      : ALL
Ruijie(config-mst)# exit
Ruijie(config)#
```

Related Commands	Command	Description
	N/A	N/A

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

## 10.12 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 Examples** The following example displays BPDU TUNNEL configuration.

```
Ruijie# show l2protocol-tunnel stp

L2protocol-tunnel: stp Enable
L2protocol-tunnel destination mac address:011a.a900.0005
GigabitEthernet 0/1 l2protocol-tunnel stp enable
```

Related Commands	Command	Description
	N/A	N/A

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

## 10.13 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 Examples** The following example displays the global spanning-tree configuration.

```
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**

## 10.14 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* [ { **bpdufilter** | **portfast** | **bpduguard** | **link-type** } ]

Parameter Description	Parameter	Description
	<i>interface-id</i>	Interface ID
	<b>bpdufilter</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 bpdupfilter</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**

## 10.15 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 Examples** The following example displays the information of MST and instances.

```
Ruijie# show spanning-tree mst configuration
Multi spanning tree protocol : Enable
Name      : test
Revision  : 0
Instance  Vlans Mapped
-----
```

```
0      : 2-4094
1      : 1
```

## Field Description

Field	Description
Multi spanning tree protocol	Enables MSTP protocol.
Name	Name of the MST region
Revision	Revision of the MST region
Instance Vlans Mapped	Mapping relation between the instance and VLAN

## Related Commands

Command	Description
<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

## 10.16 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
-----
```

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** N/A  
**Description**

## 10.17 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** Global configuration mode.

**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**

## 10.18 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** Interface configuration mode.

**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**

## 10.19 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** Interface configuration mode.

**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**

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

Commands	
<b>show spanning-tree interface</b>	Displays the STP configuration of the interface.

**Platform** N/A

**Description**

## 10.20 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
	<b>enabled</b>	Enables BPDU guard on the interface.
	<b>disabled</b>	Disables BPDU guard on the interface.

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

**Command** Interface configuration mode.

**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** The following example enables the BPDU guard function on the interface.

**Examples**

```
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** N/A

**Description**

## 10.21 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  
Description**

Parameter	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 Examples** The following example enables the compatibility mode on interface Gi 0/1.

```
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

## 10.22 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 bpdu. Use the **no** form of this command to disable **loop guard**.

**spanning-tree guard loop**  
**no spanning-tree guard loop**

**Parameter  
Description**

Parameter	Description
N/A	N/A

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

**Command  
Mode** Interface configuration mode.



- Usage Guide**
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**

### 10.23 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**

## 10.24 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**

Interface configuration mode.

**Mode****Usage Guide**

- If root guard is enabled, the current root bridge will not change due to incorrect configuration or illegal packet attacks.
- The loop guard function and root guard function cannot be enabled at the same time.

**Configuration**

The following example enables **root guard** on the interface.

**Examples**

```
Ruijie(config)# interface gigabitethernet 0/1
Ruijie(config-if-interface-id)# spanning-tree guard root
```

**Related Commands**

Command	Description
N/A	N/A

**Platform**

N/A

**Description**

## 10.25 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**

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

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

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

**Command** Interface configuration mode.

**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
```

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

**Platform** N/A

**Description**

## 10.26 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**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<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** Interface configuration mode.

**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**

## 10.27 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**

## 10.28 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 Examples** This example sets the max-hops of the spanning tree to 10 for all instances.

```
Ruijie(config)# spanning-tree max-hops 10
```

You can verify your setting by entering the **show spanning-tree mst** command in the privileged EXEC mode.

Related Commands	Command	Description
	<b>show spanning-tree</b>	Displays the MSTP information.

**Platform** N/A

**Description**

## 10.29 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
	<i>stp</i>	Spanning tree protocol(IEEE 802.1d)
	<i>rstp</i>	Rapid spanning tree protocol(IEEE 802.1w)
	<i>mstp</i>	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**

## 10.30 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**

## 10.31 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
<i>instance-id</i>	Instance ID in the range from 0 to 64.
<i>cost</i>	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**

## 10.32 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** Interface configuration mode.

**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**

### 10.33 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** Global configuration mode.

**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**

## 10.34 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** Global configuration mode.

**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**

## 10.35 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** Interface configuration mode.

**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** N/A

**Description**

## 10.36 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	Parameter	Description
-----------	-----------	-------------

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

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

**Command** Global configuration mode.

**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
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show spanning-tree interface</b>	Displays the global STP configuration.

**Platform** N/A

**Description**

## 10.37 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**


<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	N/A	N/A

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

**Command** Global configuration mode.

**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
		<b>show spanning-tree interface</b>

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

## 10.38 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

**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>

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

## 10.39 spanning-tree reset

Use this command to restore the **spanning-tree** configuration to the default setting.

**spanning-tree reset**

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

<b>Description</b>								
	N/A	N/A						
<b>Defaults</b>	N/A							
<b>Command Mode</b>	Global configuration mode.							
<b>Usage Guide</b>	Enable TC guard to prevent TC packets from spreading.							
<b>Configuration Examples</b>	The following example enables tc-guard on interface Gi 1/1.							
	<pre>Ruijie(config)# interface gigabitethernet 1/1 Ruijie(config-if-interface-id)# spanning-tree tc-guard</pre>							
<b>Related Commands</b>	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><b>show spanning-tree</b></td> <td>Displays the global STP configuration.</td> </tr> <tr> <td><b>show spanning-tree interface</b></td> <td>Displays the STP configuration of the interface.</td> </tr> </tbody> </table>		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.
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.							
<b>Platform Description</b>	N/A							

## 10.40 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**

<b>Parameter Description</b>	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>		Parameter	Description	N/A	N/A
Parameter	Description					
N/A	N/A					
<b>Defaults</b>	This function is disabled by default.					
<b>Command Mode</b>	Global configuration mode.					
<b>Usage Guide</b>	N/A					
<b>Configuration Examples</b>	The following example enables <b>tc-guard</b> on the interface to prevent the spread of TC messages.					
	<pre>Ruijie(config)# spanning-tree tc-guard</pre>					

Related Commands	Command	Description
		N/A

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

## 10.41 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

**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

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

## 10.42 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	Parameter	Description

<b>Description</b>		
	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

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

**Platform Description** N/A

## 10.43 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**

<b>Parameter Description</b>	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

<b>Related</b>	Command	Description



---

Commands	
<b>show spanning-tree</b>	Displays the global MSTP configuration.

**Platform** N/A

**Description**

## 11 GVRP Commands

### 11.1 bridge-frame forwarding protocol gvrp

Use this command to enable GVRP PDUs transparent transmission. Use the **no** form of this command to restore the default setting.

**bridge-frame forwarding protocol gvrp**  
**no bridge-frame forwarding protocol gvrp**

Parameter Description	Parameter	Description
	N/A	N/A

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

**Command mode** Global configuration mode

**Usage Guide** In the IEEE 802.1Q standard, the MAC address 01-80-C2-00-00-21 of GVRP PDUs is reserved for future standardization. In other words, the device following the IEEE 802.1Q standard does not forward GVRP PDUs frames. However, in actual network deployment, GVRP PDUs transparent transmission may be required. For example, the device not enabled with GVRP needs to transmit GVRP PDUs frames transparently to ensure proper GVRP topology calculation.

**Configuration Examples** The following example enables GVRP PDUs transparent transmission.

```
Ruijie(config)# bridge-frame forwarding protocol gvrp
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 11.2 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** N/A

**Description**

## 11.3 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	Command	Description
---------	---------	-------------

Commands	
show gvrp configuration	Displays the GVRP configurations.

**Platform** N/A

**Description**

## 11.4 gvrp dynamic-vlan-creation

Use this command to enable dynamic VLAN creation. Use the **no** form of this command to restore the default setting.

**gvrp dynamic-vlan-creation enable**

**no gvrp dynamic-vlan-creation enable**

Parameter Description	Parameter	Description
	N/A	N/A

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

**Command mode** Global configuration mode.

**Usage Guide** Use the **show gvrp configuration** to display the configuration.

**Configuration Examples** The following example enables dynamic VLAN creation.

```
Ruijie(config)# gvrp dynamic-vlan-creation enable
```

Related Commands	Command	Description
	show gvrp configuration	Displays the GVRP configurations.

**Platform** N/A

**Description**

## 11.5 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**

## 11.6 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	Command	Description
---------	---------	-------------

Commands	
show gvrp configuration	Displays the GVRP configurations.

**Platform** N/A

**Description**

## 11.7 gvrp timer

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

**gvrp timer** { **join** *timer\_value* | **leave** *timer\_value* | **leaveall** *timer\_value* }

**no gvrp timer**

Parameter Description	Parameter	Description
	join <i>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.
	leave <i>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.
	leave all <i>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

<b>Related Commands</b>	Command	Description
	show gvrp configuration	Displays the GVRP configuration.

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

## 11.8 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**

<b>Parameter Description</b>	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
```

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

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

## 11.9 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** The following example enables GVRP PDUs TUNNEL on the interface.

**Examples**

```
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

## 11.10 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 Description** N/A

## 11.11 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**

## 11.12 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

## 11.13 show gvrp status

Use this command to display all dynamic VLAN ports generated by GVRP and the dynamic VLAN ports added to the static VLAN.

**show gvrp status**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command mode** Privileged EXEC mode.

**Usage Guide** Use the **show gvrp status** command to display the GVRP status.

**Configuration** 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**

## 11.14 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  
**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

## 12 LLDP Commands

### 12.1 { 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** LLDP network policy configuration mode

**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.

**Platform** N/A

**Description**

## 12.2 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** LLDP Civic address configuration mode

**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	Command	Description
<b>Commands</b>	<b>show lldp location civic-location { identifier id   interface interface-name   static }</b>	Displays the information about an LLDP Civic address.

**Platform** N/A

**Description**

## 12.3 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** Privileged EXEC mode

**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****Commands**

Command	Description
N/A	N/A

**Platform**

N/A

**Description**

## 12.4 clear lldp table

Use this command to clear LLDP neighbor information.

**clear lldp table** [ **interface** *interface-name* ]

**Parameter****Description**

Parameter	Description
<i>interface-name</i>	Interface name

**Defaults**

N/A

**Command**

Privileged EXEC mode

**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
```

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

## 12.5 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**

<b>Parameter Description</b>	Parameter	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 Mode** LLDP Civic address configuration mode

**Usage Guide** This command is used to configure the device type in a common LLDP address in LLDP Civic address configuration mode.

**Configuration Examples** The following example sets the device type to switch.

```
Ruijie#config
Ruijie(config)# lldp location civic-location identifier 1
Ruijie(config-lldp-civic)# device-type 1
```

<b>Related Commands</b>	Command	Description
	<b>show lldp location civic-location { identifier <i>id</i>   interface <i>interface-name</i>   static }</b>	Displays LLDP Civic Address information.

**Platform Description** N/A

## 12.6 lldp compliance vendor

Use this command to enable detection of compatible neighbors.

**lldp compliance vendor**

**no lldp compliance vendor**

Parameter	Parameter	Description
Description	N/A	N/A

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

**Command Mode** Global configuration mode

**Usage Guide** N/A

**Configuration** The following example enables detection of compatible neighbors.

**Examples**

```
Ruijie#configure terminal
Ruijie(config)# lldp compliance vendor
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 12.7 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** The following example disables LLDP globally and on the interface.

**Examples**

```
Ruijie#config
Ruijie(config)#no lldp enable
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if)# no lldp enable
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show lldp status</b>	Displays LLDP status information.

**Platform** N/A

**Description**

## 12.8 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**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	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 Examples** The following example sets LLDP packet encapsulation format to SNAP.

```
Ruijie#config
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if)#lldp encapsulation snap
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show lldp status</b>	Displays LLDP status information.

**Platform** N/A

**Description**

## 12.9 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	Command	Description
Commands	<b>show interface status</b>	Displays LLDP status information.

**Platform** N/A

**Description**

## 12.10 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**

<b>Parameter</b>	<b>Parameter</b>	<b>Description</b>
<b>Description</b>	<i>value</i>	The number of fast sent LLDP packets, 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>	N/A	
<b>Configuration Examples</b>	The following example sets the number of fast sent LLDP packets to 5.	
<b>Examples</b>	<pre>Ruijie#config Ruijie(config)#lldp fast-count 5</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show interface status</b>	Displays LLDP status information.
<b>Platform Description</b>	N/A	

## 12.11 Ildp 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**

<b>Parameter</b>	<b>Parameter</b>	<b>Description</b>
<b>Description</b>	<i>value</i>	TTL multiplier, in the range from 2 to 10.
<b>Defaults</b>	The default is 4.	
<b>Command Mode</b>	Global configuration mode.	
<b>Usage Guide</b>	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.	
<b>Configuration Examples</b>	The following example sets TTL multiplier to 5.	
<b>Examples</b>	<pre>Ruijie#config Ruijie(config)#lldp hold-multiplier 5</pre>	

Related	Command	Description
Commands	<b>show lldp status</b>	Displays LLDP status information.

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

## 12.12 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 *id* to 1.

```
Ruijie#config
Ruijie(config)#lldp location civic-location identifier 1
Ruijie(config-lldp-civic)#
```

Related	Command	Description
Commands	<b>show lldp location civic-location { identifier <i>id</i>   interface <i>interface-name</i>   static }</b>	Displays the LLDP Civic Address information.

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

## 12.13 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
Description	<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 Examples** The following example sets an emergency number.

```
Ruijie#config
Ruijie(config)#lldp location elin identifier 1 elin-location 085283671111
```

Related Commands	Command	Description
	<b>show lldp location elin-location { identifier <i>id</i>   interface <i>interface-name</i>   static }</b>	Displays an LLDP emergency number.

**Platform Description** N/A

## 12.14 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** N/A

**Description**

## 12.15 lldp mode

Use this command to configure the LLDP operating mode. Use **no** form of this command to restore the default setting.

**lldp mode { rx | tx | txrx }**

**no lldp mode**

Parameter Description	Parameter	Description
	<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 Mode** Interface configuration mode

**Usage Guide** Disable LLDP operating mode on the interface. The interface won't send and receive LLDP packets. The precondition for enabling LLDP on the interface is that LLDP has been enabled globally and LLDP operates in tx, rx or txrx mode.

**Configuration Examples** The following example sets LLDP operating mode to tx on the interface.

```
Ruijie#config
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if)#lldp mode tx
```

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

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

## 12.16 lldp network-policy profile

Use this command to create an LLDP network policy and enter the LLDP network policy configuration mode. Use the **no** form of this command to delete the policy.

**lldp network-policy profile** *profile-num*  
**no lldp network-policy profile** *profile-num*

Parameter	Parameter	Description
<b>Description</b>	<i>profile-num</i>	ID of an LLDP network policy, in the range from 1 to 1024.

**Defaults** N/A

**Command Mode** Global configuration mode

**Usage Guide** This command is used to enter the LLDP network policy configuration mode. When this command is run, the policy ID must be specified.  
 In LLDP network-policy mode, the { **voice** | **voice-signaling** } **vlan** command can be used to configure the specific network policy.

**Configuration Examples** The following example creates an LLDP network policy whose ID is 1.

```
Ruijie#config
Ruijie(config)#lldp network-policy profile 1
Ruijie(config-lldp-network-policy)#
```

Related Commands	Command	Description
	<b>show lldp network-policy profile</b> [ <i>profile-num</i> ]	Displays an LLDP network policy.

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

## 12.17 lldp notification remote-change enable

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

**lldp notification remote-change enable**

**no lldp notification remote-change enable**

Parameter	Parameter	Description
Description	N/A	N/A

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

**Command Mode** Interface configuration mode.

**Usage Guide** By configuring LLDP Trap, the LLDP information of local device (such as information about the detection of new neighbor or the fault on the communication link) can be sent to the network management server. The administrator can monitor the network operation status according to such information.

**Configuration Examples** The following example configures LLDP Trap.

```
Ruijie#config
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if)#lldp notification remote-change enable
```

Related Commands	Command	Description
	<b>show lldp status</b>	Displays LLDP status information.

**Platform Description** N/A

## 12.18 lldp timer notification-interval

Use this command to set an interval of sending LLDP Traps. Use the **no** form of this command to restore the default setting.

**lldp timer notification-interval** *seconds*

**no lldp timer notification-interval**

Parameter	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** The following example sets the interval of sending LLDP Traps to 10 seconds.

**Examples**

```
Ruijie#config
Ruijie(config)#lldp timer notification-interval 10
```

Related	Command	Description
Commands	<b>show lldp status</b>	Displays LLDP status information.

**Platform** N/A

**Description**

## 12.19 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** Global configuration mode.

**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	Command	Description
Commands	<b>show lldp status</b>	Displays LLDP status information.

**Platform** N/A

**Description**

## 12.20 lldp timer tx-delay

Use this command to set LLDP packet transmission delay. Use the **no** form of this command to restore the default setting.

**lldp timer tx-delay** *seconds*

**no lldp timer tx-delay**

Parameter	Parameter	Description
<b>Description</b>	<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 Examples** The following example sets LLDPDU transmission delay to 3 seconds.

```
Ruijie#config
Ruijie(config)#lldp timer tx-delay 3
```

Related Commands	Command	Description
	<b>show lldp status</b>	Displays LLDP status information.

**Platform Description** N/A

## 12.21 lldp timer tx-interval

Use this command to set the interval of sending the LLDP packets. Use **no** form of this command to restore the default setting.

**lldp timer tx-interval** *seconds*

**no lldp timer tx-interval**

Parameter	Parameter	Description
<b>Description</b>	<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

## 12.22 lldp tlv-enable

Use this command to configure the types of advertisable TLVs. Use the **no** form of this command to restore the default setting.

```
lldp tlv-enable { basic-tlv { all | port-description | system-capability | system-description |
system-name } | dot1-tlv { all | port-vlan-id | protocol-vlan-id [ vlan-id ] | vlan-name [ vlan-id ] } |
dot3-tlv { all | link-aggregation | mac-physic | max-frame-size | power } | med-tlv { all | capability
| inventory | location { civic-location | elin } identifier id | network-policy profile [ profile-num ] |
power-over-ethernet } }
```

```
no lldp tlv-enable { basic-tlv { all | port-description | system-capability | system-description |
system-name } | dot1-tlv { all | port-vlan-id | protocol-vlan-id | vlan-name } | dot3-tlv { all |
link-aggregation | mac-physic | max-frame-size | power } | med-tlv { all | capability | inventory |
location { civic-location | elin } identifier id | network-policy profile [ profile-num ] |
power-over-ethernet } }
```

Parameter Description	Parameter	Description
	<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** Interface configuration mode

**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**

Command	Description
<b>show lldp tlv-config interface</b>	Displays the attributes of advertisable TLVs

**Commands****Platform**

N/A

**Description**

## 12.23 show lldp local-information

Use this command to display the LLDP information of local device. The information will be encapsulated in the TLVs and sent to the neighbor device.

**show lldp local-information [ global | interface *interface-name* ]**

**Parameter**

Parameter	Description
<i>interface-name</i>	Interface name

**Description****Defaults**

N/A

**Command**

Privileged EXEC mode

**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** The following example displays the device information to be sent to neighbor device.

**Examples**

```
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**

## 12.24 show lldp location

Use this command to display the common LLDP address or emergency number of the local device.

**show lldp location** { **civic-location** | **elin** } { **identifier** *id* | **interface** *interface-name* | **static** }

Parameter	Parameter	Description
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** The following example displays all addresses.

**Examples**

```
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      : iiiiivviii
Ports     : Gi1/0/3
-----
```

Related Commands	Command	Description
	N/A	N/A

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

## 12.25 show lldp neighbors

Use this command to display the LLDP information about a neighboring device.

**show lldp neighbors [ interface *interface-name* ] [ detail ]**

Parameter Description	Parameter	Description
	<i>interface-name</i>	Interface name
	<b>detail</b>	All information about a neighboring device

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** If the **detail** parameter is not specified, the brief information about a neighboring device is displayed. If the **detail** parameter is specified, the detailed information about a neighboring device is displayed. If the **interface** parameter is specified, the neighboring device information received on the specified interface is displayed.

**Configuration Examples** The following example displays the neighboring device information received on all ports.

```
Ruijie# show lldp neighbors detail
Lldp neighbor-information of port [GigabitEthernet 0/1]
Neighbor index      : 1
Device type         : LLDP Device
Update time         : 1hour 53minutes 30seconds
Aging time          : 5seconds
```

```
Chassis ID type      : MAC address
Chassis id          : 00d0.f822.33cd
System name         : System name
System description   : System description
System capabilities supported : Repeater, Bridge, Router
System capabilities enabled : Repeater, Bridge, Router

Management address subtype : 802 mac address
Management address      : 00d0.f822.33cd
Interface numbering subtype :
Interface number        : 0
Object identifier       :

LLDP-MED capabilities :
Device class           :
HardwareRev            :
FirmwareRev            :
SoftwareRev            :
SerialNum              :
Manufacturer name      :
Asset tracking identifier :

Port ID type          : Interface name
Port id               : GigabitEthernet 0/1
Port description      :

802.1 organizationally information
Port VLAN ID         : 1
Port and protocol VLAN ID (PPVID) : 1
  PPVID Supported     : YES
  PPVID Enabled       : NO
VLAN name of VLAN 1  : VLAN0001
Protocol Identity     :
802.3 organizationally information
Auto-negotiation supported : YES
Auto-negotiation enabled  : YES
PMD auto-negotiation advertised : 100BASE-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: <ul style="list-style-type: none"> <li>● PSE</li> <li>● PD</li> </ul>
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**

## 12.26 show lldp network-policy profile

Use this command to display the information about an LLDP network policy.

```
show lldp network-policy { profile [ profile-num ] | interface interface-name }
```

Parameter	Parameter	Description
<b>Description</b>	<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 Description** N/A

## 12.27 show lldp statistics

The following example displays LLDP statistics.

**show lldp statistics** [ **global** | **interface** *interface-name* ]

Parameter Description	Parameter	Description
	<i>interface-name</i>	Interface name

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide**

- **global** parameter: display the global LLDP statistics.
- **interface** parameter: display the LLDP statistics of the specified interface.

**Configuration Examples** The following example displays all LLDP statistics.

```
Ruijie# show lldp statistics
lldp statistics global Information:
Neighbor information last changed time : 1hour 52minute 22second
The number of neighbor information inserted : 2
The number of neighbor information deleted : 0
The number of neighbor information dropped : 0
The number of neighbor information age out : 1
```

```
-----
Lldp statistics information of port [GigabitEthernet 0/1]
-----
```

```
The number of lldp frames transmitted : 26
The number of frames discarded      : 0
The number of error frames         : 0
The number of lldp frames received  : 12
The number of TLVs discarded       : 0
The number of TLVs unrecognized    : 0
The number of neighbor information aged out : 0
```

**show lldp statistics** command output description:

Field	Description
Neighbor information last change time	Time the neighbor information is latest updated
The number of neighbor information inserted	Number of times of adding neighbor information
The number of neighbor information deleted	Number of times of removing neighbor information
The number of neighbor information dropped	Number of times of dropping neighbor information
The number of neighbor information aged out	Number of the neighbor information entries that have aged out
The number of lldp frames transmitted	Total number of the LLDPDUs transmitted
The number of frames discarded	Total number of the LLDPDUs discarded
The number of error frames	Total number of the LLDP error frames received
The number of lldp frames received	Total number of the LLDPDUs received
The number of TLVs discarded	Total number of the LLDP TLVs dropped
The number of TLVs unrecognized	Total number of the LLDP TLVs that cannot be recognized
The number of neighbor information aged out	Number of the neighbor information entries that have aged out

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 12.28 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 Mode** Privileged EXEC mode

**Usage Guide** **interface** parameter: display the LLDP status information of the specified interface.

**Configuration Examples** The following example displays LLDP status information of all ports.

```
Ruijie# show lldp status
Global status of LLDP      : Enable
Neighbor information last changed time : 1hour 52minute 22second
Transmit interval         : 30s
Hold multiplier           : 4
Reinit delay              : 2s
Transmit delay            : 2s
Notification interval     : 5s
Fast start counts         : 3
-----
Port [GigabitEthernet 0/1]
-----
Port status of LLDP      : Enable
Port state                : UP
Port encapsulation       : Ethernet II
Operational mode         : RxAndTx
Notification enable      : NO
Error detect enable      : YES
Number of neighbors      : 1
Number of MED neighbors  : 0
```

**show lldp status** command output description:

Field	Description
Global status of LLDP	Whether LLDP is globally enabled
Neighbor information last changed time	Time the neighbor information is latest updated
Transmit interval	LLDPDU transmit interval
Hold multiplier	TTL multiplier
Reinit delay	Port re-initialization delay
Transmit delay	LLDPDU transmit delay
Notification interval	Interval for sending LLDP Traps

Fast start counts	The number of fast sent LLDPDUs
Port status of LLDP	Whether LLDP is enabled on the port
Port state	Link status of port: UP or DOWN
Port encapsulation	LLDPDU encapsulation format
Operational mode	Operating mode of LLDP
Notification enable	Whether LLDP Trap is enabled on the port
Error detect enable	Whether error detection is enabled on the port
Number of neighbors	Number of neighbors
Number of MED neighbors	Number of MED neighbors

Related Commands	Command	Description
	N/A	N/A

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

## 12.29 show lldp tlv-config

Use this command to display the advertisable TLV configuration of a port.

**show lldp tlv-config [ interface *interface-name* ]**

Parameter	Parameter	Description
<b>Description</b>	<i>interface-name</i>	Interface name

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** **Interface** parameter: display the LLDP TLV configuration of the specified interface.

**Configuration Examples** The following example displays TLV information of port 1.

### 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

## 13 QinQ Commands

### 13.1 dot1q new-outer-vlan *new-vid* translate old-outer-vlan *vid* inner-vlan

*v-list*

Use this command to modify the policy list of outer vid based on the inner Tag VID and outer Tag VID on the access, trunk, hybrid, uplink port. Use the **no** form of this command to restore the default setting.

**dot1q new-outer-vlan *new-vid* translate old-outer-vlan *vid* inner-vlan *v\_list***

**no dot1q new-outer-vlan *new-vid* translate old-outer-vlan *vid* inner-vlan *v\_list***

Parameter Description	Parameter	Description
	new-vid	Vid list of the
	vid	Vid of outer tag.
	<b>no</b>	Removes the setting.

**Defaults** The policy list is null by default.

**Command Mode** Interface configuration mode.

**Usage Guide** N/A.

**Configuration Examples** The following example modifies the vid to 3888 when the input packets inner tag vid.

```
Ruijie(config)# vlan 1888, 3888
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# dot1q new-outer-vlan 3888 translate old-outer-vlan 1888
inner-vlan 2001-3000
Ruijie(config-if)# end
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 13.2 dot1q outer-vid vid register inner-vid v-list

Use this command to configure the add policy list of outer vid based on protocol on tunnel port. Use the **no** or **default** form of this command to restore the default setting.

**dot1q outer-vid** *vid* **register inner-vid** *v\_list*

**no dot1q outer-vid** *vid* **register inner-vid** *v\_list*

Parameter Description	Parameter	Description
	<i>v_list</i>	Inner vlan id list
	<i>vid</i>	Outer vlan id list
	<b>no</b>	Removes the settings.

**Defaults** The policy list is null by default.

**Command** Interface configuration mode.

**Mode**

**Usage Guide** N/A

**Configuration** The following example specifies vid in the tag of input message as 4-22 and sets the vid to 3.

**Examples**

```
Ruijie#configure
Ruijie(config)#interface gigabitEthernet 0/1
Ruijie(config-if)#switchport mode dot1q-tunnel
Ruijie(config-if)#dot1q outer-vid 3 register inner-vid 4-22
Ruijie(config-if)#end
```

Related Commands	Command	Description
	<b>show registration-table</b> [ interface <i>intf-id</i> ]	N/A

**Platform** N/A

**Description**

## 13.3 dot1q relay-vid vid translate local-vid v-list

Use this command to configure the modify policy list of outer vid based on protocol on access, trunk, hybrid port. Use the **no** or **default** form of this command to restore the default setting.

**dot1q relay-vid** *vid* **translate local-vid** *v-list*

**no dot1q relay-vid** *vid* **translate local-vid** *v-list*

**default dot1q relay-vid** *vid* **translate local-vid** *v-list*

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

Description	
v_list	Outer vlan list of input message
vid	Modified outer vlan id list
no	Removes the settings.

**Defaults** The policy list is null by default.

**Command** Interface configuration mode.

**Mode**

**Usage Guide** N/A

**Configuration Examples** The following example specifies vid in the outer tag of input message as 10-20 and sets the vid to 100.

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport mode access
Ruijie(config-if)# dot1q relay-vid 100 translate local-vid 10-20
Ruijie(config-if)# end
```

Related Commands	Command	Description
	show translation-table [ interface <i>intf-id</i> ]	N/A

**Platform** N/A

**Description**

## 13.4 dot1q relay-vid vid translate inner-vid v-list

Use this command to configure the modify policy list of outer vid based on protocol on access, trunk, hybrid port. Use the **no** or **default** form of this command to restore the default setting.

**dot1q relay-vid** *vid* **translate inner-vid** *v-list*

**no dot1q relay-vid** *vid* **translate inner-vid** *v-list*

**default dot1q relay-vid** *vid* **translate inner-vid** *v-list*

Parameter Description	Parameter	Description
	v_list	Outer vlan list of input message
vid	Modified outer vlan id list	
no	Removes the settings.	

**Defaults** The policy list is null by default.

**Command** Interface configuration mode.



**Mode****Usage Guide** N/A**Configuration Examples** The following example configures vid in the outer tag of input message as 10-20 and sets the vid to 100.

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport mode access
Ruijie(config-if)# dot1q relay-vid 100 translate inner-vid 10-20
Ruijie(config-if)# end
```

**Related Commands**

Command	Description
show translation-table [ interface <i>intf-id</i> ]	N/A

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

## 13.5 dot1q-tunnel cos inner-cos-value remark-cos outer-cos-value

Use this command to map the priority from the outer tag to the inner tag for the packets on the interface. Use the **no** form of this command to restore the default setting.

**dot1q-tunnel cos inner-cos-value remark-cos outer-cos-value**

**no dot1q-tunnel cos inner-cos-value remark-cos outer-cos-value**

**default dot1q-Tunnel cos *inner-cos-value* remark-cos *outer-cos-value***

Parameter	Parameter	Description
<b>Description</b>	<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** Interface configuration mode.**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** N/A  
**Description**

### 13.6 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.
<b>no</b>	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 Examples** The following example sets the packet TPID compatible with the manufacturer TPID.

```
Ruijie(config)# interface g0/3
Ruijie(config-if)# frame-tag tpid 0x9100
Ruijie(config-if)# end
Ruijie# show frame-tag tpid
Port      tpid
-----  -
Gi0/3     0x9100
```

**Related Commands**

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

<b>show frame-tag tpid</b>	N/A
----------------------------	-----

**Platform** N/A

**Description**

## 13.7 inner-priority-trust enable

Use this command to copy the priority of the inner tag to the outer tag of the packets on the interface.

Use the **no** 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	Parameter	Description
<b>Description</b>	N/A	N/A

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

**Command** Interface configuration mode.

**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** N/A

**Description**

## 13.8 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 Examples** The following example enables the function of receiving L2 protocol gvrp and stp.

```
Ruijie#configure
Ruijie(config)# I2protocol-tunnel stp
Ruijie(config)# I2protocol-tunnel gvrp
Ruijie(config)#end
```

Related Commands	Command	Description
	<b>show I2protocol-tunnel { gvrp   stp }</b>	N/A

**Platform Description** N/A

## 13.9 I2protocol-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.

**I2protocol-tunnel { stp | gvrp } enable**

**no I2protocol-tunnel { stp | gvrp } enable**

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

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 Mode** Intereface configuration mode.

**Usage Guide** 1 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**

## 13.10 l2protocol-tunnel tunnel-dmac

Use this command to set the MAC address for the transparent transmission of the corresponding protocol messages. Use the **no** 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>	
<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>

**Platform Description** N/A

### 13.11 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
	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** Interface configuration mode.

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

## 13.12 show dot1q-tunnel

Use this command to display whether dot1q-tunnel of interface is enabled or not.

**show dot1q-tunnel [ interface *intf-id* ]****Parameter Description**

Parameter	Description
intf-id	The specified interface.

**Defaults** N/A**Command** Any mode**Mode****Usage Guide** N/A**Configuration Examples** 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**

## 13.13 show frame-tag tpid

Use this command to display the configuration of interface tpid.

**show frame-tag tpid** [**interface** <intf-id>]

**Parameter  
Description**

Parameter	Description
intf-id	Specifies the interface.

**Defaults** N/A

**Command  
Mode** 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**

## 13.14 show inner-priority-trust

Use this command to display whether the priority copy function is enabled.

**show inner-priority-trust**

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults** N/A



**Command** Any mode

**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**

## 13.15 show interface dot1q-tunnel

Use this command to display the VLAN configuration on the dot1q-tunnel port.

**show interface [ *intf-ld* ] dot1q-tunnel**

**Parameter  
Description**

Parameter	Description
intf-id	Specifies the interface.

**Defaults** N/A

**Command** Any mode

**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**

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

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

**Platform** N/A

**Description**

## 13.16 show interface mac-address-mapping

Use this command to display the MAC address mapping configuration.

**show interface mac-address-mapping**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	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 interface mac-address-mapping
Ports      Status    Index    Destination-VID Source-VID-list
-----
Gi0/1      active    2        3            2
```

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

**Platform** N/A

**Description**

## 13.17 show interface remark

Use this command to display the priority mapping configuration.

**show interface [ *intf-id* ] remark**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<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 Description** N/A

## 13.18 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 Description** N/A

## 13.19 show registration-table

Use this command to display vid add policy list of prorocol-based dot1q-tunnel port.

**show registration-table [ interface *intf-id* ]**

Parameter Description	Parameter	Description
	intf-id	

**Defaults** N/A

**Command Mode** Any mode

**Usage Guide** N/A

**Configuration** The following example displays vid add policy list of prorocol-based dot1q-tunnel port.

### Examples

```
Ruijie# show registration-table
Ports      Type      Outer-VID  Inner-VID-list
-----
Gi0/7      Add-outer  5          7-10,15,20-30
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 13.20 show traffic-redirect

Use this command to display flow-based vid change or add policy list.

**show traffic-redirect [ interface *intf-id* ]**

Parameter Description	Parameter	Description
	intf-id	Specifies the interface.

**Defaults** N/A

**Command Mode** Any mode

**Usage Guide** N/A

**Configuration** The following example displays flow-based vid change or add policy list.

**Examples**

```
Ruijie# show traffic-redirect
Ports          Type          VID  Match-filter
-----
Gi0/3          Mod-outer     23   11
Gi0/3          Mod-outer     3    4
Gi0/3          Mod-outer     6    5
Gi0/3          Mod-inner     8    inner-to-8
Gi0/6          Mod-inner     9    100
Gi0/7          Nested-vid    13   nest-13
```

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 13.21 show translation-table

Use this command to display vid modify policy list of prorocol-based access, trunk, hybrid port.

**show translation-table [ interface *intf-id* ]**

Parameter Description	Parameter	Description
	intf-id	Specifies the interface.

**Defaults** N/A

**Command Mode** Any mode

**Usage Guide** N/A

**Configuration** The following example displays vid modify policy list of protocol-based access, trunk, hybrid port.

**Examples**

```
Ruijie# show translation-table
Ports      Type      Relay-VID  Old-local  Local\inner-VID-list
-----
Gi0/7      Inner-CVID 8          N/A        10-20
Gi0/7      Local-SVID 1001       N/A        30-60
Gi0/7      In+Out    8          20         50
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 13.22 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.
<b>no</b>	Remove the settings.

**Defaults** The default is **untagged 1**.

**Command** Interface configuration mode.

**Mode**

**Usage Guide** N/A

**Configuration** The following example specifies vlan 3-6 of dot1q-tunnel port as allowed VLAN and outputting the frame with tag.

**Examples**

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

## 13.23 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 Examples** The following example specifies default VLAN of dot1q-tunnel port as 8.

```
Ruijie(config)#interface gigabitEthernet 0/1
Ruijie(config-if)#switchport dot1q-tunnel native vlan 8
Ruijie(config)#end
```

**Related  
Commands**

Command	Description
<b>show interface dot1q-tunnel</b>	N/A

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

## 13.24 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
	<b>no</b>	Deletes the corresponding dot1q-tunnel interface configuration.

**Defaults** The interface is not a tunnel port by default.

**Command** Interface configuration mode.

**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
	<b>show vlan</b>	N/A

**Platform** N/A

**Description**

## 13.25 traffic-redirect access-group *acl* inner-vlan *vid* out

Use this command to configure the modification policy of inner vid based on flow for the packets outputted from the access, trunk, hybrid port. Use the **no** or **default** form of this command to restore the default setting.

**traffic-redirect access-group *acl* inner-vlan *vid* out**

**no traffic-redirect access-group *acl* inner-vlan**

**default traffic-redirect access-group *acl* inner-vlan**

Parameter Description	Parameter	Description
	<i>acl</i>	Flow matching.



<i>vid</i>	Modified inner vid
<b>no</b>	Removes the settings.

**Defaults** By default, no policy is configured.

**Command** Interface configuration mode.

**Mode**

**Usage Guide** N/A

**Configuration Examples** The following example specifies the outer vid of outgoing messages whose source address is 1.1.1.2 as 6,

```
Ruijie#configure
Ruijie(config)#ip access-list standard to_6
Ruijie(config-std-nacl)#permit host 1.1.1.2
Ruijie(config-std-nacl)#exit
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# traffic-redirect access-group to_6 inner-vlan 6 out
Ruijie(config-if)# end
```

**Related Commands**

Command	Description
<b>show traffic-redirect</b>	N/A

**Platform** N/A

**Description**

## 13.26 traffic-redirect access-group acl nested-vlan *vid* in

Use this command to configure vid add policy list based on flow on dot1q-tunne port. Use the **no** or **default** form of this command to restore the default setting.

**traffic-redirect access-group *acl* nested-vlan *vid* in**

**no traffic-redirect access-group *acl* nested -vlan**

**default traffic-redirect access-group *acl* nested -vlan**

**Parameter Description**

Parameter	Description
<i>acl</i>	Flow matching.
<i>vid</i>	vid list to be added.
<b>no</b>	Removes the settings.

**Defaults** The policy list is null by default.

**Command** Interface configuration mode.

**Mode**

**Usage Guide** N/A

**Configuration** The following example specifies the vid of input message whose source address is 1.1.1.3 as 9.

**Examples**

```
Ruijie#configure
Ruijie(config)#ip access-list standard 20
Ruijie(config-std-nacl)#permit host 1.1.1.3
Ruijie(config-std-nacl)#exit
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport mode dot1q-tunnel
Ruijie(config-if)# traffic-redirect access-group 20 nested-vlan 10 in
Ruijie(config-if)# end
```

**Related  
Commands**

Command	Description
<b>show traffic-redirect</b>	N/A

**Platform** N/A

**Description**

## 13.27 traffic-redirect access-group acl outer-vlan vid in

Use this command to configure the modify policy list of outer vid based on flow on access, trunk, hybrid port. Use the **no** or **default** form of this command to restore the default setting.

**traffic-redirect access-group acl outer-vlan vid in**

**no traffic-redirect access-group acl outer-vlan**

**default traffic-redirect access-group acl outer-vlan**

**Parameter  
Description**

Parameter	Description
<i>acl</i>	Flow matching.
<i>vid</i>	Modified outer vid list
<b>no</b>	Removes the settings.

**Defaults** The policy list is null by default.

**Command** Interface configuration mode.

**Mode**

**Usage Guide** N/A

**Configuration** The following example specifies outer vid of input message whose source address is 1.1.1.1 as 3.

**Examples**

```
Ruijie# configure
Ruijie(config)#ip access-list standard 2
Ruijie(config-std-nacl)# permit host 1.1.1.1
Ruijie(config-std-nacl)# exit
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# traffic-redirect access-group 2 outer-vlan 3 in
Ruijie(config-if)# end
```

**Related  
Commands**

Command	Description
<b>show traffic-redirect</b>	N/A

**Platform  
Description** N/A

## 14 ERPS Commands

### 14.1 associate sub-ring

Use this command to associate the ethernet ring with its sub-rings.

**associate sub-ring raps-vlan** *vlan-list*

**no associate sub-ring raps-vlan** *vlan-list*

#### Parameter Description

Parameter	Description
<i>vlan-list</i>	Sub-rings' R-APS VLAN.

#### Defaults

By default, Ethernet ring is not associated with its sub-rings.

#### Command

ERPS configuration mode.

#### Mode

#### Usage Guide

1. You need to configure this command on all nodes of the Ethernet ring, so as to transmit its sub-ring's ERPS protocol packets in the Ethernet ring.
2. Configuring the association is mainly to make the sub-ring's protocol packets transmit in the Ethernet ring. Users can also adopt the configuration command provided by the VLAN module to configure elaborately the VLAN and the relation between ports and VLAN, so as to transmit the sub-ring's protocol packets in other Ethernet rings and not leak the packets to the user network.

#### Configuration

The following example associates the Ethernet sub-ring with other Ethernet rings:

#### Examples

```
#Enter the privileged EXEC mode
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.

# Configure the link mode of the Ethernet ring port and the default VLAN.
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# exit
Ruijie(config)# interface fastEthernet 0/2
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# exit

# Enter the erps configuration mode.
Ruijie(config)# erps raps-vlan 4093

#Add the ports that participate in the ERPS protocol computing to the Ethernet ring.
Ruijie(config-erps4093)# ring-port west fastEthernet 0/1 east fastEthernet
```

```

0/2

# Configure the Ethernet subring
Ruijie(config)# erps raps-vlan 100
Ruijie(config)# interface fastEthernet 0/3
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# exit
Ruijie(config)# erps raps-vlan 100
Ruijie(config-erps100)# ring-port west fastEthernet 0/3 east virtual-channel
Ruijie(config-if)# exit

# Associate the subring with other Ethernet rings.
Ruijie(config)# erps raps-vlan 4093
Ruijie(config-erps4093)# associate sub-ring raps-vlan 100

```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 14.2 erps enable

Use this command to enable/disable the ERPS function in the global configuration mode.

**erps enable****no erps enable****Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults**

Disabled

**Command  
Mode**

Global configuration mode.

**Usage Guide**

The ERPS protocol of the specified ring will begin running truly only after the global ERPS protocol and the ERPS protocol of the specified ring are both enabled.

**Configuration**

The following example enables the ERPS protocol globally:

**Examples**

```

# Enter the privileged EXEC mode
Ruijie# configure terminal

```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
# Enable the ERPS function globally.
Ruijie(config)# erps enable
```

```
# Enter the ERPS configuration mode
Ruijie(config)# erps raps-vlan 4093
```

```
# Enable the ERPS function for the specified ring.
Ruijie(config-erps4093)# state enable
```

**Related Commands**

Command	Description
<b>state enable</b>	After entering the ERPS configuration mode of the specified ring, configure this command to enable the ERPS protocol of this specified ring.

**Platform** N/A

**Description**

### 14.3 erps monitor link-state by oam

Use this command to configure the method of monitoring the ERPS link state.

**erps monitor link-state by oam vlan *vlan-id***

**no erps monitor link-state by oam**

**Parameter Description**

Parameter	Description
N/A	N/A

**Defaults** By default, it adopts the directly monitoring the link physical state (up or down) rather than the oam method.

**Command Mode** Global configuration mode.

**Usage Guide** For the link state monitoring, use the method of directly monitoring the link physical state (up or down), also monitor the logic state (unidirectional fault, bidirectional fault or normal) of the link by the OAM. By default, the former is adopted. If the OAM method is used, the inefficient link state monitoring may cause the convergence time longer when the topology changes.

**Configuration Examples** The following example configures the method of monitoring the link state.

```
# Enter the privileged EXEC mode.
Ruijie# configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.

# Configure the method of monitoring the link state.
Ruijie(config)# erps monitor link-state by oam vlan 100
```

**Related Commands**

Command	Description
N/A	N/A

**Platform**

N/A

**Description**

## 14.4 erps raps-vlan

Use this command to configure the R-APS VLAN of Ethernet ring.

**erps raps-vlan** *vlan-id*

**no erps raps-vlan** *vlan-id*

**Parameter Description**

Parameter	Description
<i>vlan-id</i>	R-APS VLAN ID

**Defaults**

No R-APS VLAN is configured.

**Command Mode**

Global configuration mode.

**Usage Guide**

The R-APS VLAN must be the VLAN that is not used on the device. Cannot set the VLAN1 to the R-APS VLAN.

The same Ethernet ring of different devices needs the same R-APS VLAN.

If you want to transparently transmit the ERPS protocol packets on a device without the ERPS function configured, make sure that only the two ports connected to the Ethernet ring on this device allow the R-APSA VLAN packets corresponding to this ERPS ring passing through. Otherwise, the other VLAN packets may enter the R-APS VLAN through the transparent transmission, causing the shock to the ERPS ring.

**Configuration Examples**

```
# Enter the privileged EXEC mode.
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.

#Configure the R-APS VLAN globally.
Ruijie(config)# erps raps-vlan 4093
```

Related Commands	Command	Description
		N/A

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

## 14.5 protected-instance

Use this command to configure the VLAN protected by the Ethernet ring to implement the load balance function.

**protected-instance** *instance-id-list*

**no protected-instance**

Parameter Description	Parameter	Description
		<i>instance-id-list</i>

**Defaults** By default, all VLANs are protected.

**Command Mode** ERPS configuration mode.

**Usage Guide** The protected VLAN consists of the R-APS VLAN of this Ethernet ring and the data VLAN protected by this Ethernet ring.

**Configuration Examples** Suppose that the ERP1 and ERP2 are configured on the switch to implement the load balance. The R-APS VLAN of the ERPS1 is 100, the protected data VLAN is in the range of 1 to 99 and 101-2000, the R-APS VLAN of the ERPS2 is 4093, and the protected data VLAN is in the range of 2001 to 4092 and 4094. Configuration for the load balance is shown as below:

```
# Enter the privileged EXEC mode.
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
```

```
# Configure the VLAN configured by the ERP1.
Ruijie(config)# spanning-tree mst configuration
Ruijie(config-mst)# instance 1 vlan 100, 1-99, 101-2000
Ruijie(config-mst)# exit
Ruijie(config)# erps raps-vlan 100
Ruijie(config-erps100)#protected-instance 1
```

```
# Configure the VLAN configured by the ERP2.
Ruijie(config)# spanning-tree mst configuration
```



```
Ruijie(config-mst)# instance 2 vlan 4093, 2001-4092, 4094
Ruijie(config-mst)# exit
Ruijie(config)# erps raps-vlan 4093
Ruijie(config-erps4093)#protected-instance 2
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform**

N/A

**Description**

## 14.6 ring-port

Use this command to configure the ERPS ring.

**ring-port west** { *interface-name1* | **virtual-channel** } **east** { *interface-name2* | **virtual-channel** }  
**no ring-port**

**Parameter  
Description**

Parameter	Description
<i>interface-name1</i>	Name of the West port.
<i>interface-name2</i>	Name of the East port.

**Defaults**

No ERPS ring is configured.

**Command  
Mode**

ERPS configuration mode.

**Usage Guide**

- 1) After adding the port to the ERP ring, the trunk attribute of the port is not allowed to be modified any more.
- 2) If the ring port is configured on the virtual-channel, this ring will be considered as a sub-ring.
- 3) Ports running the ERPS do not participate in the STP computing. ERPS, RERP and REUP do not share the port.

**Configuration** The following example is for the ERPS ring.

**Examples**

```
# Enter the privileged EXEC mode.
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
```

```
# Configure the link mode of the Ethernet ring port and the default VLAN.
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# exit
Ruijie(config)# interface fastEthernet 0/2
```

```
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# exit
```

```
# Enter the ERPS configuration mode.
Ruijie(config)# erps raps-vlan 4093
```

```
#Add the ports that participate in the ERPS protocol computing to the Ethernet ring.
Ruijie(config-erps4093)# ring-port west fastEthernet 0/1 east fastEthernet
0/2
```

#### Related Commands

Command	Description
<b>state enable</b>	Enable the ERPS protocol of the specified ring in the ERPS mode of the specified ring.
<b>sub-ring associate raps-vlan <i>vlan-id</i></b>	Establish the association between the subring and other Ethernet rings in the subring ERPS configuration mode.

**Platform** N/A

#### Description

## 14.7 rpl-port

Use this command to configure the RPL port and RPL owner.

```
rpl-port { west | east } [ rpl-owner ]
no rpl-port
```

#### Parameter Description

Parameter	Description
N/A	N/A

**Defaults** No RPL port and RPL owner are configured.

**Command** EPRS configuration mode.

#### Mode

**Usage Guide** Up to one RPL link and one RPL owner node are needed and configurable for each ring.

**Configuration** The following example configures the RPL port and RPL owner.

#### Examples

```
# Enter the privileged EXEC mode.
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
```

```
# Configure the link mode of the Ethernet ring port and the default VLAN.
```

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# exit
Ruijie(config)# interface fastEthernet 0/2
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# exit
```

```
# Enter the ERPS configuration mode.
Ruijie(config)# erps raps-vlan 4093
```

```
# Add the ports that participate in the ERPS protocol computing to the Ethernet ring.
Ruijie(config-erps4093)# ring-port west fastEthernet 0/1 east fastEthernet
0/2
```

```
# Specify the port where the RPL link is and the RPL owner.
Ruijie(config-erps4093)# rpl-port west rpl-owner
```

#### Related Commands

Command	Description
<b>ring-port west</b> { <i>interface-name1</i>   <b>virtual-channel</b> } <b>east</b> { <i>interface-name2</i>   <b>virtual-channel</b> }	Configure the specified ERP ring in the ERPS configuration mode of the specified ring.
<b>state enable</b>	Enable the ERPS protocol of the specified ring in the ERPS configuration mode of the specified ring.

**Platform** N/A

**Description**

## 14.8 show erps

Use this command to show the parameters and states of the ERPS.

```
show erps [ { global | raps-vlan vlan-id [ sub-ring ] } ]
```

#### 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 the use of this command.

**Examples**

```
Ruijie# show erps
ERPS Information
Global Status           : Enabled
Link monitored by      : Not Oam
-----
R-APS VLAN             : 4092
Ring Status            : Enabled
West Port              : Gi 0/5 (Blocking)
East Port              : Gi 0/7 (Forwarding)
RPL Port               : West Port
RPL Port Blocked VLAN : All
RPL Owner              : Enabled
Holdoff Time           : 0 milliseconds
Guard Time             : 500 milliseconds
WTR Time               : 5 minutes
Current Ring State     : Idle
-----
R-APS VLAN             : 4093
Ring Status            : Enabled
West Port              : Virtual Channel
East Port              : Gi 0/10 (Forwarding)
RPL Port               : None
RPL Port Blocked VLAN : All
RPL Owner              : Disabled
Holdoff Time           : 0 milliseconds
Guard Time             : 500 milliseconds
WTR Time               : 5 minutes
Current Ring State     : Idle
-----
R-APS VLAN             : 4094
Ring Status            : Enabled
West Port              : Virtual Channel
East Port              : 12 (Forwarding)
RPL Port               : None
RPL Port Blocked VLAN : All
RPL Owner              : Disabled
Holdoff Time           : 0 milliseconds
Guard Time             : 500 milliseconds
WTR Time               : 5 minutes
Current Ring State     : Idle

Ruijie# show erps raps_vlan 4093 sub-ring
```

```

R-APS VLAN: 4093
Sub-Ring R-APS VLANs      TC Propagation State
-----
100                        Enable
200                        Enable

```

**Related Commands**

Command	Description
N/A	N/A

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

## 14.9 state enable

Use this command to enable/disable the specified R-APS ring.

**state enable**

**no state enable**

**Parameter Description**

Parameter	Description
N/A	N/A

**Defaults** Disabled

**Command Mode** EPRS configuration mode.

**Usage Guide** Only after the global ERPS protocol and the ERPS protocol of the specified ring are both enabled, the ERPS protocol of the specified ring will begin truly running.

**Configuration Examples** The following example enables the specified ERPS ring:

```

#Enter the privileged EXEC mode.
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.

#Configure the link mode of the Ethernet ring port and the default VLAN.
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# exit
Ruijie(config)# interface fastEthernet 0/2
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# exit

```

```
# Enter the ERPS configuration mode.
Ruijie(config)# erps raps-vlan 4093

# Add the ports that participate in the ERPS protocol computing to the Ethernet ring.
Ruijie(config-erps4093)# ring-port west fastEthernet 0/1 east fastEthernet
0/2

# Enable the ERPS function for the specified ring.
Ruijie(config-erps4093)#state enable

# Enable the global ERPS function.
Ruijie(config-erps4093)# exit
Ruijie(config)# erps enable
```

#### Related Commands

Command	Description
<b>erps enable</b>	Enable the global ERPS protocol.

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

## 14.10 sub-ring tc-propagation

Use this command to specify the devices corresponding to the crossing node on the crossing ring whether to send out the notification when the subring topology changes.

**sub-ring tc\_propagation enable**  
**no sub-ring tc\_propagation**

#### Parameter Description

Parameter	Description
N/A	N/A

**Defaults** By default, the topology changing notification is not sent.

**Command  
Mode** EPRS configuration mode.

**Usage Guide** This command is just needed to be configured on the crossing nodes on the crossing ring.

**Configuration** The following example is configured when the subring topology changes.

#### Examples

```
# Enter the privileged EXEC mode.
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
```

```

#Configure the link mode of the Ethernet ring port and the default VLAN.
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# exit
Ruijie(config)# interface fastEthernet 0/2
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# exit

# Enter the ERPS configuration mode.
Ruijie(config)# erps raps-vlan 4093

# Add the ports that participate in the ERPS protocol computing to the Ethernet ring.
Ruijie(config-erps4093)# ring-port west fastEthernet 0/1 east fastEthernet
0/2

#Configure the Ethernet subring.
Ruijie(config)# erps raps-vlan 100
Ruijie(config)# interface fastEthernet 0/3
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# exit
Ruijie(config)# erps raps-vlan 100
Ruijie(config-erps100)# ring-port west fastEthernet 0/3 east virtual-channel

# Associate the subring with other Ethernet rings.
Ruijie(config-erps100)# sub-ring associate raps-vlan 4093

# Enable the topology changing notification for the subring.
Ruijie(config-erps100)# sub-ring tc-propagation enable

```

#### Related Commands

Command	Description
N/A	N/A

#### Platform Description

N/A

## 14.11 timer

Use this command to configure the timer of the ERPS protocol.

```

timer { holdoff-time interval1 | guard-time interval2 | wtr-time interval3 }
no timer { holdoff-time | guard-time | wtr-time }

```

#### Parameter Description

Parameter	Description

interval1	Value of the Holdoff timer in 100 milliseconds, the valid range is 0 to 100.
Interval2	Value of the Guard timer in 10 milliseconds, the valid range is 1 to 200.
Interval3	Value of the WTR in minute, the valid range is 5 to 12.

**Defaults** Holdoff timer: 0.  
Guard timer: 500 milliseconds.  
WTP timer: 5 seconds.

**Command Mode** EPRS configuration mode.

**Usage Guide** **Holdoff timer:** This timer is used to avoid the ERPS from topology switching continuously due to the link intermittent fault. With this timer configured, if the link fault is detected, the ERPS does not perform the topology switching immediately until the timer times out and the link fault is verified.  
**Guard timer:** This timer is used to prevent the device receiving the timed-out R-APS messages. When the device detects the recovery from failure of the link, it sends out the message of link recovery and starts up the Guard timer. Before the Guard times out, except for the flush packets indicating the subring topology change, other packets are discarded directly without being handled.  
**WTR (Wait-to-restore) timer:** This timer is only valid for the RPL owner device. It is mainly used to prevent the RPL owner making the erroneous judgment to the ring network status. When the RPL detects the fault recovery, it does not perform the topology switching immediately until the WTR times out and the Ethernet ring indeed recovers from the fault. If the ring network fault is checked again before the WTR times out, then the WTR timer will be canceled and topology switching will be not executed any longer.

**Configuration Examples** The following example configures the timer of the ERPS protocol.

```
# Enter the privileged EXEC mode.
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
# Enter the ERPS configuration mode.
Ruijie(config)# erps raps-vlan 4093

# Configure the protocol timer.
Ruijie(config-erps4093)# timer holdoff-time 10
Ruijie(config-erps4093)# timer guard-time 10
Ruijie(config-erps4093)# timer wtr-time 10
```

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A



**Description**



## 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. Tunnel Commands
10. Network Connectivity Test Tool Commands
11. TCP Commands
12. 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. 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
```

### 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	Parameter	Description
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 he 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 Description** N/A

### 1.4 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	Parameter	Description
<b>Description</b>	<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)# ip directed-broadcast
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 1.5 ip icmp error-interval

Use this command to set the rate to send the ICMP destination unreachable packets triggered by DF in the IP header. Use the **no** form of this command to restore the default setting.

```
ip icmp error-interval DF milliseconds [ bucket-size ]
no ip icmp error-interval DF milliseconds [ bucket-size ]
```

Use this command to set the rate to send other ICMP error packets. Use the **no** form of this command to restore the default setting.

```
ip icmp error-interval milliseconds [bucket-size]
no ip icmp error-interval milliseconds [ bucket-siz ]
```

Parameter	Parameter	Description
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**

## 1.6 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 is 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 iexample sets the IP MTU value of the fastEthernet 0/1 interface to 512 bytes.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip mtu 512
```

Related Commands	Command	Description
	<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** The following example disables ICMP redirection for the fastEthernet 0/1 interface.

**Examples**

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# no ip redirects
```

Related Commands	Command	Description
	N/A	N/A

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

## 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	Parameter	Description
<b>Description</b>	<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	Command	Description
<b>Commands</b>	N/A	N/A

**Platform** N/A

**Description**

## 1.11 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
<b>Description</b>	<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 Description** N/A

## 1.12 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** Interface configuration mode.

**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** N/A

**Description**

### 1.13 show ip interface

Use this command to display the IP status information of an interface.

**show ip interface** [ *interface-type interface-number* | **brief** ]

Parameter	Parameter	Description
<b>Description</b>	<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** Privileged EXEC mode.

**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** The following example displays the output of the **show ip interface brief** command.

**Examples**

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

## 1.14 show ip packet queue

Use this command to display the statistics of IP packet queues.

**show ip packet queue**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode.

**Usage Guide** N/A.

**Configuration** 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 ebuf: 0
  Dropped by EFMP: 0
  NoRoutes: 887
  Get vrf fails: 0
  Cannot assigned address drops: 0
  Failed to encapsulate ethernet head: 0
    
```



ICMP error queue: length 0, max 1542, overflow 0.

Field	Description
IP packet receive queue	Statistics of received packets
Discards	Statistics of discarded packets
Sent packets	Statistics of sent packets
ICMP error queue	Statistics of ICMP error packets

Related Commands	Command	Description
	N/A	N/A

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

## 1.15 show ip packet statistics

Use this command to display the statistics of IP packets.

**show ip packet statistics** [ **total** | *interface-name* ]

Parameter	Parameter	Description
<b>Description</b>	<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** The following example displays the output of this command.

### Examples

```
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**

### 1.16 show ip raw-socket

Use this command to display IPv4 raw sockets.

**show ip raw-socket [ num ]**

**Parameter  
Description**

Parameter	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 Commands	Command	Description
	N/A	N/A

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

## 1.17 show ip sockets

Use this command to display all IPv4 sockets.

**show ip sockets**

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

**Defaults** N/A.

**Command Mode** Privileged EXEC mode.

**Usage Guide** N/A.

**Configuration Examples** The following displays all IPv4 sockets.

```
Ruijie# show ip sockets
Number Process name      Type      Protocol LocalIP:Port  ForeignIP:Port
State
1      dhcp.elf              RAW       ICMP        0.0.0.0:1     0.0.0.0:0
*
2      vrrp.elf              RAW       ICMP        0.0.0.0:1     0.0.0.0:0
*
3      igmp.elf              RAW       IGMP        0.0.0.0:2     0.0.0.0:0
*
4      vrrp.elf              RAW       VRRP        0.0.0.0:112   0.0.0.0:0
*
5      dhcpc.elf            DGRAM    UDP         0.0.0.0:68    0.0.0.0:0
*
6      rg-snmpd             DGRAM    UDP         0.0.0.0:161   0.0.0.0:0
*
7      wbav2                DGRAM    UDP         0.0.0.0:2000  0.0.0.0:0
*
8      vrrp_plus.elf        DGRAM    UDP         0.0.0.0:3333  0.0.0.0:0
*
9      mpls.elf             DGRAM    UDP         0.0.0.0:3503  0.0.0.0:0
```

```

*
10      rds_other_th      DGRAM      UDP        0.0.0.0:3799  0.0.0.0:0
*
11      rg-snmpd         DGRAM      UDP        0.0.0.0:14800 0.0.0.0:0
*
12      rg-sshd          STREAM     TCP        0.0.0.0:22     0.0.0.0:0
LISTEN
13      rg-telnetd       STREAM     TCP        0.0.0.0:23     0.0.0.0:0
LISTEN
14      wbard            STREAM     TCP        0.0.0.0:4389   0.0.0.0:0
LISTEN
15      wbard            STREAM     TCP        0.0.0.0:7165   0.0.0.0:0
LISTEN
Total: 15
    
```

Field Description

Field	Description
Number	Serial number.
Process name	Process name.
Type	Socket type, including the following types: RAW: raw sockets DGRAM: datagram type STREAM: stream type.
Protocol	Protocol.
LocalIP:Port	Local IP address and port.
ForeignIP:Port	Peer IP address and port.
State	State. This field is for only TCP sockets.
Total	The total number of sockets.

Related  
Commands

Command	Description
N/A	N/A

Platform  
Description

N/A

## 1.18 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	Parameter	Description
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** Global configuration mode.

**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** The following example sets an ARP static mapping record for a host in the Ethernet.

**Examples**

```
Ruijie(config)# arp 1.1.1.1 4e54.3800.0002 arpa
```

Related	Command	Description
Commands	clear arp-cache	Clears the ARP cache table

**Platform** N/A

**Description**

### 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	Parameter	Description
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** [ *mgmt.-name* ] *ip-address mac-address type*

**no arp oob** [ *mgmt.-name* ] *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> .
	<i>mgmt.-name</i>	Specifies the ARP-mapping management interface when there are multiple management interfaces.

**Defaults** No static ARP is configured by default.

**Command Mode** Global configuration mode

**Usage Guide** RGOS uses the ARP cache table to search for the 48-bit MAC address according to the 32-bit IP address.  
 Most hosts support dynamic ARP analysis, so static ARP mapping does not need to be configured. The clear arp-cache oob command is used to clear the ARP mapping learned by the management port dynamically.  
 If no management interface is specified, the static ARP is configured on the first management interface by default. If you specify the first management interface, the *mgmt-name* parameter is not displayed by running the **show run** command.

**Configuration Examples** The following example configures a static ARP mapping record for the Ethernet host

```
Ruijie(config)# arp oob 1.1.1.1 4e54.3800.0002 arpa
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 2.6 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** The following example sets the retry interval of the ARP request as 30 seconds.

**Examples** Ruijie(config)# arp retry interval 30

Related	Command	Description
<b>Commands</b>	<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	Parameter	Description
<b>Description</b>	<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** Global configuration mode.

**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** The following example sets the local ARP request not to be retried.

**Examples** 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	Command	Description
<b>Commands</b>	<b>arp retry interval</b>	Interval for retransmitting an ARP request message

**Platform** N/A

**Description**

## 2.8 arp suppress-auth-vlan-req

Use this command to disable the SVI interface from sending the ARP request to the authentication VLAN. Use the **no** form of this command to disable this function.

**arp suppress-auth-vlan-req**

**no arp suppress-auth-vlan-req**

Parameter	Parameter	Description
Description	N/A	N/A

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

**Command Mode** Interface configuration mode

**Usage Guide** In gateway authentication mode, all sub-VLANs of SuperVLAN are authentication VLANs by default. Users on authentication VLANs should pass the authentication before accessing the network. Static ARP table entries are generated on the device after users pass authentication. The device does not need to send ARP requests to the authentication VLAN when accessing these users. If the device accesses users on the authentication-exemption VLAN, it only needs to send ARP requests to the authentication-exemption VLAN.

In gateway authentication mode, the device enables suppression of ARP request sent to the authentication VLAN by default. If the device needs to access authentication-exemption users on the authentication VLAN, this function should be disabled.

**Configuration Examples** The following example disables VLAN 2 from sending the ARP request to the authentication VLAN.

```
Ruijie(config)# interface vlan 2
Ruijie(config-if-VLAN 2)# arp suppress-auth-vlan-req
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 2.9 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
<b>Description</b>	<i>secondsv</i>	The timeout is in the range from 0 to 2147483 in the unit of seconds.
<b>Defaults</b>	The default is 3600.	
<b>Command Mode</b>	Interface configuration mode	
<b>Usage Guide</b>	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.	
<b>Configuration Examples</b>	The following example sets the timeout for the dynamic ARP mapping record that is learned dynamically from FastEthernet port 0/1 to 120 seconds.	
	<pre>Ruijie(config)# interface fastEthernet 0/1 Ruijie(config-if-GigabitEthernet 0/1)# arp timeout 120</pre>	

## 2.10 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
<b>Description</b>	<i>number</i>	Maximum number of trusted ARP entries.
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Global configuration mode.	
<b>Usage Guide</b>	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.	
<b>Configuration Examples</b>	The following example sets 1000 trusted ARPs.	
	<pre>Ruijie(config)# arp trusted 1000</pre>	
<b>Related</b>	<b>Command</b>	<b>Description</b>

<b>Commands</b>	<b>service trustedarp</b>	Enables the trusted ARP function.
-----------------	---------------------------	-----------------------------------

**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
<b>Description</b>	N/A	N/A

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

**Command Mode** Global configuration 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 Examples** N/A

Related Commands	Command	Description
	<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**

Parameter	Parameter	Description
<b>Description</b>	<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 trust-monitor enable

Use this command to enable egress gateway trusted ARP. Use the **no** form of this command to restore the default setting.

**arp trust-monitor enable**

**no arp trust-monitor enable**

Parameter Description	Parameter	Description
	N/A	N/A

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

**Command Mode** Interface configuration mode

**Usage Guide** The egress gateway trusted ARP is different from GSN trusted ARP. With this function enabled, the device sends a unicast request for confirmation when learning an ARP table entry. The device learns the ARP table entry after receiving the response. When the device receives the ARP packet, only if the ARP table entry is aged or incomplete and the ARP packet is a response packet will the packet be handled. After egress gateway trusted ARP is enabled, the aging time of the ARP table entry turns to 60 seconds. After this function is disabled, the aging time restores to 3600 seconds.

**Configuration Examples** The following example enables egress gateway trusted ARP.

```
Ruijie(config)# interface gi 0/0
Ruijie(config-if-GigabitEthernet 0/0)# arp trust-monitor enable
```

The following example disables engress gateway trusted ARP.

```
Ruijie(config)# interface gi 0/0
Ruijie(config-if-GigabitEthernet 0/0)# no arp trust-monitor enable
```

Related	Command	Description
Commands	N/A	N/A

Platform N/A

Description

## 2.14 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	Parameter	Description
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	Command	Description
Commands	N/A	N/A

Platform N/A

Description

## 2.15 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* ]

Parameter	Parameter	Description
<b>Description</b>	<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.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** This command can be used to refresh an ARP cache table.

On a NFPP-based (Network Foundation Protection Policy) device, it receives one ARP packet for every mac/ip address per second by default. If the interval of two **clear arp** times is within 1s, the second response packet will be filtered and the ARP packet will not be resolved for a short time.

**Configuration Examples** The following example deletes all dynamic ARP mapping records.

```
Ruijie# clear arp-cache
```

The following deletes the dynamic ARP entry 1.1.1.1.

```
Ruijie# clear arp-cache 1.1.1.1
```

The following example deletes the dynamic ARP entry on interface SVI1.

```
Ruijie# clear arp-cache interface Vlan 1
```

Related Commands	Command	Description
	<b>arp</b>	Adds a static mapping record to the ARP cache table.

**Platform Description** N/A

## 2.16 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** N/A

**Description**

## 2.17 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** The following example enables ARP on FastEthernet port 0/1.

**Examples**

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip proxy-arp
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description** N/A

## 2.18 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** The following example enables local proxy ARP on VLAN1.

**Examples**

```
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**

## 2.19 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	Parameter	Description
<b>Description</b>	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**

## 2.20 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**

## 2.21 show arp counter

Use this command to display the number of ARP entries in the ARP cache table.

**show arp counter**

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 output result of the **show arp counter** command:

```
Ruijie#sho arp counter
ARP Limit:                75000
Count of static entries:  0
Count of dynamic entries: 1 (complete: 1 incomplete: 0)
Total:                    1
```

The meaning of each field in the ARP cache table is described in the following Table.

Parameter	Description
overlay	Indicates the number of VxLAN-related ARP entries.
underlayer	Indicates the number of VxLAN-irrelated ARP entries.

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 2.22 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** ] | **subvlan** { *subvlan-number* | **min-max** *min\_value* *max\_value* ]

**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.
<i>static</i>	Displays all the static ARP entries.
<i>completev</i>	Displays all the resolved dynamic ARP entries.
<i>incomplete</i>	Displays all the unresolved dynamic ARP entries.
<b>subvlan</b>	Displays the ARP entries of the specified subvlan
<i>subvlan-number</i>	Subvlan ID
<b>min-max</b>	Displays the minimum and maximum subvlan ID
<i>min_value</i>	Minimum subvlan ID
<i>max_value</i> ]	Maximum subvlan ID.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** Use this command to display the ARP details, such as the ARP type (Dynamic, Static, Local, Trust), the information on the layer2 port.  
If you enter a *min\_value* greater than *max\_value*, no error message is prompted. Instead, ARP entries corresponding to the subvlan are displayed.

**Configuration Examples** The following example displays the output result of the **show arp detail** command:

```
Ruijie# show arp detail
IP Address      MAC Address      Type      Age(min)  Interface  Port
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
SubVLAN	SubVLAN corresponding to the ARP entries
InnerVLAN	InnerVLAN or CE-VLAN corresponding to the ARP entries
Subvni	Vni corresponding to the ARP entries, namely ID of the VxLAN.
Location	Local: ARP entries are generated or learned on the local device. Remote: ARP entries are synced from a remote gateway.

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 Description	Parameter	Description
	<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 Examples** The following example displays the outcome of the running the show arp oob command.

```
Ruijie# show arp oob
Total Numbers of Arp: 7
Protocol  Address          Age (min)  Hardware          Type  Interface
Internet  192.168.195.68    0          0013.20a5.7a5f   arpa  mgmt 0
Internet  192.168.195.67    0          001a.a0b5.378d   arpa  mgmt 0
Internet  192.168.195.65    0          0018.8b7b.713e   arpa  mgmt 0
Internet  192.168.195.64    0          0018.8b7b.9106   arpa  mgmt 0
Internet  192.168.195.63    0          001a.a0b5.3990   arpa  mgmt 0
Internet  192.168.195.62    0          001a.a0b5.0b25   arpa  mgmt 0
Internet  192.168.195.5     --         00d0.f822.33b1   arpa  mgmt 0
```

The following example displays the outcome of running the **show arp oob 192.168.195.68** command.

```
Ruijie# show arp oob 192.168.195.68
Protocol  Address          Age (min)  Hardware          Type  Interface
Internet  192.168.195.68    1          0013.20a5.7a5f   arpa  mgmt 0
```

The following example displays the outcome of running the **show arp oob 192.168.195.0 255.255.255.0**.

```
Ruijie# show arp 192.168.195.0 255.255.255.0
Protocol  Address          Age (min)  Hardware          Type  Interface
Internet  192.168.195.64    0          0018.8b7b.9106   arpa  mgmt 0
Internet  192.168.195.2     1          00d0.f8ff.f00e   arpa  mgmt 0
Internet  192.168.195.5     --         00d0.f822.33b1   arpa  mgmt 0
Internet  192.168.195.1     0          00d0.f8a6.5af7   arpa  mgmt 0
Internet  192.168.195.51    1          0018.8b82.8691   arpa  mgmt 0
```

The following example displays the outcome of running the **show arp oob 001a.a0b5.378d** command.

```
Ruijie# show arp 001a.a0b5.378d
Protocol  Address          Age (min)  Hardware          Type  Interface
Internet  192.168.195.67    4          001a.a0b5.378d   arpa  mgmt 0
```

Field	Description
-------	-------------

Protocol	Only "Internet" is available at present, which indicates the IP protocol.
Address	The IPv4 address.
Age(min)	The age of the table entry. For the local IP address, the field is displayed as '-'. For the static table entry, the field is displayed as <static>. For the dynamic table entry, the field indicates the time for which the table entry has been learned, in the unit of minutes.
Hardware	48-bit MAC address, written as a dotted triple of four-digit hexadecimal numbers.
Type	Only "arpa" is available at present.
Interface	The L3 interface corresponding to the ARP table entry. The field is NULL for static ARP table entries for the IP address of the static ARP is not within any network segment directly connected with the device.

Related Commands	Command	Description
	N/A	N/A

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

## 2.24 show arp packet statistics

Use this command to display the statistics of ARP packets.

**show arp packet statistics** [ *interface-name* ]

Parameter	Parameter	Description
<b>Description</b>	<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 Requests Replies Others Requests Replies
-----
VLAN 1 10 20 1 50 10
```

```
VLAN 2 5 8 0 10 10
VLAN 3 20 5 0 15 12
VLAN 4 5 8 0 10 10
VLAN 5 20 5 0 15 12
VLAN 6 20 5 0 15 12
VLAN 7 20 5 0 15 12
VLAN 8 5 8 0 10 10
VLAN 9 20 5 0 15 12
VLAN 10 20 5 0 15 12
VLAN 11 20 5 0 15 12
VLAN 12 20 5 0 15 12
```

Description of fields:

Field	description
Received Requests	Number of received ARP requests
Received Replies	Number of received ARP response messages
Received Others	Number of other received ARP packets
Sent Requests	Number of sent ARP requests
Sent Replies	Number of sent ARP requests

**Related  
Commands**

Command	Description
N/A.	N/A.

**Platform  
Description**

N/A

## 2.25 show arp timeout

Use this command to display the aging time of a dynamic ARP entry on the interface.

**show arp timeout**

**Parameter  
Description**

Parameter	Description
N/A.	N/A.

**Defaults**

N/A.

**Command  
Mode**

Privileged EXEC mode

**Usage Guide**

N/A.

**Configuration** 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 Commands	Command	Description
	N/A.	N/A.

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

## 2.26 show ip arp

Use this command to display the Address Resolution Protocol (ARP) cache table.

**show ip arp**

Parameter	Parameter	Description
<b>Description</b>	N/A.	N/A.

**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.

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

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

## 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** The following example clears the dynamic IPv6 neighbors.

**Examples** 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
<b>Description</b>	<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>	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.
	<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** Interface configuration mode

**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	Parameter	Description
<b>Description</b>	<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 <b>default</b> 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.
-----------------	--	---

**Platform** N/A

**Description**

### 3.4 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	Parameter	Description
<b>Description</b>	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**

### 3.5 Ipv6 gateway

Use this command to configure the default gateway IPv6 address on the management port.

**ipv6 gateway ipv6-address**

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

<b>Description</b>	<i>ipv6-address</i>	Configures the default gateway IPv6 address.				
<b>Defaults</b>	N/A					
<b>Command Mode</b>	Interface configuration mode					
<b>Usage Guide</b>	The management port is MGMT in type and 0 in ID.					
<b>Configuration Examples</b>	The following example configures the default gateway IPv6 address on the management port.					
<b>Examples</b>	<pre>Ruijie(config)# interface mgmt 0 Ruijie(config-int)# ipv6 gateway 2001:1::1 Ruijie(config-int)# exit Ruijie(config)#</pre>					
<b>Related Commands</b>	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>	Command	Description	N/A	N/A	
Command	Description					
N/A	N/A					
<b>Platform Description</b>	N/A					

### 3.6 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*

<b>Parameter Description</b>	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><i>prefix-name</i></td> <td>The general prefix name.</td> </tr> <tr> <td><i>pv6-prefix</i></td> <td>The network prefix value of the general-prefix following the format defined in RFC4291.</td> </tr> <tr> <td><i>prefix-length</i></td> <td>The length of the general prefix.</td> </tr> </tbody> </table>	Parameter	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.
Parameter	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.								
<b>Defaults</b>	N/A								
<b>Command Mode</b>	Global configuration mode.								
<b>Usage Guide</b>	<p>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.</p> <p>A general prefix could contain multiple prefixes.</p> <p>These longer specified prefixes are usually used for the Ipv6 address configuration on the interface.</p>								

**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	Command	Description
<b>Commands</b>	<code>ipv6 address prefix-name sub-bits/prefix-length</code>	Configures the interface address using the general prefix.
	<code>show ipv6 general-prefix</code>	Displays the general prefix.

**Platform** N/A

**Description**

### 3.7 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
<b>Description</b>	N/A	N/A

**Defaults** The default is 64.

**Command Mode** Global configuration mode.

**Usage Guide** This command takes effect for the unicast messages only, not for multicast messages.

**Configuration Examples** Ruijie(config)# `ipv6 hop-limit 100`

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

**Platform** N/A

**Description**

### 3.8 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
Description	<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**

### 3.9 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
<b>Description</b>	<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
<b>Description</b>	<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** Interface configuration mode

**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** The following example sets the number of neighbors learned on the interface to 100.

**Examples**

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# ipv6 nd cache interface-limit 100
```

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

**Platform** N/A

**Description**

### 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	Parameter	Description
<b>Description</b>	<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** Interface configuration mode.

**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	<i>value</i>	Sets the interval for address conflict detection, 60 seconds by default. Setting <i>value</i> 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** Ruijie(config-if)# ipv6 nd managed-config-flag

**Examples**

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
```

#### Examples

Related Commands	Command	Description
	<code>show ipv6 interface</code>	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	Parameter	Description
<b>Description</b>	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
```

#### Examples

Related Commands	Command	Description
	<code>show ipv6 interface</code>	Displays the interface information.

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

### 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 preferred-lifetime ] ] [ at valid-date preferred-date ] [ [ infinite | preferred-lifetime ] ] [ no-advertise ] [ [ off-link ] [ no-autoconfig ] ]
no ipv6 nd prefix { ipv6-prefix/prefix-length | default }
```

Parameter	Parameter	Description
<b>Description</b>	<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** Interface configuration mode.

**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
<b>Commands</b>	<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
<b>Description</b>	<i>value</i>	Hopcount

**Defaults** The default is 64.

**Command** Interface configuration mode.

**Mode**

**Usage Guide** This command is used to set the hopcount of the RA message.

**Configuration** Ruijie(config-if)# **ipv6 nd ra-hoplimit** 110

**Examples**

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	Parameter	Description
<b>Description</b>	<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** Interface configuration mode.

**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** Ruijie(config-if)# **ipv6 nd ra-interval** 110

**Examples** Ruijie(config-if)# **ipv6 nd ra-interval min-max** 110 120

Related	Command	Description
---------	---------	-------------

<b>Commands</b>	<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 hopcount 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
<b>Description</b>	<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** Interface configuration mode.

**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** Ruijie(config-if)# `ipv6 nd ra-lifetime 2000`

**Examples**

Related	Command	Description
<b>Commands</b>	<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**

```
Ruijie(config-if)# ipv6 nd ra-mtu 1400
```

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-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** Interface configuration mode.

**Mode**

**Usage Guide** The device checks the unreachable neighbor through the set time. A shorter time means that the device can check the neighbor failure more quickly, but more network bandwidth and device resource will be occupied. Therefore, it is not recommended to set a too short reachable time.

The configured value will be advertised through RA and will be used by the device itself. If the value is set to 0, it indicates that the time is not specified, that is, the default value is used.

According to RFC4861, the actual time to reach neighbor is not consistent with the configured value, ranging from 0.5\*configured value to 1.5\*configured value.

**Configuration** Ruijie(config-if)# ipv6 nd reachable-time 1000000

**Examples**

Related	Command	Description
<b>Commands</b>	<b>show ipv6 interface</b>	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 stale-time** *seconds*

**no ipv6 nd stale-time**

Parameter	Parameter	Description
<b>Description</b>	<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** Global configuration mode

**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** The following example sets the period to 600 seconds for the neighbor to maintain the state.

**Examples** Ruijie(config)# ipv6 nd stale-time 600



Related Commands	Command	Description
	N/A	N/A

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

### 3.23 ipv6 nd suppress-auth-vlan-ns

Use this command to disable the SVI interface from sending the NS packet to the authentication VLAN. Use the **no** form of this command to disable this function.

**ipv6 nd suppress-auth-vlan-ns**

**no ipv6 nd suppress-auth-vlan-ns**

Parameter Description	Parameter	Description
	N/A	N/A

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

**Command Mode** Interface configuration mode

**Usage Guide** This command is supported on the SVI interface in gateway authentication mode.

**Configuration Examples** The following example enables VLAN 2 to send the NS packet to the authentication VLAN.

```
Ruijie(config-if-VLAN 2)# no ipv6 nd suppress-auth-vlan-ns
```

Related Commands	Command	Description
	N/A	N/A

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

### 3.24 ipv6 nd suppress-ra

Use this command to disable the interface from sending the RA message. Use the **no** form of this command to enable the function.

**ipv6 nd suppress-ra**

**no ipv6 nd suppress-ra**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** The **ipv6 nd suppress-ra** command is enabled by default.

**Command** Interface configuration mode.

**Mode**

**Usage Guide** This command suppresses the sending of the RA message on an interface.

**Configuration** Ruijie(config-if)# ipv6 nd suppress-ra

**Examples**

Related	Command	Description
<b>Commands</b>	show ipv6 interface	Displays the interface information.

**Platform** N/A

**Description**

### 3.25 ipv6 nd threshold

Use this command to configure the neighbor entry threshold to prevent ND-based Dos attacks. Use the **no** form of this command to restore the default setting.

**ipv6 nd threshold** *percent\_value*

**no ipv6 nd threshold**

Parameter	Parameter	Description
<b>Description</b>	<i>percent_value</i>	Neighbor entry threshold, in the range from 50 to 100.

**Defaults** The default is 70.

**Command** Global configuration mode.

**Mode**

**Usage Guide** The threshold indicates the percentage of current neighbor entry count accounting for the maximum count. When the IPv6 neighbor entry count reaches the threshold, reachability test will be performed on neighbors in the stale state. But it does not affect the neighbor discovery function. The device can still learn new neighbor entries.

**Configuration** The following example sets the threshold to 80%.

**Examples** Ruijie(config)# ipv6 nd threshold 80

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

**Platform** N/A

**Description**

### 3.26 ipv6 nd threshold per-mac

Use this command to configure the maximum neighbor entry count for a MAC address to prevent ND-based Dos attacks. Use the **no** form of this command to restore the default setting.

**ipv6 nd threshold per-mac** *value*

**no ipv6 nd threshold per-mac**

Parameter	Parameter	Description
Description	<i>value</i>	Neighbor entry count, in the range from 4 to 256.

**Defaults** The default is 16.

**Command Mode** Global configuration mode.

**Usage Guide** When the IPv6 neighbor entry count reaches the threshold, reachability test will be performed on neighbors in the stale state. But it does not affect the neighbor discovery function. The device can still learn new neighbor entries.

**Configuration** The following example sets the count to 100.

**Examples**

```
Ruijie(config)# ipv6 nd threshold per-mac 100
```

Related	Command	Description
Commands	N/A	N/A

**Platform Description** N/A

### 3.27 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** Global configuration mode

**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	Command	Description
Commands	N/A	N/A

**Platform** N/A

**Description**

### 3.28 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	Parameter	Description
<b>Description</b>	<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** Global configuration mode

**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**

### 3.29 ipv6 ns-linklocal-src

Use this command to set the local address of the link as the source IP address to send neighbor requests. Use the **no** form of this command to use the global IP address w as the source address to send neighbor requests.

**ipv6 ns-linklocal-src**

**no ipv6 ns-linklocal-src**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** The local address of the link is always used as the source address to send neighbor requests.

**Command Mode** Global configuration mode.

**Usage Guide** N/A

**Configuration Examples**

```
Ruijie(config)# no ipv6 ns-linklocal-src
```

**Examples**

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

### 3.30 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** Interface configuration mode.

**Mode**

**Usage Guide** The transmission rate of any ICMPv6 error message is limited. By default, it is 10pps.

**Configuration** The following example enables ICMPv6 redirection on interface GigabitEthernet 0/1.

**Examples**

```
Ruijie(config-if-GigabitEthernet 0/1)# ipv6 redirects
```

Related	Command	Description
Commands	<b>show ipv6 interface</b>	Displays the interface information.

**Platform** N/A

**Description**

### 3.31 ipv6 source-route

Use this command to forward the IPv6 packet with route header. Use the **no** form of this command to restore the default setting.

**ipv6 source-route**  
**no ipv6 source-route**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** The **ipv6 source-route** command is disabled by default.

**Command** Global configuration mode.

**Mode**

**Usage Guide** Because of the potential security of the header of type 0 route, it's easy for the device to suffer from the denial service attack. Therefore, forwarding the IPv6 packet with route header is disabled by default. However, the IPv6 packet of route header with type 0 that destined to the local machine is processed.

**Configuration**

```
Ruijie(config)# no ipv6 source-route
```

**Examples**

Related Commands	Command	Description
	N/A	N/A

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

**3.32 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 Mode** Privileged EXEC mode.

**Usage Guide** N/A

**Configuration Examples** The following example displays all IPv6 address configured on the device.

```
Ruijie#show ipv6 address
Global unicast address limit: 1024, Global unicast address count: 3
Tentative address count: 2,Duplicate address count: 1
Preferred address count: 3,Deprecated address count: 0
Gi 0/5
  FE80::1/64 Preferred
    Preferred lifetime: INFINITE, Valid lifetime: INFINITE
  1000::1/64 Duplicate
    Preferred lifetime: INFINITE, Valid lifetime: INFINITE
Gi 0/6
  FE80::1/64 Tentative
    Preferred lifetime: INFINITE, Valid lifetime: INFINITE
  1111:1111:1111:1111:1111:1111:1111:1111/64 Tentative
    Preferred lifetime: INFINITE, Valid lifetime: INFINITE
Gi 0/7
  FE80::1/64 Preferred
    Preferred lifetime: INFINITE, Valid lifetime: INFINITE
  2000:1111:1111:1111:1111:1111:1111:1111/64 Preferred
    Preferred lifetime: INFINITE, Valid lifetime: INFINITE
```

The following example displays the IPv6 address configured on the GigabitEthernet 0/1.

```
Ruijie#show ipv6 address Gi 0/5
Global unicast address count: 3
Tentative address count: 0,Duplicate address count: 1
Preferred address count: 1,Deprecated address count: 0
FE80::1/64 Preferred
Preferred lifetime: INFINITE, Valid lifetime: INFINITE
1000::1/64 Duplicate
Preferred lifetime: INFINITE, Valid lifetime: INFINITE
```

Related	Command	Description
Commands	N/A	N/A

**Platform** N/A

**Description**

### 3.33 show ipv6 general-prefix

Use this command to display the information of the general prefix.

**show ipv6 general-prefix**

Parameter	Parameter	Description
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	Command	Description
Commands	ipv6 general-prefix	Configures the general prefix.

**Platform** N/A

**Description**



### 3.34 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, Global configuration mode, Interface configuration mode.

**Usage Guide** Use this command to display the address configuration, ND configuration and other information of an IPv6 interface.

**Configuration Examples** The following example displays the information of the IPv6 interface.

```
Ruijie# show ipv6 interface vlan 1
Interface vlan 1 is Up, ifindex: 2001
address(es):
Mac Address: 00:00:00:00:00:01
INET6: fe80::200:ff:fe00:1 , subnet is fe80::/64
Joined group address(es):
ff01:1::1
ff02:1::1
ff02:1::2
ff02:1::1:ff00:1
INET6: 2001::1 , subnet is 2001::/64 [TENTATIVE]
Joined group address(es):
ff01:1::1
ff02:1::1
ff02:1::2
ff02:1::1:ff00:1
MTU is 1500 bytes
ICMP error messages limited to one every 10 milliseconds
ICMP redirects are enabled
ND DAD is enabled, number of DAD attempts: 1
ND reachable time is 30000 milliseconds
ND advertised reachable time is 0 milliseconds
ND retransmit interval is 1000 milliseconds
ND advertised retransmit interval is 0 milliseconds
```

```
ND router advertisements are sent every 200 seconds<240--160>
ND device advertisements live for 1800 seconds
```

The following line is included in the above information: 2001::1, subnet is 2001::/64 [TENTATIVE].  
The flag bit in the [ ] following the INET6 address is explained as follows:

Flag	Meaning
ANYCAST	Indicate that the address is an anycast address.
TENTATIVE	Indicate that the DAD is underway. The address is a tentative before the DAD is completed.
DUPLICATED	Indicate that a duplicate address exists.
DEPRECATED	Indicate that the preferred lifetime of the address expires.
NODAD	Indicate that no DAD is implemented for the address.
AUTOIFID	Indicate that the interface ID of the address is automatically generated by the system, which is usually an EUI-64 ID.

```
The following example displays the RA information of the IPv6 interface. Ruijie#
show ipv6 interface vlan 1 ra-info
vlan 1: DOWN
RA timer is stopped
waits: 0, initcount: 3
statistics: RA(out/in/inconsistent): 4/0/0, RS(input): 0
Link-layer address: 00:00:00:00:00:01
Physical MTU: 1500
ND device advertisements live for 1800 seconds
ND device advertisements are sent every 200 seconds<240--160>
Flags: !M!O, Adv MTU: 1500
ND advertised reachable time is 0 milliseconds
ND advertised retransmit time is 0 milliseconds
ND advertised CurHopLimit is 64
Prefixes: (total: 1)
fec0:1:1:1::/64(Def,Auto,vltime: 2592000, pltime: 604800, flags: LA)
```

Description of the fields in **ra-info**:

Field	Meaning
RA timer is stopped (on)	Indicate whether the RA timer is started.
waits	Indicate that the RS is received but the number of the responses is not available.
initcount	Indicate the number of the RAs when the RA timer is restarted.

RA(out/in/ inconsistent)	out: Indicate the number of the RAs that are sent. In: Indicate the number of the RAs that are received. inconsistent: Indicate the number of the received RAs in which the parameters are different from those contained in the RAs advertised by the device.
RS(input)	Indicate the number of the RSs that are received.
Link-layer address	Link-layer address of the interface.
Physical MTU	Link MTU of the interface.
!M   M	!M indicates the managed-config-flag bit in the RA is not set. M: Conversely
!O   O	!O indicates the other-config-flag bit in the RA is not set. O: Conversely

Description of the fields of the prefix list in **ra-info**:

Field	Meaning
total	The number of the prefixes of the interface.
fec0:1:1:1::/64	A specific prefix.
Def	Indicate that the interfaces use the default prefix.
Auto   CFG	Auto: Indicate the prefix is automatically generated after the interface is configured with the corresponding IPv6 address. CFG: Indicate that the prefix is manually configured.
!Adv	Indicate that the prefix will not be advertised.
vlttime	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** N/A  
**Description**

### 3.35 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** N/A  
**Description**

### 3.36 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**

### 3.37 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 Description** Supported on all platforms.

### 3.38 show ipv6 neighbor statistics per-mac

Use this command to display the number of neighbor entries of every MAC address.

**show ipv6 neighbor statistics per-mac** [*interface-name*] [*mac-address*]

Parameter Description	Parameter	Description
	<i>interface-name</i>	Interface ID
	<i>mac-address</i>	MAC address

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration Examples** The following example displays the number of neighbor entries of every MAC address..

```
Ruijie# show ipv6 neighbor statistics per-mac
Interface  MAC address      Statistics
-----
VLAN 1    0000:0000:0001      3
VLAN 1    0000:0000:0002      5
VLAN 2    0000:0000:0003     10
```

Field	Description
Interface	Interface ID.
MAC address	MAC address.
Statistics	ND entry number.

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A



### 3.39 show ipv6 raw-socket

Use this command to display all IPv6 raw sockets.

**show ipv6 raw-socket** [ *num* ]

Parameter	Parameter	Description
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.

#### Examples

```
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**

### 3.40 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
-----------	-----------	-------------

<b>Description</b>	<i>interface-type</i> <i>interface-number</i>	( Optional ) Displays the routing advertisement of the specified interface.
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Privileged EXEC mode.	
<b>Usage Guide</b>	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 Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 3.41 show ipv6 sockets

Use this command to display all IPv6 sockets.

**show ipv6 sockets**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode.

**Usage Guide** N/A

**Configuration** 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**

### 3.42 show ipv6 udp

Use this command to display all IPv6 UDP sockets.

**show ipv6 udp [ local-port *num* ] [ peer-port *num* ]**

Use this command to display IPv6 UDP socket statistics.

**show ipv6 udp statistics**

**Parameter  
Description**

Parameter	Description
<b>local-port <i>num</i></b>	Local port number.
<b>peer-port <i>num</i></b>	Peer port number.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays all IPv6 UDP sockets.

**Examples**

```
Ruijie# show ipv6 udp
Number Local Address Peer Address Process name
1 :::161 :::0 rg-snmpd
2 :::162 :::0 rg-snmpd
3 :::547 :::0 dhcp6.elf
```

Filed	Description
Number	Number.
Local Address	Local IPv6 address and port.
Peer Address	Peer IPv6 address and port.
Process name	Process name.

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 4 DHCP Commands

### 4.1 address range

Use this command to specify the network segment range of the addresses that can be allocated by CLASS associated with DHCP address pool. Use the **no** form of this command to restore the default setting.

**address range** *low-ip-address high-ip-address*

**no address range**

Parameter	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 address-manage

Use this command to enter the AM rule configuration mode.

**address-manage**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** N/A

**Command Mode** Global configuration mode

**Usage Guide** This command is configured on the DHCP server and used in combination with Super VLAN.

**Configuration Examples** The following example enters the AM rule configuration mode.

```
Ruijie (config) #address-manage
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 4.3 bootfile

Use this command to define the startup mapping file name of the DHCP client. Use the **no** or **default** form of this command to restore the default setting.

**bootfile** *file-name*

**no bootfile**

**default bootfile**

Parameter	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** The following example defines the device.conf as the startup file name.

**Examples** `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** N/A

**Description**

## 4.4 class

Use this command to configure the associated CLASS in the DHCP address pool. Use the **no** form of this command to restore the default setting.

**class** *class-name*

**no class**

Parameter Description	Parameter	Description
	<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** The following example configures the address *mypool0* to associate with class1.

**Examples**

```
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**

## 4.5 clear ip dhcp binding

Use this command to clear the DHCP binding table in the privileged user mode.

**clear ip dhcp binding** { \* | *ip-address* }

Parameter	Parameter	Description
<b>Description</b>	*	Deletes all DHCP bindings.
	<i>ip-address</i>	Deletes the binding of the specified IP addresses.

**Defaults** N/A.

**Command Mode** Privileged EXEC mode.

**Usage Guide** This command can only clear the automatic DHCP binding, but the manual DHCP binding can be deleted by the **no ip dhcp pool** command.

**Configuration** 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**

## 4.6 clear ip dhcp conflict

Use this command to clear the DHCP address conflict record.

**clear ip dhcp conflict** { \* | *ip-address* }



<b>Parameter</b>	<b>Parameter</b>	<b>Description</b>
<b>Description</b>	*	Deletes all DHCP address conflict records.
	<i>ip-address</i>	Deletes the conflict record of the specified IP addresses.
<b>Defaults</b>	N/A.	
<b>Command Mode</b>	Privileged EXEC mode.	
<b>Usage Guide</b>	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 <b>clear ip dhcp conflict</b> command can be used to delete the history conflict record.	
<b>Configuration Examples</b>	The following example clears all address conflict records.	
<b>Examples</b>	<pre>clear ip dhcp conflict *</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<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.
<b>Platform Description</b>	N/A	

## 4.7 clear ip dhcp history

Use this command to clear the address assigned by the DHCP server.

**clear ip dhcp history**{ \* | *mac-address* }

<b>Parameter</b>	<b>Parameter</b>	<b>Description</b>
<b>Description</b>	*	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.
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Privileged EXEC mode	
<b>Usage Guide</b>	This command is configured on the DHCP server.	

**Configuration** The following example clears all addresses assigned by the DHCP server.

**Examples**

```
Ruijie# clear ip dhcp history *
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 4.8 clear ip dhcp relay statistics

Use this command to clear the DHCP relay statistics.

**clear ip dhcp relay statistics**

Parameter	Parameter	Description
<b>Description</b>	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** The following example clears the DHCP relay statistics.

**Examples**

```
Ruijie# clear ip dhcp relay statistics
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 4.9 clear ip dhcp server detect

Use this command to clear statistics about the fake DHCP server.

**clear ip dhcp server detect { \* | ip-address }**

Parameter	Parameter	Description
<b>Description</b>	*	Clears statistics about all fake DHCP servers.
	<i>ip-address</i>	Clears statistics about the specified fake DHCP server.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** The detected fake DHCP server addresses are saved on the server. You can use the **clear ip dhcp server detect** command to clear statistics about the fake DHCP server.

**Configuration** The following example clears statistics about all fake DHCP servers.

**Examples**

```
Ruijie# clear ip dhcp server detect *
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 4.10 clear ip dhcp server rate

Use this command to clear statistics about the packet processing rate of every module.

**clear ip dhcp server rate**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** This command is used to clear statistics about the packet processing rate of every module, including arp, hot backup, lsm, and socket.

**Configuration** 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 Description** N/A

## 4.11 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	Parameter	Description
Description	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode.

**Usage Guide** The DHCP server carries out the statistics counter, records the DHCP address pool, automatic binding, manual binding and expired binding. Furthermore, it also carries out the statistics to the number of sent and received DHCP messages. The **clear ip dhcp server statistics** command can be used to delete the history counter record and carry out the statistics starting from scratch.

**Configuration Examples** The following example clears the statistics record of the DHCP server.

```
clear ip dhcp server statistics
```

Related Commands	Command	Description
	<b>show ip dhcp server statistics</b>	Displays the statistics record of the DHCP server.

**Platform** N/A

**Description**

## 4.12 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**

Parameter	Parameter	Description
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.

**Defaults** N/A.

**Command** DHCP address pool configuration mode.

**Mode**

**Usage Guide** When some DHCP clients request the DHCP server to assign IP addresses, they use their client IDs rather than their hardware addresses. The client ID consists of media type, MAC addresses and interface name. For instance, the MAC address is 00d0.f822.33b4, the interface name is GigabitEthernet 0/1, and the corresponding client ID is 0100.d0f8.2233.b467.6967.6162.6974.4574.6865.726e.6574.302f.31, where, 01 denotes the type of the Ethernet media.

The 67.6967.6162.6974.4574.6865.726e.6574.302f.31 is the hex code of GigabitEthernet0/1. For the definition of the media code, refer to the Address Resolution Protocol Parameters section in RFC1700. This command is used only when the DHCP is defined by manual binding.

**Configuration Examples** The following example defines the client ID of the Ethernet DHCP client whose MAC address is 00d0.f822.33b4.

```
client-identifier
0100.d0f8.2233.b467.6967.6162.6974.4574.6865.726e.6574.302f.31
```

**Related Commands**

Command	Description
<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**

## 4.13 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 Description** N/A

### 4.14 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</i> ... <i>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**

## 4.15 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
<b>Description</b>	<i>ip-address</i>	Defines the IP address of the DNS server. At least one IP address should be configured.
	<i>ip-address2</i> ... <i>ip-address8</i>	(Optional) Up to 8 DNS servers can be configured.

**Defaults** No DNS server is defined by default.

**Command** DHCP address pool configuration mode.

**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.

**Configuration** The following example specifies the DNS server 192.168.12.3 for the DHCP client.

**Examples**

```
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** N/A

**Description**

## 4.16 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
<b>Description</b>	<i>domain-name</i>	Defines the suffix domain name string of the DHCP client.

**Defaults** No suffix domain name by default.

**Command Mode** DHCP address pool configuration mode.

**Usage Guide** After the DHCP client obtains specified suffix domain name, it can access a host with the same suffix domain name by the host name directly.

**Configuration Examples** The following example defines the suffix domain name i-net.com.cn for the DHCP client.

```
Ruijie(dhcp-config)#domain-name ruijie.com.cn
```

Related Commands	Command	Description
	<b>dns-server</b>	Defines the DNS server 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.

**Platform** N/A

**Description**

### 4.17 force-no-router

Use this command to cancel gateway allocation to the client. Use the **no** or **default** form of this command to restore the default setting.

**force-no-router**

**no force-no-router**

**default force-no-router**

Parameter	Parameter	Description
<b>Description</b>	N/A	N/A

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

**Command Mode** DHCP address pool configuration mode

**Mode**

**Usage Guide** N/A



**Configuration** The following example cancels gateway allocation to the client.

**Examples**

```
Ruijie (dhcp-config) # force-no-router
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 4.18 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**

Parameter	Parameter	Description
<b>Description</b>	<i>hardware-address</i>	Define the MAC address of the DHCP client.
	<i>type</i>	To indicate the hardware platform protocol of the DHCP client, use the string definition or digits definition. String option: Ethernet ieee802 Digits option: 1 (10M Ethernet) 6 (IEEE 802)

**Defaults** No hardware address is defined by default.

If there is no option when the hardware address is defined, it is the Ethernet by default.

**Command** DHCP address pool configuration mode.

**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**

## 4.19 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	Parameter	Description
<b>Description</b>	<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 Examples** The following example sets the client IP address as 192.168.12.91, and the network mask as 255.255.255.240.

```
host 192.168.12.91 255.255.255.240
```

Related Commands	Command	Description
<b>Related Commands</b>	<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	<b>default-router</b>

DHCP client.	
--------------	--

**Platform** N/A

**Description**

## 4.20 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
Description	N/A	N/A

**Defaults** The interface cannot obtain the ID address by the DHCP by default.

**Command** Interface configuration mode.

**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.

```
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**

## 4.21 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	Parameter	Description
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** The following example configures a global CLASS.

**Examples**

```
Ruijie(config)# ip dhcp class myclass
```

Related	Command	Description
Commands	N/A	N/A

**Platform** N/A

**Description**

## 4.22 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** Global configuration mode.  
**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**

## 4.23 ip dhcp force-send-nak

Use this command to configure the forcible NAK packet sending function. Use the **no** or **default** form of this command to restore the default setting.

**ip dhcp force-send-nak**  
**no ip dhcp force-send-nak**  
**default ip dhcp force-send-nak**

Parameter Description	Parameter	Description
	N/A	N/A

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

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

**Usage Guide** The DHCP client checks the previously used IP address every time it is started and sends a DHCPREQUEST packet to continue leasing this IP address. If the address is not available, the DHCP server sends an NAK packet to let the client resend a DHCPDISCOVER packet to apply for a new IP address. If no corresponding lease record can be found on the server, the client keeps sending DHCPDISCOVER packets.

**Configuration** The following example enables the forcible NAK packet sending function in global configuration mode.

**Examples**

```
Ruijie(config)# ip dhcp force-send-nak
```

**Related Commands**

Command	Description
N/A	N/A

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

## 4.24 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**

## 4.25 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	Parameter	Description
<b>Description</b>	<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 Examples** The following example sets the number of the packets sent by the ping operation as 3.

```
ip dhcp ping packets 3
```

Related Commands	Command	Description
	<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**

## 4.26 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** The following example configures the waiting time of the ping response packet to 600ms.

**Examples**

```
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**

## 4.27 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
<b>Description</b>	<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** Global configuration mode.  
**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** The following example defines a DHCP address pool named mypool0.

**Examples**

```
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**

## 4.28 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
<b>Description</b>	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
	<b>service dhcp</b>	Enables the DHCP Relay.

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

## 4.29 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	Parameter	Description
<b>Description</b>	N/A	N/A

**Defaults** The **ip dhcp relay information option82** command is disabled.

**Command Mode** Global configuration mode.

**Usage Guide** This command is exclusive with the **option dot1x** command.

**Configuration Examples** The following example enables the option82 function on the DHCP relay.

```
Ruijie# configure terminal
Ruijie(config)# Ip dhcp relay information option82
```

Related Commands	Command	Description
	<b>service dhcp</b>	Enables the DHCP Relay.

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

## 4.30 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
-----------	-----------	-------------

<b>Description</b>	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

## 4.31 ip dhcp server arp-detect

Use this command to enable the user-offline detection. Use the **no** or **default** form this command to restore the default setting.

**ip dhcp server arp-detect**  
**no ip dhcp server arp-detect**  
**default ip dhcp server arp-detect**

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 detect whether the user has gone offline, If the user does not go online within a certain period, the IP address is reclaimed.

**Configuration Examples** The following example enables the user-offline detection.

```
Ruijie(config)# ip dhcp server arp-detect
```

Related	Command	Description
Commands	N/A	N/A

**Platform** N/A

**Description**

## 4.32 ip dhcp server detect

Use this command to enable the fake DHCP server detection. Use the **no** or **default** form of this command to restore the default setting.

**ip dhcp server detect**

**no ip dhcp server detect**

**default ip dhcp server detect**

Parameter	Parameter	Description
Description	N/A	N/A

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

**Command Mode** Global configuration mode

**Usage Guide** After this function is enabled, any fake DHCP server detected is logged.

**Configuration** The following example enables the fake DHCP server detection.

**Examples**

```
Ruijie(config)# ip dhcp server detect
```

Related	Command	Description
Commands	N/A	N/A

**Platform** N/A

**Description**

## 4.33 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	Command	Description
Commands	N/A	N/A

**Platform** N/A

**Description**

## 4.34 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	Parameter	Description
<b>Description</b>	<b>cycle-mode</b> (Supported in global configuration mode)	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	Command	Description
Commands	service dhcp	Enables the DHCP relay.

**Platform** N/A

**Description**

### 4.35 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	Parameter	Description
<b>Description</b>	<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 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**

## 4.36 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
<b>Description</b>	<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	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**

## 4.37 match ip

Use this command to define an AM matching rule.

Use the **no** form of this command to remove the configuration.

Use the clear form of this command to clear all configurations.

**match ip** *ip-address netmask* [*interface*] [**add/remove**] **vlan** *vlan-list*

**no match ip** *ip-address netmask* [*interface*] [**add/remove**] **vlan** *vlan-list*

**clear match ip** [*interface*]

Parameter	Parameter	Description
Description	<i>ip-address</i>	IP address
	<i>netmask</i>	Subnet mask
	<i>interface</i>	Interface ID
	<i>add/remove</i>	Adds or removes the specified VLAN.
	<i>vlan-list</i>	VLAN ID

**Defaults** N/A

**Command** AM rule configuration mode

**Mode**

**Usage Guide** With this function enabled, all DHCP clients with specified *vlan-list* and *interface* obtain addresses in the rule.

If a DHCP client obtains a static address, it is not subject to AM matching rules in whichever Sub VLAN unless the AM rule configuration is based on VLAN instead of Sub VLAN. This type of matching rules applies to only static addresses.

**Configuration** The following example defines an AM matching rule.

**Examples**

```
Ruijie(config-address-manage)#match ip 192.168.11.0 255.255.255.0
GigabitEthernet 0/10 vlan 10
```

Related	Command	Description
Commands	N/A	N/A

**Platform** N/A

**Description**

## 4.38 match ip default

Use this command to define a default AM matching rule.

Use the **no** form of this command to remove the configuration,

**match ip default** *ip-address netmask*

**no match ip default** *ip-address netmask*



<b>Parameter</b>	<b>Parameter</b>	<b>Description</b>
<b>Description</b>	<i>ip-address</i>	IP address
	<i>netmask</i>	Subnet mask
<b>Defaults</b>	N/A	
<b>Command Mode</b>	AM rule configuration mode	
<b>Usage Guide</b>	With this function enabled, all DHCP clients with specified <i>vlan-list</i> and <i>interface</i> obtain addresses in the default rule.	
<b>Configuration Examples</b>	The following example defines a default AM matching rule.	
<b>Examples</b>	<pre>Ruijie(config-address-manage)#match ip default 192.168.12.0 255.255.255.0</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	N/A	N/A
<b>Platform Description</b>	N/A	

## 4.39 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**

<b>Parameter</b>	<b>Parameter</b>	<b>Description</b>
<b>Description</b>	<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.
<b>Defaults</b>	No WINS server is defined by default.	
<b>Command Mode</b>	DHCP address pool configuration mode.	
<b>Usage Guide</b>	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** The following example specifies the WINS server 192.168.12.3 for the DHCP client.

**Examples** `netbios-name-server 192.168.12.3`

Related	Command	Description
<b>Commands</b>	<code>ip address dhcp</code>	Enables the DHCP client on the interface to obtain the IP address.
	<code>ip dhcp pool</code>	Defines the name of the DHCP address pool and enter the DHCP address pool configuration mode.
	<code>netbios-node-type</code>	Defines the netbios node type of the client host.

**Platform** N/A

**Description**

## 4.40 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
<b>Description</b>	<i>type</i>	Type of node in two modes: Digit in hexadecimal form in the range of 0 to FF. Only the following numerals are available: 1: b-node. 2: p-node. 4: m-node. 8: h-node. String: b-node: broadcast node p-node: peer-to-peer node m-node: mixed node h-node: hybrid node

**Defaults** No type of the NetBIOS node is defined by default.

**Command** DHCP address pool configuration mode.

**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** The following example sets the NetBIOS node of Microsoft DHCP client as Hybrid.

**Examples** `netbios-node-type h-node`

Related Commands	Command	Description
	<code>ip dhcp pool</code>	Defines the name of DHCP address pool and enters the DHCP address pool configuration mode.
	<code>netbios-name-server</code>	Configures the WINS name server of the Microsoft DHCP client NETBIOS.

**Platform** N/A

**Description**

## 4.41 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 Description	Parameter	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** DHCP address pool configuration mode.

**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

## 4.42 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 Description**

Parameter	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 priority. The DHCP client will select the next startup server only when its communication with the former startup server fails.

**Configuration** The following example specifies the startup server 192.168.12.4 for the DHCP client.

**Examples**

```
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** N/A

**Description**

## 4.43 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**

Parameter Description	Parameter	Description
	<i>code</i>	Defines the DHCP option codes.
	<b>ascii</b> <i>string</i>	Defines an ASCII string.
	<b>hex</b> <i>string</i>	Defines a hex string.
	<b>ip</b> <i>ip-address</i>	Defines an IP address list.

**Defaults** N/A

**Command** Global configuration mode

**Mode**

**Usage Guide** The DHCP provides a mechanism to transmit the configuration information to the host in the TCP/IP network. The DHCP message has a variable option field that can be defined according to the actual requirement. The DHCP client needs to carry the DHCP message with 32 bytes of option information at least. Furthermore, the fixed data field in the DHCP message is also referred to as an option. For the definition of current DHCP option, refer to RFC 2131.

**Configuration Examples** The following example defines the option code 19, which determines whether the DHCP client can enable the IP packet forwarding. 0 indicates to disable the IP packet forwarding, and 1 indicates to enable the IP packet forwarding. The configuration below enable the IP packet forwarding on the DHCP client.

```
Ruijie(dhcp-config)# option 19 hex 1
```

The following example defines the option code 33, which provides the DHCP client with the static route information. The DHCP client will install two static routes: 1) the destination network 172.16.12.0 and the gateway 192.168.12.12, 2) the destination network 172.16.16.0 and the gateway 192.168.12.16.

```
option 33 ip 172.16.12.0 192.168.12.12 172.16.16.0 192.168.12.16
```

Related Commands	Command	Description
	<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**

## 4.44 pool-status

Use this command to enable or disable the DHCP address pool.

**pool-status { enable | disable }**

Parameter Description	Parameter	Description
	<b>enable</b>	Enables the address pool.
	<b>disable</b>	Disables the address pool.

**Defaults** By default, the address pool is enabled after it is configured.

**Command Mode** DHCP address pool configuration mode

**Usage Guide** This command is configured on the DHCP server.

**Configuration Examples** The following example disables the address pool.

```
Ruijie(dhcp-config)# pool-status disable
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 4.45 relay agent information

Use this command to enter the Option82 matching information configuration mode in the global

CLASS configuration mode. Use the **no** form of this command to delete the Option82 matching information of the CLASS.

**relay agent information**

**no relay agent information**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** N/A

**Command Mode** Global CLASS configuration mode

**Usage Guide** After executing this command, it enters the Option82 matching information configuration mode which is shown as "Ruijie (config-dhcp-class-relayinfo)#".  
In this configuration mode, user can configure the class matching multiple Option82 information.

**Configuration Examples** The following example configures a global CLASS and enters the Option82 matching information configuration mode.

```
Ruijie(config)# ip dhcp class myclass
Ruijie(config-dhcp-class)# relay agent information
Ruijie(config-dhcp-class-relayinfo)#
```

Related Commands	Command	Description
	<b>ip dhcp class</b>	Defines a CLASS and enters the global CLASS configuration mode.

**Platform Description** N/A

### 4.46 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  
Commands**

Command	Description
<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**

## 4.47 remark

Use this command to configure the identification which is used to describe the CLASS in this global CLASS configuration mode. Use the **no** form of this command to delete the identification.

**remark** *class-remark*

**no remark**

**Parameter  
Description**

Parameter	Description
class-remark	Information used to identify the CLASS, which can be the character strings with space in them.

**Defaults** N/A.

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

**Usage Guide** N/A



**Configuration** The following example configures the identification information for a global CLASS.

**Examples**

```
Ruijie(config)# ip dhcp class myclass
Ruijie(config-dhcp-class)# remark used in #1 build
```

Related	Command	Description
<b>Commands</b>	<b>ip dhcp class</b>	Defines a CLASS and enter the global CLASS configuration mode.

**Platform** N/A

**Description**

## 4.48 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
<b>Description</b>	N/A	N/A

**Defaults** The **service dhcp** command is disabled.

**Command Mode** Global configuration mode

**Usage Guide** The DHCP server can assign the IP addresses to the clients automatically, and provide them with the network configuration information such as DNS server and default gateway. The DHCP relay can forward the DHCP requests to other servers, and the returned DHCP responses to the DHCP client, serving as the relay for DHCP packets.

**Configuration** The following example enables the DHCP server and the DHCP relay feature.

**Examples**

```
service dhcp
```

Related	Command	Description
<b>Commands</b>	<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**

## 4.49 show dhcp lease

Use this command to display the lease information of the IP address obtained by the DHCP client.

**show dhcp lease**

Parameter	Parameter	Description
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	Command	Description
Commands	N/A	N/A

**Platform** N/A

**Description**

## 4.50 show ip dhcp binding

Use this command to display the binding condition of the DHCP address.

**show ip dhcp binding [ ip-address ]**

Parameter	Parameter	Description
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** The following is the result of the show ip dhcp binding.

**Examples**

```
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 Description** N/A

### 4.51 show ip dhcp conflict

Use this command to show the conflict history record of the DHCP sever.

**show ip dhcp conflict**

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

<b>Description</b>	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 Description** N/A

## 4.52 show ip dhcp history

Use this command to display the DHCP lease history.

**show ip dhcp history**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** This command is configured on the DHCP server.

**Configuration Examples** The following example displays the DHCP lease history.

```
Ruijie#show ip dhcp history
```

```
Expired clients          : 3
IP address      Hardware address      Lease expiration      Vlan/Relay
10.1.1.5        2222.abcd.47ac          IDLE                  4097
10.1.1.4        2222.abcd.47ae          IDLE                  4097
10.1.1.3        2222.abcd.47ad          IDLE                  4097
Running clients      : 0
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 4.53 show ip dhcp identifier

Use this command to display the DHCP address pool ID and address usage.

**show ip dhcp identifier**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration Examples** The following example displays the DHCP address pool ID and address usage.

```
Ruijie# show ip dhcp identifier
Pool name      Identifier      Total      Distributed  Remained
-----
wzp            597455782      65533      0            65533
```

Pool name	Address pool name.
Identifier	Address pool ID.
Total	Total number of addresses.
Distributed	Number of allocated addresses.
Remained	Number of remained addresses.

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 4.54 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** N/A

**Mode**

**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**

### 4.55 show ip dhcp relay-statistics

Use this command to display the statistics of the DHCP relay.

**show ip dhcp relay-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 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** N/A  
**Description**

### 4.56 show ip dhcp server detect

Use this command to display the fake DHCP server detected.

**show ip dhcp server detect**



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 fake DHCP server detected.	
Examples	<pre>Ruijie#show ip dhcp server detect The DHCP Server information: Server IP = 10.1.10.40, DHCP server interface = GigabitEthernet 0/1</pre>	
Related Commands	Command	Description
	N/A	N/A
Platform Description	N/A	

## 4.57 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	The following example displays the output result of the <b>show ip dhcp server statistics</b> command.	
Examples	<pre>Ruijie# show ip dhcp server statistics Address pools          2 Lease counter         4 Active Lease Counter  0</pre>	

```

Expired Lease Counter      4
Malformed messages       0
Dropped messages         0

Message                    Received
BOOTREQUEST              216
DHCPDISCOVER             33
DHCPPREQUEST             25
DHCPCDECLINE             0
DHCPCRELEASE             1
DHCPCINFORM              150

Message                    Sent
BOOTREPLY                 16
DHCPOFFER                 9
DHCPCACK                   7
DHCPCNAK                   0
DHCPCREQTIMES             0
DHCPCREQSUCTIMES         0
DISCOVER-PROCESS-ERROR   0
LEASE-IN-PINGSTATE        0
NO-LEASE-RESOURCE         0
SERVERID-NO-MATCH         0
-----
rcv                        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	Command	Description
Commands	<b>clear ip dhcp server statistics</b>	Clears the DHCP server statistics.

**Platform** N/A

**Description**

## 4.58 show ip dhcp socket

Use this command to display the socket used by the DHCP server.

**show ip dhcp socket**

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 socket used by the DHCP server.

**Examples**

```
ruijie#show ip dhcp socket
dhcp socket = 47.
```

Related	Command	Description
Commands	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 *ipv6-address* is not specified, all DHCPv6 binding information is cleared. If the *ipv6-address* is specified, the binding information for the specified address is cleared.

**Configuration Examples** The following example clears the DHCPv6 binding information:

```
Ruijie(config)# clear ipv6 dhcp binding
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 5.2 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	Command	Description
Commands	<b>show ipv6 dhcp conflict</b>	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	Command	Description
Commands	<b>show ipv6 dhcp relay statistics</b>	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	Parameter	Description
<b>Description</b>	<i>domain</i>	Sets the domain name.

**Defaults** By default, no domain name is configured.

**Command** DHCPv6 pool configuration mode

**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** 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	Command	Description
Commands	<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	Command	Description
Commands	<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	Parameter	Description
<b>Description</b>	<i>poolname</i>	Defines the DHCPv6 pool name.
	<b>rapid-commit</b>	Allows the two-message interaction process.
	<b>preference <i>value</i></b>	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** Interface configuration mode  
**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, Server and Relay functions are exclusive, and only one of the functions can be configured on the interface.

**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	Parameter	Description
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 Description	Parameter	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	Parameter	Description
<b>Description</b>	<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 Commands	Command	Description
	<b>clear ipv6 dhcp conflict</b>	Clears address conflicts.

**Platform Description** N/A

## 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	Command	Description
Commands	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	Parameter	Description
Description	<i>poolname</i>	Defines the DHCPv6 pool name.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** If the *poolname* is not specified, all DHCPv6 interface information 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	Command	Description
Commands	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
	all	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 Description	Parameter	Description
	<i>poolname</i>	The local prefix pool name

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** This command is used to display the local prefix pool configuration and usage.

**Configuration Examples** The following example displays all local prefix pool information.

```
Ruijie#show ipv6 local pool
Pool                               Prefix
Free           In use
client-prefix-pool                2001:db8::/64
65536           0
```

Field	Description
Pool	The local address pool name.
Prefix	The prefix and prefix length.
Free	The available prefix.
In use	The prefix in use.

The following example displays the information about the specified local prefix pool.

```
Ruijie#show ipv6 local pool client-prefix-pool
Prefix is 2001:db8::/64 assign /80 prefix
1 entries in use, 65535 available
Prefix                               Interface
2001:db8::/80                        GigabitEthernet 0/0
```

Filed	Description
Prefix	The assigned prefix and prefix length.
Interface	The assigning interface.

Related	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** N/A

**Description**

### 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 Examples** The following example disables the DNS domain name resolution function.

```
Ruijie(config)# no ip domain-lookup
```

**Related Commands**

Command	Description
<b>show hosts</b>	Displays the DNS related configuration information.

**Platform Description** N/A

### 6.3 ip host

Use this command to configure the mapping of the host name and the IP address. Use the **no** form of the command to remove the host list.

**ip host** *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 Examples** The following example configures IPv4 address 192.168.5.243 for domain name www.test.com.

```
Ruijie(config)# ip host www.test.com 192.168.5.243
```

**Related**

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* } [ **via** *mgmt-name* ]

**no ip name-server** [ **oob** ] [ *ip-address* | *ipv6-address* ] [ **via** *mgmt-name* ]

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.
	<b>via</b>	Configures MGMT port.
	<i>mgmt-name</i>	Specifies the MGMT port in <b>oob</b> mode.

**Defaults** No domain name server is configured by default.

**Command** Global configuration mode.

**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 via mgmt 2/0
Ruijie(config)# ip name-server 2001:0DB8::250:8bff:fee8:f800
2001:0DB8:0:f004::1 via mgmt 2/0
```

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** Global configuration mode.

**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** N/A

**Description**

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

## 7 FTP Server Commands

### 7.1 ftp-server enable

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


**ftp-server enable**  
**default ftp-server enable**

Parameter Description	Parameter	Description
	N/A	N/A

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

**Command Mode** Global configuration mode

**Usage Guide** This command is used to enable the FTP server to connect the FTP client to upload/download the files.

 To enable the FTP client to access to the FTP server files, this command shall be co-used with the **ftp-server topdir** command.

**Configuration Examples** The following example enables the FTP Server and confines the FTP client access to the syslog subdirectory:

```
Ruijie(config)# ftp-server topdir /syslog
```

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 Description** N/A

## 7.3 ftp-server login times

Use this command to set the number of login attempts. Use the **no** or **default** form of this command to restore the default setting.

**ftp-server login times** *time*

**no ftp-server login times**

**default ftp-server login times**

Parameter Description	Parameter	Description
	<i>time</i>	Sets the number of login attempts, in the range from 1 to 10.

**Defaults** The default is 3.

**Command Mode** Global configuration mode

**Usage Guide** The number of login attempts refers to the maximum count you are allowed to perform authentication. If the number of your login attempts exceeds 3, you will be forced offline.

**Configuration Examples** The following example sets the number of login attempts to 5.

```
Ruijie(config)# ftp-server login times 5
```

The following example restores the default setting.

```
Ruijie(config)# no ftp-server login times
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 7.4 ftp-server 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**

## 7.5 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**

**Parameter Description**

Parameter	Description
<i>directory</i>	Sets the top-directory.

**Defaults** No top-directory is configured by default.

**Command Mode** Global configuration mode.

**Usage Guide** The FTP server top directory specifies the directory range of the files accessed by the client. Can the FTP client accesses to the files on the FTP server with the top directory correctly specified. Without this command configured, FTP client fails to access to any file or directory on the FTP server.

**Configuration** The following example enables the FTP Server and confines the FTP client access to the syslog

**Examples** 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

## 7.6 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:BINARy (ctrl)server IP:192.168.21.100[21]
client IP:192.168.21.26[3927]
[1]trans-type:ASCIi (ctrl)server IP:192.168.21.100[21]
client IP:192.168.21.26[3929]
username:a1        password:(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]
    
```

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

**Platform Description** N/A

## 8 FTP Client Commands

### 8.1 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**

## 8.2 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
copy tftp	Uses the TFTP protocol to transfer files.

**Platform Description** N/A

### 8.3 ftp-client ascii

Use this command to use ASCII mode for FTP transfer.  
 Use the **no** form of this command to restore the default setting.

- ftp-client [ vrf vrfname ] ascii**
- no ftp-client [ vrf vrfname ] ascii**
- default ftp-client [ vrf vrf-name ]**

**Parameter Description**

Parameter	Description
vrf vrf-name	Configures the file transfer mode for the specified VRF.

**Defaults** The default FTP transfer mode is binary.

**Command Mode** Global configuration mode

**Usage Guide** The **default** command is used to restore the FTP client setting. Specifically, data connection is in PASV mode and file transfer BINARY. The client source IP address is not bound.

**Configuration Examples** The following example configures ASCII FTP transfer.

```
Ruijie (config)# ftp-client ascii
```

The following example configures ASCII FTP transfer for *vrf-name*.

```
Ruijie(config)# ftp-client vrf vrf-name ascii
```

The following example configures binary FTP transfer.

```
Ruijie(config)# no ftp-client ascii
```

The following example configures binary FTP transfer for *vrf-name*.

```
Ruijie(config)# no ftp-client vrf vrf-name ascii
```

The following example restores the default setting of the FTP Client.

```
Ruijie(config)# default ftp-client
```

The following example restores the default setting of the FTP Client *vrf-name*,

```
Ruijie(config)# default ftp-client vrf vrf-name
```

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 8.4 ftp-client port

Use this command to configure PORT mode used for FTP data connection. Use the **no** form of this command to restore the default setting.

**ftp-client [ vrf *vrfname* ] port**

**no ftp-client [ vrf *vrfname* ] port**

**default ftp-client [ vrf *vrf-name* ]**

**Parameter Description**

Parameter	Description
<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 Examples** The following example configures PORT mode used for FTP data connection

```
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

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

## 8.5 ftp-client source

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** { *ip-address* | *ipv6-address* | *interface* }

**no ftp-client** [ *vrf vrf-name* ] **source**

**default ftp-client** [ *vrf vrf-name* ]

Parameter Description	Parameter	Description
		<b>vrf</b> <i>vrf-name</i>

**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. The **ftp-client** [ *vrf vrfname* ] **source-address** {*ip-address* | *ipv6-address*} command will be converted to this command automatically

**Configuration Examples** The following example binds FTP Client with source IP address 192.168.23.236.

```
Ruijie(config)# ftp-client source 192.168.23.236
```

The following example binds FTP Client with source IP address 2003:0:0:0::2.

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

The following example disables source IP address binding.

```
Ruijie(config)# no ftp-client source
```

The following example disables source IP address binding.

```
Ruijie(config)# no ftp-client vrf vrf-name source
```

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



## 9 Tunnel Commands

### 9.1 show interfaces tunnel

Use this command to display the tunnel configuration.

**show interfaces tunnel** [ *number* ]

Parameter Description	Parameter	Description
	<i>number</i>	Specifies the tunnel number.

**Defaults** N/A

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

**Usage Guide** N/A

**Configuration Examples** The following example displays tunnel 1 information.

```
Ruijie#showinterfaces tunnel 1
// Here is the public information about the interface
Tunnel source 1.1.1.2, destination 1.1.1.1, routeable
  Tunnel TOS/Traffic Class not set, Tunnel TTL 254
  Tunnel config nested limit is 0, current nested number is 0
  Tunnel protocol/transport is ipv6ip
  Tunnel transport VPN is no set
```

Field Description

Field	Description
Destination	The tunnel destination address. The address 0.0.0.0 indicates that the destination address is not configured.
Tunnel source	The tunnel source address, which can be either an IPv4 or an IPv6 address. If the <b>tunnel source interface</b> command is configured, the tunnel source address is the interface address.
Tunnel TTL	The TTL or hop limit field of the transmission protocol.
Tunnel TOS	The TOS or traffic class field of the transmission protocol. Note that there is an exception. If the field is 0, and the transmission protocol is the same as the payload protocol, the field of the payload protocol is copied to the

	transmission protocol.
Tunnel nested-limit	The limit to the number of tunnel nested encapsulation times. This field is displayed by all tunnels except the 6to4, 6rd and isatap tunnels.
Tunnel protocol/transport	Tunnel encapsulation mode
Key	With the key setting, this field is displayed by only the GRE tunnel.
Checksuming	With the checksum setting, this field is displayed by only the GRE tunnel.
Tunnel VPN	The destination VRF.

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 9.2 show tunnel statistics

Use this command to display the number of configurable tunnel interfaces and configured tunnel interfaces.

**show tunnel statistics**

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults**

N/A

**Command  
Mode**

Privileged EXEC mode/Global configuration mode/Interface configuration mode

**Usage Guide**

This command is used to display the number of configurable tunnel interfaces and configured tunnel interfaces. Note that the actual forwarding capacity is restricted by the number of chipentries. It is possible that the tunnel interface has been created while the chip entry list is full. In that case, the syslog is generated.

**Configuration  
Examples**

The following example displays the number of configurable tunnel interfaces and configured tunnel interfaces.

```
Ruijie#show tunnel statistics
used: 2, limit: 1000
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 9.3 tunnel destination

Use this command to specify the destination IP address of a tunnel interface in interface configuration mode.

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

**tunnel destination** *ip-address*

**no tunnel destination**

Parameter Description	Parameter	Description
	<i>ip-address</i>	Sets the IP address of the specified tunnel destination.

**Defaults** No destination IP address is set by default.

**Command Mode** Interface configuration mode

**Usage Guide** This command must be used to specify the peer address during tunnel setup. Tunnels cannot be set up if this command is not executed.

**Configuration Examples** The following example creates a tunnel interface.

```
Ruijie(config)# interface tunnel 1
```

The following example configures the tunnel mode.

```
Ruijie(config-if)# tunnel mode gre ip
```

The following example sets the destination IP address of tunnel interface.

```
Ruijie(config-if)# tunnel destination 1.1.1.1
```

Related Commands	Command	Description
	<b>show interface tunnel</b>	Displays tunnel interface information.

**Platform Description** N/A

## 9.4 tunnel mode

Use this command to set the encapsulation mode on a tunnel interface.

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

**tunnel mode** { gre {ip | ipv6} | ipv6 | ipip | ipv6ip [ 6to4 | isatap ] }

**no tunnel mode**

**default tunnel mode**

Parameter Description	Parameter	Description
	<b>gre ip</b>	The transmission network is IPv4 network. GRE for the route is at the IP layer
	<b>gre ipv6</b>	The transmission network is IPv6 network. GRE for the route is at the IP layer
	<b>ipv6</b>	The transmission network is IPv6 network. GRE for the route is not at the IP layer.
	<b>ipip</b>	The transmission network is IPv4 network. GRE for the route is not at the IP layer. The user network is IPv4 network.
	<b>ipv6ip</b>	The transmission network is IPv4 network, and GRE for the route is not at the IP layer. The user network is manually configured IPv6 network. The IPv4 address of the peer end needs to be configured.
	<b>ipv6ip 6to4</b>	The transmission network is IPv4 network, and GRE for the route is not at the IP layer. The user network is IPv6 network. The IPv4 address of the peer end does not need to be configured. It is used for connection between IPv6 networks.
	<b>ipv6ip isatap</b>	The transmission network is IPv4 network, and GRE for the route is not at the IP layer. The user network is IPv6 network. The IPv4 address of the peer end does not need to be configured. It is used for quick deployment of IPv6 networks.

**Defaults** For switches and wireless products, the default encapsulation mode is **ipv6ip**.  
For gateways and routers, the default encapsulation mode is **gre ip**.

**Command Mode** Interface configuration mode

**Usage Guide** The tunnel encapsulation format is the tunnel carrier protocol. The default encapsulation format of tunnel interfaces is GRE. You can determine the encapsulation format of tunnel interfaces based on the actual usage. By default, IP tunnel GRE can be implemented without any definition of the encapsulation format.

**Configuration** The following example creates a tunnel interface.

**Examples**

```
Ruijie(config)# interface tunnel 1
```

The following example configures the tunnel mode.

```
Ruijie(config-if-Tunnel 1)# tunnel mode ipv6ip
```

**Related  
Commands**

Command	Description
<b>show interface tunnel</b>	Displays tunnel interface information.

**Platform  
Description**

N/A

## 9.5 tunnel source

Use this command to configure the source IP address for the tunnel.

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

**tunnel source** { *ip-address* | *interface-type interface-number* }

**no tunnel source**

**Parameter  
Description**

Parameter	Description
<i>ip-address</i>	Source IP address of the tunnel used as the source IP address of the packets to be transmitted through the tunnel.
<i>interface-type</i> <i>interface-number</i>	Interface referenced by the tunnel, which will be used as the source IP address of the packets to be transmitted through the tunnel.

**Defaults** No tunnel source address is configured by default.

**Command** Interface configuration mode.

**Mode**

**Usage Guide** The source IP address of a tunnel can be a specified IP address or an IP address of an interface. When you configure an auto tunnel (for example, 6to4 and isatap), it is recommended to specify the source address.

A device shall not be configured multiple tunnels with the same encapsulation type, source address and destination address.

If there are multiple auto tunnels, their source addresses shall be different.

**Configuration** The following example creates a tunnel interface.

**Examples**

```
Ruijie(config)# interface tunnel 1
```

The following example configures the tunnel mode.

```
Ruijie(config-if-Tunnel 1)# tunnel mode ipv6ip
```

The following example configures an IPv6 manual tunnel.

```
Ruijie(config-if)# tunnel source 1.1.1.1
```

Related Commands	Command	Description
	<b>tunnel mode</b>	Configures the mode of a tunnel.
	<b>tunnel destination</b>	Configures the destination address of a tunnel.
	<b>Tunnel ttl</b>	Configures the TTL of the tunnel.

**Platform** N/A

**Description**

## 9.6 tunnel tos

Use this command to set the IPv4 ToS byte or IPv6 traffic class 8 bits in tunnel interface configuration mode. Use the **no** form of this command to restore the default setting.

**tunnel tos** *number*

**no tunnel tos**

Parameter	Parameter	Description
<b>Description</b>	<i>number</i>	IPv4 ToS byte or IPv6 traffic class 8 bits, in the range from 0 to 255.

**Defaults** By default, the inner-layer IPv4 ToS byte is copied to the outer-layer IPv4 header, if both the inner-layer carrier and the outer-layer encapsulation on a tunnel interface use the IPv4 protocol. By default, the inner-layer IPv6 traffic class 8 bits are copied to the outer-layer IPv6 header if both the inner-layer carrier and the outer-layer encapsulation on a tunnel interface use the Ipv6 protocol. In other circumstances, the outer-layer IPv4 ToS and IPv6 traffic class are 0.

**Command**

**Mode** Interface configuration mode

**Usage Guide** This command is used to set GRE tunnel packets to a higher priority.

**Configuration Examples** The following example sets the ToS byte for a GRE tunnel outer-layer encapsulation protocol to 100 on interface tunnel 1.

```
Ruijie(config)# interface tunnel 1
Ruijie(config-if)# tunnel mode ipv6ip
Ruijie(config-if)# tunnel tos 100
```

Related Commands	Command	Description
	<b>show interface tunnel</b>	Displays tunnel interface information.

**Platform** N/A

**Description**

## 9.7 tunnel ttl

Use this command to specify the TTL value of the IPv4 header in the encapsulated IPv6 messages.

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

**tunnel ttl** *hop-count*

**no tunnel ttl**

Parameter	Parameter	Description
<b>Description</b>	<i>hop-count</i>	TTL value

**Defaults** The default is 255.

**Command** Interface configuration mode

**Mode**

**Usage Guide** This command is used to specify the TTL value of the IPv4 header in the encapsulated IPv6 messages.

**Configuration** The following example creates a tunnel interface.

**Examples**

```
Ruijie(config)# interface tunnel 1
```

The following example configures the tunnel mode.

```
Ruijie(config-if-Tunnel 1)# tunnel mode ipv6ip
```

The following example sets the TTL value to 100.

```
Ruijie(config-if)# tunnel ttl 100
```

Related	Command	Description
<b>Commands</b>	<b>tunnel mode</b>	Configures the mode of a tunnel.
	<b>tunnel source</b>	Configures the source IP address of the tunnel.
	<b>tunnel destination</b>	Configures the destination IP address of a tunnel.

**Platform** N/A

**Description**

## 10 Network Connectivity Test Tool Commands

### 10.1 clear rping table all

Use this command to clear Rping entries.

**clear rping table** [**all** | [**ping-object** *owner test-name*] | [**trace-object** *owner test-name*]]

Parameter Description	Parameter	Description
	<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

### 10.2 ping

Use this command to test the connectivity of a network to locate the network connectivity problem. The command format is as follows:

**ping** [**oob** | **vrf** *vrf-name* | **ip**] [**address** [**via** *mgmt-name*] [**length** *length*] [**ntimes** *times*] [**timeout** *seconds*] [**data** *data*] [**source** *source*] [**df-bit**] [**validate**] [**detail**] [**out-interface** *interface* [**next-hop** *next-hop*]]]

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



n

<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>interface</i>	Specifies the outbound interface
<i>next-hop</i>	Specifies the next hop IPv4 address
<i>millisecond</i>	Specifies the ping interval, in the range from 10 to 30000 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 Mode** 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

**Guide** the extension functions of ping, the number, quantity and timeout time of the packets to be sent can be specified, and the statistics is also displayed in the end. To use the domain name function, configure the domain name server firstly. For the concrete configuration, refer to the DNS Configuration section.

**Configuration** The following example tests the connectivity of a network to locate the network connectivity problem.

```
(regular ping).Ruijie# ping 192.168.21.26
Sending 5, 100-byte ICMP Echoes to 192.168.21.26, timeout is 2 seconds:
 < press Ctrl+C to break >
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/10 ms
```

The following example displays details.

```
Ruijie#ping 192.168.21.26 detail
*Apr 16 09:16:08: %PING-7-DEBUG: Ping vrf index -1.
```

```

Sending 5, 100-byte ICMP Echoes to 192.168.21.26, timeout is 2 seconds:
  < press Ctrl+C to break >
Reply from 192.168.21.26: bytes=100 time=4ms TTL=64
Reply from 192.168.21.26: bytes=100 time=3ms TTL=64
Reply from 192.168.21.26: bytes=100 time=1ms TTL=64
Reply from 192.168.21.26: bytes=100 time=1ms TTL=64
Reply from 192.168.21.26: bytes=100 time=1ms TTL=64
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/4 ms.2

```

The following example tests the connectivity of a network to locate the network connectivity problem (extension ping).

```

Ruijie# ping 192.168.21.26 length 1500 ntimes 100 data ffff source 192.168.21.99
timeout 3
Sending 100, 1500-byte ICMP Echoes to 192.168.21.26, timeout is 3 seconds:
  < press Ctrl+C to break >
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
Success rate is 100 percent (100/100), round-trip min/avg/max = 2/2/3 ms

```

The following example displays the details.

```

ping 192.168.21.26 length 1500 ntimes 20 data ffff source 192.168.21.99 timeout 3
detail
Sending 20, 1500-byte ICMP Echoes to 192.168.21.26, timeout is 3 seconds:
  < press Ctrl+C to break >
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=2ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=1ms TTL=64
Reply from 192.168.21.26: bytes=1500 time=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 s	Command	Description
	N/A	N/A

**Platform** N/A

**Description**  
n

### 10.3 ping ipv6

Use this command to test the connectivity of a network to locate the network connectivity problem. The command format is as follows:

```
ping [ vrf vrf-name | [ oob ] ipv6 ] [ ip-address [ via mgmt-name ] [ length length ] [ ntimes times ] [ timeout seconds ] [ data data ] [ source source ] [ detail ] [ interval millisecond ] [ out-interface interface [ next-hop next-hop ] ]
```

Parameter Description n	Parameter	Description
	<b>oob</b>	
<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>interface</i>		Specifies the outbound interface
<i>next-hop</i>		Specifies the next hop IPv6 address
<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** Privileged EXEC mode.

**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.

**Configurat** The following example tests the connectivity of a network to locate the network connectivity problem.

**ion**

**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
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**

### 10.4 show rping detail

Use this command to display Rping information.

**show rping detail**

**Parameter Description**

Parameter	Description
N/A	N/A

**Defaults** N/A

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

**Usage Guide** This command is used to display the Rping information such as numbers of test accounts and users.

**Configuration Examples** The following example displays Rping information.

```

Ruijie#show rping detail
Total owner number: 2
Total test number: 4
owner: user1
  test name: taget_1      storage type: volatile
test name: taget_2      storage type: nonVolatile
    
```

```
owner: user2
  test name: taget_1      storage type: permanent
test name: taget_2      storage type: readOnly
```

Field	Description
Total owner number	The number of users
Total test number	The number of Rping accounts
owner	Username
test name	Test name
storage type	Storage type

#### Related Commands

Command	Description
N/A	N/A

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

## 10.5 traceroute

Use this command to display all gateways passed by the test packets from the source address to the destination address.

```
traceroute [ oob | vrf vrf-name | ip ] [ address [ via mgmt-name ] ] [ probe number ] [ source source ] [ timeout seconds ] [ ttl minimum maximum ] [ out-interface interface [ next-hop next-hop ] ]
```

#### 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).
<i>interface</i>	Specifies the outbound interface
<i>next-hop</i>	Specifies the next hop IPv4 address

**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 **tracert** 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 tracert, 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# tracert 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# tracert 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** N/A

**Description**

## 10.6 traceroute ipv6

Use this command to display all gateways passed by the test packets from the source address to the destination address.

**traceroute** [ **vrf** *vrf-name* | [ **oob** **ipv6** ] ] [ *address* [ **via** *mgmt-name* ] ] [ **probe** *number* ] [ **timeout** *seconds* ] [ **tll** *minimum maximum* ] [ **out-interface** *interface* [ **next-hop** *next-hop* ] ]

**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.
<i>interface</i>	Specifies the outbound interface
<i>next-hop</i>	Specifies the next hop IPv6 address

**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
 1  3000::1      0 msec  0 msec  0 msec
 2  3001::1      4 msec  4 msec  4 msec
 3  3002::1      8 msec  8 msec  4 msec
 4  3004::1      4 msec  28 msec 12 msec
```

From above result, it's clear to know that the gateways passed by the packets sent to the host with an IP address of 3004::1 (gateways 1~4) and the spent time are displayed. Such information is helpful for network analysis.

2. When some gateways in the network fail:

```
Ruijie# traceroute ipv6 3004::1
< press Ctrl+C to break >
Tracing the route to 3004::1
 1  3000::1      0 msec  0 msec  0 msec
 2  3001::1      4 msec  4 msec  4 msec
 3  3002::1      8 msec  8 msec  4 msec
 4  * * *
 5  3004::1      4 msec  28 msec 12 msec
```

The above result clearly shown that the gateways passed by the packets sent to the host with an IP address of 3004::1 (gateways 1~5) and the spent time are displayed, and gateway 4 fails.

---

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

**Platform  
Description** N/A

## 11 TCP Commands

### 11.1 ip tcp keepalive

Use this command to enable the TCP keepalive function. Use the **no** form of this command to restore the default setting,

**ip tcp keepalive** [ **interval** *num1* ] [ **times** *num2* ] [ **idle-period** *num3* ]

#### 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

## 11.2 ip tcp mss

Use this command to set the upper limit of the MSS value. Use the **no** form of this command to restore the default setting.

**ip tcp mss** *max-segment-size*

**no ip tcp mss**

### Parameter Description

Parameter	Description
<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

Global configuration mode

### 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

## 11.3 ip tcp path-mtu-discovery

Use this command to enable Path Maximum Transmission Unit (PMTU) discovery function for TCP in global configuration mode. Use the **no** form of this command to restore the default setting.

**ip tcp path-mtu-discovery** [ **age-timer** *minutes* | **age-timer infinite** ]

**no ip tcp path-mtu-discovery**

### Parameter Description

Parameter	Description
<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 infinite</b>	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>

**Platform Description** N/A

## 11.4 ip tcp send-reset

Use this command to enable the device to send the reset packet when receiving the TCP port unreachable packet. Use the **no** form of this command to disable this function,

**ip tcp send-reset**  
**no ip tcp send-reset**

Parameter Description	Parameter	Description
		N/A

**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**

## 11.5 ip tcp synwait-time

Use this command to set the timeout value for SYN packets (the maximum time from SYN transmission to successful three-way handshake). Use the **no** form of this command to restore the default setting.

**ip tcp synwait-time** *seconds*

**no ip tcp synwait-time**

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

## 11.6 ip tcp window-size

Use this command to change the size of receiving buffer and sending buffer for TCP connections. Use the **no** form of this command to restore the default setting.

**ip tcp window-size** *size*

**no ip tcp window-size**

Parameter Description	Parameter	Description
	<i>size</i>	

**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** N/A

**Description**

## 11.7 service tcp-keepalives-in

Use this command to enable the keepalive function for the TCP server. Use the **no** form of this command to restore the default setting.

**service tcp-keepalives-in** [ *interval* ] [ **garbage** ]

**no service tcp-keepalives-in**

Parameter Description	Parameter	Description
	<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.

## 11.8 service tcp-keepalives-out

Use this command to enable the keepalive function for the TCP client. Use the **no** form of this command to restore the default setting,



**service tcp-keepalives-out** [ *interval* ] [ **garbage** ]  
**no service tcp-keepalives-out** [ *interval* ] [ **garbage** ]

**Parameter  
Description**

Parameter	Description
<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.

## 11.9 show ipv6 tcp connect

Use this command to display the current IPv6 TCP connection information.

**show ipv6 tcp connect** [ **local-ipv6** X:X:X:X::X ] [ **local-port** *num* ] [ **peer-ipv6** X:X:X:X::X ]  
[ **peer-port** *num* ]

Use this command to display the current IPv6 TCP connection statistics.

**show ipv6 tcp connect statistics**

**Parameter  
Description**

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

<b>local-ipv6</b> X:X:X:X::X	Local IPv6 address
<b>local-port</b> num	Local port
<b>peer-ipv6</b> X:X:X:X::X	Peer IPv6 address
<b>peer-port</b> num	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**

## 11.10 show ipv6 tcp pmtu

Use this command to display information about IPv6 TCP PMTU.

```
show ipv6 tcp pmtu [ local-ipv6 X:X:X:X::X ] [ local-port num ] [ peer-ipv6 X:X:X:X::X ] [ peer-port num ]
```

Parameter Description	Parameter	Description
	<b>local-ipv6</b> X:X:X:X::X	Local IPv6 address
	<b>local-port</b> num	Local port
	<b>peer-ipv6</b> X:X:X:X::X	Peer IPv6 address
	<b>peer-port</b> num	Peer port

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration Examples** The following example information about IPv6 TCP PMTU.

```
Ruijie# show ipv6 tcp pmtu
Number  Local Address          Foreign Address      PMTU
1       1000::1:23             1000::2.13560
```

Field	Description
Number	Number
Local Address	Local address and port number. The number after the last colon is the port number.
Foreign Address	Remote address and port number. The number after the last colon is the port number.
PMTU	Path MTU.

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 11.11 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.

<p><b>State</b></p>	<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>
<p><b>Process Name</b></p>	<p>Process name</p>

The following example displays the current IPv6 TCP connection statistics.

```
Ruijie#show ipv6 tcp connect statistics
State          Count
-----
ESTABLISHED 1
SYN_SENT      0
SYN_RECV      0
FIN_WAIT1     0
FIN_WAIT2     0
TIME_WAIT     0
CLOSED        0
CLOSE_WAIT    0
LAST_ACK      0
LISTEN        1
CLOSING       0
Total: 2
```

**Related Commands**

Command	Description
N/A	N/A

**Platform**

N/A

**Description****11.12 show tcp connect**

Use this command to display basic information about the current TCP connections.

**show tcp connect** [ **local-ip** *a.b.c.d* ] [ **local-port** *num* ] [ **peer-ip** *a.b.c.d* ] [ **peer-port** *num* ]

Use this command to display the current IPv4 TCP connection statistics.

**show tcp connect statistics**

**Parameter Description**

Parameter	Description
<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

## 11.13 show tcp parameter

Use this command to show TCP parameters.

**show tcp parameter**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** 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**

## 11.14 show tcp pmtu

Use this command to display information about TCP PMTU.

**show tcp pmtu** [ **local-ip** *a.b.c.d* ] [ **local-port** *num* ] [ **peer-ip** *a.b.c.d* ] [ **peer-port** *num* ]

**Parameter Description**

Parameter	Description
<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 Examples** 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**

## 11.15 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

## 11.16 show tcp statistics

Use this command to show TCP statistics on received packets, three way handshake and time-wait.  
**show tcp parameter**

#### Parameter Description

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

N/A	N/A
-----	-----

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** 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

## 12 IPv4/IPv6 REF Commands

### 12.1 clear ip ref packet statistics

Use this command to clear IPv4 Ruijie Express Forwarding (REF) packet statistics.

**clear ip ref packet statistics**

<b>Parameter</b>	<b>Parameter</b>	<b>Description</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 Examples</b>	The following example clears IPv4 REF packet statistics.	
	<pre>Ruijie #clear ip ref packet statistics</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	N/A	N/A
<b>Platform Description</b>	N/A	

### 12.2 clear ipv6 ref packet statistics

Use this command to clear IPv6 REF packet statistics.

**clear ipv6 ref packet statistics**

<b>Parameter</b>	<b>Parameter</b>	<b>Description</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	

**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**

## 12.3 show ip ref adjacency

Use this command to display the information about the specified adjacent node or all adjacent nodes.

**show ip ref adjacency** [ **glean** | **local** | *ip-address* | **interface** *interface\_type interface\_number* | **discard** | **statistics** ]

Parameter	Parameter	Description
<b>Description</b>	<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	Command	Description
Commands	<b>show ip ref route</b>	Displays all route information in the current REF module.

Platform N/A

Description

## 12.4 show ip ref exact-route

This command is used to display the IPv4 REF exact route.

```
show ip ref exact-route [ oob | vrf vrf_name ] source_ipaddress dest_ipaddress
```

Parameter	Parameter	Description
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.
	<i>source_ipaddress</i>	Source IP address of the packet
	<i>dest_ipaddress</i>	Destination IP address of the packet

Defaults N/A

**Command** Privileged EXEC mode

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



## 12.5 show ip ref packet statistics

Use this command to display IPv4 REF packet statistics.

**show ip ref packet statistics**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** 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 Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 12.6 show ip ref resolve-list

Use this command to display the IPv4 REF resolution information.

**show ip ref resolve-list**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays IPv4 REF resolution information.

Field	Description
IP	IP address
res_state	unres: unresolved res: resolved
flags	0: related to adjacency 1: unrelated to adjacency
interface	Interface

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 12.7 show ip ref route

Use this command to display all the routing information in the IPv4 REF table.

**show ip ref route** [ *oob* | *vrf vrf\_name* ] [ *default* | *ip mask* | *statistics* ]

Parameter Description	Parameter	Description
	<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.
	<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 Commands**

Command	Description
show ip ref exact-route	Displays the accurate REF forwarding path of an IP packet.

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

## 12.8 show ipv6 ref adjacency

Use this command to display the information about the IPv6 adjacent node.

**show ipv6 ref adjacency** [**glean** | **local** | *ipv6-address* | **interface** *interface\_type* *interface\_number* | **discard** | **statistics** ]

**Parameter Description**

Parameter	Description
<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>ipv6-address</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 privileged EXEC mode and global configuration mode.

**Configuration Examples** The following example displays the information about the IPv6 adjacent node..

**Examples**

```
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**

## 12.9 show ipv6 ref exact-route

This command is used to display the IPv6 REF exact route.

**show ipv6 ref exact-route** [ **oob** | **vrf** *vrf\_name* ] *source-ipv6-address destination-ipv6-address*

Parameter Description	Parameter	Description
	<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-ipv6-address</i>	Source IP address of the packet
	<i>destination-ipv6-address</i>	Destination IP address of the packet

**Defaults** N/A

**Command** Privileged EXEC mode

**Mode****Usage Guide** N/A**Configuration** The following example displays the IPv4 REF exact route from 2001:db8:1::1 to 3001:db8:2::2.**Examples**

```
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**

## 12.10 show ipv6 ref packet statistics

Use this command to display IPv6 REF packet statistics.

**show ipv6 ref packet statistics**

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

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

**Defaults** N/A

**Command** Privileged EXEC mode

**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**

## 12.11 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

## 12.12 show ipv6 ref route

Use this command to display all the routing information in the IPv6 REF table.

**show ipv6 ref route [ oob | vrf vrf-name ] [ default | statistics | prefix/len ]**



Parameter Description	Parameter	Description
	<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 Examples** The following example creates a VRF with the name of vpn1 and creates its RIP instance.

```
Ruijie(config)# ip vrf vpn1
Ruijie(config-vrf)# exit
Ruijie(config)# interface fastEthernet 1/0
Ruijie(config-if-FastEthernet 0/1)# ip vrf forwarding vpn1
Ruijie(config-if-FastEthernet 0/1)# ip address 192.168.1.1 255.255.255.0
Ruijie(config)# router rip
Ruijie(config-router)# address-family ipv4 vrf vpn1
Ruijie(config-router)# network 192.168.1.0
Ruijie(config-router)# exit-address-family
```

Related Commands	Command	Description
	<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.

```
Ruijie (config)# router rip
Ruijie (config-router)# version 2
Ruijie (config-router)# no auto-summary
```

<b>Related Commands</b>	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**

<b>Parameter Description</b>	Parameter	Description
	N/A	N/A

**Defaults** BFD is not configured by default.

**Command Mode** Routing process configuration mode

**Usage Guide** With the BFD function enabled on the RIP, one BFD session will be established for the RIP routing information source (the source address of the RIP route update packet). Once the BFD neighbor fails, the RIP routing information will be invalid directly and no longer join routing or forwarding. You can also use the interface configuration mode command **ip rip bfd [disable]** to enable or disable the BFD function on the specified interface, which takes precedence over the command **bfd all-interfaces** in the routing process configuration mode.

#### Configuration

**Examples** N/A

<b>Related Commands</b>	Command	Description
	<b>route ip</b>	Creates the RIP routing process 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 1-15 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 RGNOS regards the route unreachable.

**Defaults** The default is 1.

**Command**

**Mode** Routing process configuration mode

**Usage Guide** This command needs to work with the command **redistribute**. When the routes are redistributed to the RIP routing process from a routing protocol process, the route metric value cannot be converted due to the incompatibility of the metric calculation mechanisms for different protocols. During the conversion, therefore, it is required to redefine the metric values of redistributed routes in the RIP routing domain. If there is no clear definition of the metric value in redistributing a routing protocol process, the RIP uses the metric value defined with **default-metric**. If the metric value is defined, this value overwrites the metric value defined with default-metric. If this command is not configured, the default value of default-metric is 1.

**Configuration Examples** The following example enables the RIP routing protocol to redistribute the routes learned by the OSPF routing protocol, whose initial RIP metric value is set to 3.

```
Ruijie (config)# router rip
Ruijie (config-router)# default-metric 3
Ruijie (config-router)# redistribute ospf 100
```

**Related Commands**

Command	Description
<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** The following example sets the management distance of the RIP route to 160, and specifies the

**Examples** 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 graceful-restart

Use this command to configure the RIP graceful restart (GR) function for a device. Use the **no** form of this command to restore the default configuration.

**graceful-restart** [ **grace-period** *grace-period* ]**no graceful-restart** [ **grace-period** ]**Parameter Description**

Parameter	Description
<b>graceful-restart</b>	Enables the GR function.
<b>grace-period</b>	(Optional) Configures the grace period.
<i>grace-period</i>	(Optional) Indicates the user-defined GR period. The default value is the smaller value between twice the update time and 60 seconds. The range is from 1 to 1,800. The unit is second.

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

**Command**

**Mode** Routing process configuration mode

**Usage Guide** The GR function is configured on the RIP instances. Different parameters can be configured for different RIP instances.

The GR period refers to the time from the startup to the end of RIP GR. During this period, the forwarding table remains unchanged and the RIP route is restored to the state before protocol restart. When the GR period expires, RIP exits the GR state and performs normal RIP operation.

The **graceful-restart grace-period** command enables users to modify GR period. Note: Make sure that GR is completed before the RIP route is validate and after an RIP route update cycle elapses. If an improper value is configured, non-stop data forwarding cannot be ensured during the GR process. For example, if the GR period is longer than the time when the neighbor's route is unavailable and GR is not completed before the route is validated, then the neighbor is not re-informed of the route and forwarding of the neighbor's route is terminated when it is validated, which results in data forwarding interruption. Therefore, unless otherwise specified, it is not recommended to adjust the GR period. If the period needs to changed, determine that the grace period is longer than the route update cycle and shorter than the time when the route is unavailable in combination with the configuration of the **timers basic** command.

 During the RIP GR period, the network must be stable.

**Configuration Examples** The following example enables the RIP GR function and configures the GR period parameters of the GR function.

```
Ruijie(config)# router rip
Ruijie(config-router)# graceful-restart grace-period 90
```

**Related Commands**

Command	Description
<b>timers basic</b>	Configures RIP timers.

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

## 1.13 ip rip authentication key-chain

Use this command to enable RIP authentication and specify the keychain used for RIP authentication. Use the **no** form of this command to restore the default setting.

**ip rip authentication key-chain** *name-of-keychain*

**no ip rip authentication key-chain**

**Parameter**

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

<b>Description</b>	
	<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**

## 1.14 ip rip authentication mode

Use this command to define the RIP authentication mode. Use the **no** form of this command to restore the default setting.

**ip rip authentication mode { text | md5 }**



**no ip rip authentication mode**

Parameter Description	Parameter	Description
	<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 Examples** The following example configures the RIP authentication mode on the fastEthernet 0/1 as MD5.

```
Ruijie (config)#interface fastEthernet 0/1
Ruijie (config-if-FastEthernet 0/1)# ip rip authentication mode md5
```

**Related Commands**

Command	Description
<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**

## 1.15 ip rip authentication text-password

Use this command to enable RIP authentication and set the password string of RIP plaintext

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

**ip rip authentication text-password** [ 0 | 7 ] *password-string*

**no ip rip authentication text-password**

Parameter Description	Parameter	Description
	<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**

## 1.16 ip rip bfd

Use the **ip rip bfd** [ **disable** ] command to configure the specified interface running RIP to enable or disable link detection using the BFD. Use the **no** form of this command to restore the default setting.

**ip rip bfd** [ **disable** ]

**no ip rip bfd**

Parameter Description	Parameter	Description
	<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 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**

## 1.17 ip rip default-information

Use this command to advertise the default route through a RIP interface. Use the `no` form of this command to restore the default setting.

**ip rip default-information** { **only** | **originate** } [**metric** *metric-value* ]

**no ip rip default-information**

Parameter Description	Parameter	Description
	<b>only</b>	Notifies the default route rather than other routes.
	<b>originate</b>	Notifies the default route and other routes.


<b>metric</b> <i>metric-value</i>	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**

## 1.18 ip rip receive enable

Use this command to enable RIP to receive the RIP data package on a specified interface. Use the **no** form of this command to restore the default setting.

**ip rip receive enable**

**no ip rip receive enable**

**Parameter Description**

Parameter	Description
N/A	N/A

**Defaults** RIP packages can be received through the interface by default.

**Command**

**Mode** Interface configuration mode

**Usage Guide** To prevent an interface from receiving RIP packets, use the **no** form of this command in interface configuration mode. This command works on interfaces configured with this command. You can use the **default** form of this command to enable the interface to receive the RIP data package.

**Configuration** 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 Commands**

Command	Description
<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**

## 1.19 ip rip receive version

Use this command to define the version of RIP packets received on an interface. Use the **no** form of this command to restore the default setting.

**ip rip receive version [ 1 ] [ 2 ]**

**no ip rip receive version**

**Parameter Description**

Parameter	Description
<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**

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

<b>Commands</b>		
	<b>version</b>	Defines the default version of the RIP packets received/sent on the interface.

**Platform** N/A

**Description**

## 1.20 ip rip send enable

Use this command to enable RIP to send a RIP data package on a specified interface. Use the **no** form of this command to restore the default setting.

**ip rip send enable**

**no ip rip send enable**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	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
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<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**

## 1.21 ip rip send supernet-routes

Use this command to enable RIP to send the supernet route on a specified interface. Use the **no** form

of this command to disable this function.

**ip rip send supernet-routes**

**no ip rip send supernet-routes**


Parameter	Parameter	Description
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**

## 1.22 ip rip send version

Use this command to define the version of the RIP packets sent on the interface. Use the **no** form of this command to restore the default setting.

**ip rip send version [ 1 ] [ 2 ]**

**no ip rip send version**

Parameter	Parameter	Description
Description		

1	(Optional) Receives only RIPv1 packets.
2	(Optional) Receives only RIPv2 packets.

**Defaults** The default behavior depends on the configuration with the version command.

**Command**

**Mode** Interface configuration mode

**Usage Guide** This command overwrites the default configuration of the **version** command. It affects only RIP packet sending through the interface and allows RIPv1 and RIPv2 packages sent on the interface at the same time. If the command is configured without parameters, package receiving depends on the configuration of the version.

**Configuration Examples** The following example enables sending both RIPv1 and RIPv2 packages on the fastEthernet 0/1 interface.

```
Ruijie (config)# interface fastEthernet 0/1
Ruijie (config-if-FastEthernet 0/1)# ip rip send version 1 2
```

**Related Commands**

Command	Description
<b>version</b>	Defines the default version of the RIP packets received/sent on the interfaces.

**Platform** N/A

**Description**

## 1.23 ip rip split-horizon

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

**ip rip split-horizon [ poisoned-reverse ]**

**no ip rip split-horizon [ poisoned-reverse ]**

**Parameter Description**

Parameter	Description
<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**

## 1.24 ip rip subvlan

Use this command to enable RIP on super VLANs. Use the **no** form of this command to restore the default setting.

**ip rip subvlan [all | vid]**

**no ip rip subvlan**

**Parameter  
Description**

Parameter	Description
all	Indicates that packets are allowed to be sent to all sub VLANs.
vid	Specifies the sub VLAN ID. The value ranges from 1 to 4094.

**Defaults** The default setting takes effect only on super VLANs with RIP disabled.

**Command**

**Mode** Interface configuration mode

**Usage Guide** In normal cases, a super VLAN contains multiple sub VLANs. Multicast packets of a super VLAN are also sent to its sub VLANs. In this case, when RIPng multicast packets are sent over a super VLAN containing multiple sub VLANs, the RIPng multicast packets are replicated multiple times, and the device processing capability is insufficient. As a result, a large number of packets are discarded, causing the neighbor down error. In most scenarios, the RIPng function does not need to be enabled on a super VLAN. Therefore, the RIPng function is disabled by default. However, in some scenarios, the RIPng function must be run on the super VLAN, but packets only need to be sent to one sub VLAN. In this case, run this command to specify a particular sub VLAN. You must be cautious in configuring packet transmission to all sub VLANs, as the large number of sub VLANs may cause a device processing bottleneck, which will lead to the neighbor down error.

**Configuration** The following example sends the RIP multicast packets to sub VLAN 1024 of super VLAN 300.

**Examples**

```
Ruijie(config)# interface vlan 300
Ruijie(config-if-VLAN 300)# ip rip subvlan 1024
```

**Related Commands**

Command	Description
N/A	N/A

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

## 1.25 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.

- i** The summary range configured by this command cannot be a super class network, that is, the configured mask length is greater than or equal to the natural mask length of the network.

**Configuration Examples** The following example disables the automatic route convergence function of RIPv2. Interface convergence is configured so that fastEthernet 0/1 advertises the converged route 172.16.0.0/16.

```
Ruijie (config)# interface fastEthernet 0/1
Ruijie (config-if-FastEthernet 0/1)# ip rip summary-address 172.16.0.0
255.255.0.0
Ruijie (config-if-FastEthernet 0/1)# ip address 172.16.1.1 255.255.255.0
Ruijie (config)# router rip
Ruijie (config-router)# network 172.16.0.0
Ruijie (config-router)# version 2
Ruijie (config-router)# no auto-summary
```

#### Related Commands

Command	Description
<b>auto-summary</b>	Enables the automatic convergence of RIP routes.

**Platform** N/A

#### Description

## 1.26 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** The following example enables TRIP and sets the retransmission interval and maximum

**Examples** 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.
	<b>ip rip split-horizon</b>	Configures RIP split horizon.

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

## 1.27 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
	<b>version</b>	Defines the default version of the RIP packets received and sent on the interface.

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

## 1.28 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 Description** N/A

## 1.29 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 Description** N/A

## 1.30 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 Examples** The following example increases the metric of the RIP routes by 7 in the range specified by ACL 7.

```
Ruijie (config-router)# offset-list 7 out 7
```

The following example increases the metric of the RIP routes by 7 in the range specified by ACL 7 and learned by fastethernet 0/1.

```
Ruijie (config-router)# offset-list 8 in 7 fastethernet 0/1
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 1.31 output-delay

Use this command to modify the delay to send RIP update packets. Use the **no** form of this command to restore the default setting.

**output-delay** *delay*

**no output-delay**

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



<b>Description</b>		
	<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**

**Mode** Routing process configuration mode

**Usage Guide** In normal cases, the size of a RIP update packet is 512 bytes including 25 routes. If the number of updated routes is greater than 25, update packets will be sent through multiple routes. Note that the update packets should be sent as fast as possible.

However, when a high-speed device sends a large number of packets to a low-speed device, the low-speed device may not process all the packets timely, resulting in packet loss. In this case, you can use this command to increase the delay to send packets on the high-speed device so that the low-speed device can process all the update packets.

**Configuration** 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
```

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

**Platform** N/A

**Description**

## 1.32 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* }

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<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** Routing process configuration mode

**Mode**

**Usage Guide** The **passive-interface default** command sets all interfaces to the passive interfaces. You can use **no passive-interface** *interface-type interface-num* command to set specified interfaces as non-passive interfaces.

After you set an interface to the passive interface, RIP route update packets will no longer be sent but can be received through the interface. In this case, route update packets can be sent to a specified neighbor through the interfaces by using the **neighbor** command. You can use the **ip rip send enable** and **ip rip receive enable** commands to control whether route update packets can be sent or received through the interface.

**Configuration** The following example sets all interfaces to the passive interfaces and then sets ethernet0/1 to the non-passive interface.

**Examples**

```
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**

## 1.33 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 <i>area-tag</i> .
<b>ospf</b> <i>process-id</i>	Is redistributed from OSPF and specifies an OSPF instance through <i>process-id</i> .

	process-id. The value is in the range from 1 to 65535.
<b>static</b>	Is redistributed from static routes.
<b>level-1   level-1-2   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**

## 1.34 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**

## 1.35 show ip rip

Use this command to display the RIP process information.

**show ip rip [ vrf vrf-name ]**

**Parameter Description**

Parameter	Description
<b>vrf vrf-name</b>	( 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

N/A

#### Description

## 1.36 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 vrf-name</b>	( 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 Description** N/A

## 1.37 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 process-id</b>	Displays redistributed ISIS routes. The process-id parameter indicates ISIS process ID.
	<b>ospf process-id</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 vrf-name</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**

## 1.38 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 vrf-name</b>	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: ripk1
```

```

Authentication text-password: ruijie
Default-information: only, metric 5
IP interface address:
192.168.64.100/24, next update due in 14 seconds
2.2.1.1/24, next update due in 24 seconds
    neighbor 2.2.1.6, next update due in 3 seconds
    neighbor 2.2.1.77, next update due in 13 seconds
2.2.2.57/24, next update due in 16 seconds

```

If the BFD has been configured for RIP, the BFD information is also displayed.

```

Ruijie#show ip rip interface
Serial 0/1 is up, line protocol is up
  Routing Protocol: RIP
    Receive RIPv1 and RIPv2 packets
    Send RIPv1 packets only
    Receive RIP packet: Enabled
    Send RIP packet: Enabled
    Send RIP supernet routes: Enabled
    Recv RIP packet total: 0
    Send RIP packet total: 3
    Passive interface: Disabled
Split Horizon: Enabled
Triggered RIP Disabled
  BFD: Enabled
  V2 Broadcast: Disabled
  Multicast registe: 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**

## 1.39 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.
	<i>vrf 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**

## 1.40 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** The following example enables the RIP update packets that are sent every 10 seconds. If no update

**Examples** 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** N/A  
**Description**

## 1.41 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**

## 1.42 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
<b>1</b>	Defines the RIP version 1.
<b>2</b>	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**

N/A

**Description**

## 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 Examples

The following example uses MD5 authentication and the authentication password backbone in area 0 (backbone area) of the OSPF routing process.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# ip address 192.168.12.1 255.255.255.0
Ruijie(config-if-FastEthernet 0/1)# ip ospf message-digest-key 1 md5 backbone
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# area 0 authentication message-digest
```

### Related Commands

Command	Description
<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 <i>value</i></b>	Sets the metric of the generated default LSA. The range is from 0 to 16777214. The default value is 1.
<b>metric-type <i>type</i></b>	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 <i>seconds</i></b>	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)#area1range 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 Examples** The following example sets area 1 as the transition area to establish virtual link with neighbor 2.2.2.2.

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 172.16.0.0 0.0.15.255 area0
Ruijie(config-router)# network 172.16.17.0 0.0.15.255 area1
Ruijie(config-router)#area1 virtual-link2.2.2.2
```

The following example sets area 1 as the transition area to establish a virtual link with neighbor 1.1.1.1. This virtual link connects area 10 and the backbone area, and works with the OSPF packet authentication inMD5 mode.

```
Ruijie(config)# routerospf1
Ruijie(config-router)# network172.16.17.0 0.0.15.255area1
Ruijie(config-router)# network172.16.252.0 0.0.0.255 area10
```



```
Ruijie(config-router)# area 0 authentication message-digest
Ruijie(config-router)# area1virtual-link 1.1.1.1message-digest-key1md5hello
```

The following example sets area 1 as the transition area to establish a virtual link with neighbor 1.1.1.1, enables the Fast Hello function on this virtual link, and sets the multiplier to 3.

```
Ruijie(config)# routerospf1
Ruijie(config-router)# network172.16.17.0 0.0.15.255 area1
Ruijie(config-router)# network 172.16.252.0 0.0.0.255 area10
Ruijie(config-router)# area1 virtual-link1.1.1.1dead-interval minimal
hello-multiplier 3
```

#### Related Commands

Command	Description
<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>
	<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

**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>

**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.

This command generates a default route of Type-5 LSA, which will not be flooded to the NSSA area. To generate a default route in the NSSA area, use the **area nssa default-information-originate** command.

The routers in the stub area cannot generate external default routes.

 The range of set metric is 0 to 16777214 for the associated route map. If the value exceeds the range, introducing a route fails.

**Configuration 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 Description** N/A

## 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)# routerospf1
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.

```
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
	<code>access-list-number   name</code>	Uses the ACL filtering rule.
	<code>prefix prefix-list-name</code>	Uses the prefix-list filtering rule.
	<code>bgp   connected   isis [ area-tag ]   ospf process-id   rip   static</code>	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
<b>distribute-list in</b>	Configures LSA filtering.
<b>redistribute</b>	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** ] ] **Isa** [ **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 ] ] | isa [ LsdbApproachOverflow | LsdbOverflow | MaxAgeLsa | OriginateLsa ] | retransmit [ IfTxRetransmit | VirtIfTxRetransmit ] | state-change [ IfStateChange | NbrRestartHelperStatusChange | NbrStateChange | NssaTranslatorStatusChange | RestartStatusChange | VirtIfStateChange | VirtNbrRestartHelperStatusChange | VirtNbrStateChange ] ]

Parameter Description

Parameter	Description
<b>error</b>	Configures all traps switches related to errors. Use this parameter to set the following specified error traps switches.
	<b>Ifauthfailure</b>   Interface authentication error
	<b>Ifconfigerror</b>   Interface parameter configuration error
	<b>Ifrxbadpacket</b>   Error packets received on the interface
	<b>Virtifauthfailure</b>   Authentication error on the virtual interface
	<b>Virtifconfigerror</b>   Parameter configuration error on the virtual interface
<b>isa</b>	Configures all traps switches related to the LSA. Use this parameter to set the following specified LSA traps switches.
	<b>Lsdbapproachoverflow</b>   External LSA count has reached the 90% of the upper limit.
	<b>Lsdboverflow</b>   External LSA count has reached the upper limit.
	<b>Maxagelsa</b>   LSA reaching the aging time
<b>Originatelsa</b>   Generates new LSA	
<b>retransmit</b>	Configures all traps switches related to the retransmission. Use this parameter to set the following specified retransmit traps switches.
	<b>Iftxretransmit</b>   Packet retransmission on the interface
	<b>Virtiftxretransmit</b>   Packet retransmission on the virtual interface
<b>state-change</b>	Configures all traps switches related to the state change. Use this parameter to set the following specified state-change switches.
	<b>Ifstatechange</b>   Interface state change
	<b>NbrRestartHelperStatusChange</b>   State change during the neighbor GR process
	<b>Nbrstatechange</b>   Neighbor state change
	<b>NssaTranslatorStatusChange</b>   State change of the NSSA translator
<b>RestartStatusChange</b>   State change of the GR Restarter on the device	

	<b>Virtifstatechange</b>	State change on the virtual interface
	<b>VirtNbrRestartHelper StatusChange</b>	Status change of the virtual neighbor GR process
	<b>Virtnbrstatechange</b>	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 **ifa** 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 **ifa** 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	Parameter	Description
<b>Description</b>	<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
0	Displays the key in plain text.
7	Displays the key in cipher text.
<i>key</i>	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 Examples** The following example configures the OSPF authentication key ospfauth for fast Ethernet 0/1.

```
Ruijie (config)#interfacefastEthernet0/1
Ruijie(config-if-FastEthernet 0/1)# ipaddress172.16.1.1
255.255.255.0
Ruijie(config-if-FastEthernet 0/1)# ip ospf authentication-key ospfauth
```

### Related Commands

Command	Description
<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 ospf bfd [ disable ]**

**no ip ospf bfd [ disable ]**

### Parameter Description

Parameter	Description
<b>disable</b>	Disables BFD on the specified OSPF interface.

### Defaults

BFD is not configured by default, and the BFD configuration in OSPF process configuration mode shall prevail.

### Command

**Mode** Interface configuration mode

### Usage Guide

The interface-based configuration takes precedence over the **bfd all-interfaces** command used in process configuration mode.

Based on the actual environment, you can run the **ip ospf bfd** command to enable BFD on a specified interface for link detection, or run the **bfd all-interfaces** command in OSPF process configuration mode to enable BFD on all interface of the OSPF process, or run the **ospf bfd disable** command to disable BFD on a specified interface.

### Configuration

```
Ruijie(config)# interface fastethernet 0/1
```

### Examples

```
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
```

### Related Commands

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.

### Platform

N/A

### Description

## 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**

**Parameter  
Description**

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 configured with the **ip ospf hello-interval** command

by default.

### Command

**Mode** Interface configuration mode

**Usage Guide** The OSPF dead interval is contained in the Hello packet. If OSPF does not receive a Hello packet from a neighbor within the dead interval, it declares that the neighbor is invalid and deletes this neighbor record 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 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

## 2.33 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**

## 2.34 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  
 10secondsfor 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 to15.

**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** Interface configuration mode

**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**

Parameter Description	Parameter	Description
	<i>priority</i>	

**Defaults** The default is 1.

**Command**

**Mode** Interface configuration mode

**Usage Guide** The interface priority is included in the Hello packet. When DR/BDR election occurs in the OSPF broadcast type network, the device with higher priority will become the DR or BDR. If the devices have the same priority, the one with higher ID will become the DR or BDR. The device with priority 0 cannot become DR or BDR. This command is valid only for OSPF broadcast and non-broadcast network types.

**Configuration** The following example configures the priority of fastethernet 0/1 as 0.

**Examples**

```
Switch(config)#interface fastethernet 0/1
Ruijie(config-if-FastEthernet 0/1)# ipospfpriority0
```

Related Commands	Command	Description
	<b>ip ospf network</b>	

**Platform** N/A

**Description**

## 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**

Parameter Description	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.

**Defaults** The default is 5.

**Command**

**Mode** Interface configuration mode

**Usage Guide** After the device sends an LSU packet, the LSU packet stays in the transmission buffer queue. If no confirmation from the neighbor is obtained in the interval defined with the **ip ospf retransmit-interval** command, the LSU will be sent once again.

In serial lines or virtual links, the retransmission interval shall be slightly larger. The LSU packet retransmission interval of virtual links is defined with the area virtual-link command followed with the keyword retransmit-interval.

**Configuration Examples** The following example configures the LSU packet retransmission interval on fastEthernet 0/1 as 10 seconds.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# ip ospf retransmit-interval 10
```

Related Commands	Command	Description
	<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 subvlan

Use this command to enable OSPF on super VLANs. Use the **no** form of this command to restore the default setting.

**ip ospf subvlan [all | vid]**

**no ip ospf subvlan**

**Parameter  
Description**

Parameter	Description
all	Indicates that packets are allowed to be sent to all sub VLANs.
vid	Specifies the sub VLAN ID. The value ranges from 1 to 4094.

**Defaults** The default setting takes effect only on super VLANs with OSPFv3 disabled.

**Command**

**Mode** Interface configuration mode

**Usage Guide** In normal cases, a super VLAN contains multiple sub VLANs. Multicast packets of a super VLAN are

also sent to its sub VLANs. In this case, when OSPF multicast packets are sent over a super VLAN containing multiple sub VLANs, the OSPF multicast packets are replicated multiple times, and the device processing capability is insufficient. As a result, a large number of packets are discarded, causing the neighbor down error. In most scenarios, the OSPF function does not need to be enabled on a super VLAN. Therefore, the OSPF function is disabled by default. However, in some scenarios, the OSPF function must be run on the super VLAN, but packets only need to be sent to one sub VLAN. In this case, run this command to specify a particular sub VLAN. You must be cautious in configuring packet transmission to all sub VLANs, as the large number of sub VLANs may cause a device processing bottleneck, which will lead to the neighbor down error.

**Configuration** The following example sends OSPF multicast packets to sub VLAN 1024 of super VLAN 300.

**Examples**

```
Ruijie(config)# interface vlan 300
Ruijie(config-if-VLAN 300)# ip ospf subvlan 1024
```

**Related Commands**

Command	Description
N/A	N/A

**Platform**

N/A

**Description**

## 2.42 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****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  
Commands**

Command	Description
<b>area virtual-link</b>	Defines an OSPF virtual link.

**Platform** N/A

**Description**

## 2.43 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**

## 2.44 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**

## 2.45 max-concurrent-dd

Use this command to specify the maximum number of DD packets that can be processed (initiated or accepted) at the same time. Use the **no** form of this command to restore the default setting.

**max-concurrent-dd** *number*

**no max-concurrent-dd**

Parameter Description	Parameter	Description
	<i>number</i>	Maximum number of DD packets 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, its performance will be affected. This command is configured to limit the maximum number of DD packets that each OSPF instance can have at the same time.

**Configuration** The following example sets the maximum number of DD packets to 4.

**Examples** After the configuration, the device can initiate to interact with four neighbors and can concurrently accept the interaction. That is, the device can interact with a maximum of eight neighbors.

```
Ruijie(config)# routerospf10
Ruijie(config-router)# max-concurrent-dd4
```

Related Commands	Command	Description
	<b>router ospf max-concurrent-dd</b>	Sets the maximum number of neighbors allowed in concurrent interaction for all OSPF routing processes.

**Platform** N/A

**Description**

## 2.46 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* ]]

Parameter Description	Parameter	Description
	<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.

- i** 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**

## 2.47 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 Examples** The following example declares an OSPF non-broadcast network neighbor, with the IP address 172.16.24.2, priority 1 and polling interval 150 seconds.

```
Ruijie(config)# routerospf 20
Ruijie(config-router)# network 172.16.24.0 0.0.0.255 area 0
Ruijie(config-router)# neighbor 172.16.24.2 priority 1 poll-interval 150
```

**Related Commands**

Command	Description
<b>ip ospf priority</b>	Sets the interface priority.
<b>ip ospf network</b>	Sets the network type

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

## 2.48 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**

## 2.49 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   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**

## 2.50 overflow database external

Use this command to configure the maximum number of external LSAs and the waiting time from the overflow state to the normal state. Use the **no** form of this command to restore the default setting.

**overflow database external** *max-dbsize* *wait-time*

**no overflow database external**

**Parameter Description**


Parameter	Description
<i>max-dbsize</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** Routing process configuration mode


**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**

## 2.51 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** The following example prevents the OSPF from entering the OVERFLOW state when the memory is insufficient.

**Examples**

```
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**

## 2.52 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</i> <i>interface-number</i>	Interface to be set as a passive interface
<b>default</b>	Sets all the interfaces as passive interfaces
<i>interface-type</i> <i>interface-number</i> <i>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 Examples** The following example configures fastEthernet 0/1 as a passive interface and the IP address of the interface 1.1.1.1 as the passive address.

```
Ruijie(config)# routerospf 30
Ruijie(config-router)# passive-interface fastEthernet 0/1
Ruijie(config-router)# passive-interface fastEthernet 0/1 1.1.1.1
```

**Related Commands**

Command	Description
<b>show ip ospf interface</b>	Displays the configuration information of the interface.

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

## 2.53 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-2command to modify the configuration.

According to preceding rules, this command restores the level-2 parameter to the default value, namely level-2. Therefore, the configuration remains the same after the no form of the preceding command is executed. redistribute isis 112 level-2 To delete the whole command, use the following command: no redistribute isis 112

**Configuration** The following example redistributes routes of **ospf2** and **isis** isis-001 to the OSPF area.

**Examples**

```
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**

## 2.54 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**

## 2.55 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>

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

## 2.56 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>

**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.

```
Ruijie(config)# router ospf 20
Ruijie(config-router)# router-id 0.0.0.36
```

Related Commands	Command	Description
		<b>show ip protocols</b>

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

## 2.57 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 isenabled
Supports only single TOS(TOS0) routes
Enable two-way-maintain
Supports opaque LSA
Supports Graceful Restart
This router is an ASBR (injecting external routing information)
Originating router-LSAs with maximum metric
Condition:on startup for 100 seconds, State:inactive
Advertise stub links with maximum metric in router-LSAs
Advertise summary-LSAs with metric 16711680
Advertise external-LSAs with metric 16711680
Unset reason:timer expired, Originated for 100 seconds
Unset time:00:02:02.080, Time elapsed: 00:23:54.656
SPF schedule delay 5 secs, Hold time between two SPFs 10 secs
Initial LSA throttle delay 0 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 Adjacency 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 this area	Number of Full neighbors with virtual connections in the area. It is effective only in the non-backbone default-type areas.
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** N/A  
**Description**

## 2.58 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**

## 2.59 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**

N/A

**Description**

## 2.60 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**

## 2.61 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>	

**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**

## 2.62 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> <i>interface-number</i>	(Optional) Displays the neighbor information of the specified interface
	<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**

## 2.63 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**

## 2.64 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**

## 2.65 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**

## 2.66 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**

## 2.67 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

## 2.68 summary-address

Use this command to configure the aggregate route out of the OSPF routing domain. Use the **no** form of this command to restore the remove the aggregate route.

**summary-address** *ip-address net-mask* [ **not-advertise** | **tag value** | **cost cost** ]

**no summary-address** *ip-address net-mask* [ **not-advertise** | **tag** | **cost** ]

#### Parameter Description

Parameter	Description
<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 value</b>	Sets the tag value of an aggregate route. The range is from 0 to 4,294,967,295.
<b>cost cost</b>	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-address100.100.0.0 255.255.0.0
Ruijie(config-router)# redistribute static subnets
Ruijie(config-router)# network200.2.2.0 0.0.0.255 area 1
Ruijie(config-router)# network172.16.24.0 0.0.0.255area 0
Ruijie(config-router)# arealnssa
```

**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**

## 2.69 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)# routerospf1
Ruijie(config-router)# timers arrival-time 2000
```

**Related  
Commands**

Command	Description
<b>show ip ospf</b>	Displays the OSPF information.

- Platform** N/A
- Description**

## 2.70 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**

## 2.71 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**

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

Commands	
<b>show ip ospf</b>	Displays the OSPF process information, including the router ID.

**Platform** N/A

**Description**

## 2.72 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**

## 2.73 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**

## 2.74 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 <i>ia-delay</i> 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 <i>ase-delay</i> 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** The following example sets the .delay time of the inter-area route calculation to one second.

**Examples**

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# timers throttle route inter-area 1000
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform**

N/A

**Description**

## 2.75 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.

- i** 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 timers spf command with the timers throttle spf command.

**Platform** N/A

**Description**

## 2.76 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

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

<b>Description</b>		
	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
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show ip ospf</b>	Displays the configuration information of the OSPF

**Platform** N/A

**Description**

### 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 aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa.

```
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 or NSSA area. Use the **no** form of this command to restore the default setting.

**area** *area-id* **default-cost** *cost*

**no area** *area-id* **authentication**

Parameter Description	Parameter	Description
	<i>area-id</i>	Area ID of the stub or NSSA area. It can be an integer or an IPv4 prefix.
	<i>cost</i>	Cost of the default route of the stub or NSSA area in the range from 0 to 16777215.

**Defaults** The default cost is 1.

**Command Mode** Routing process configuration mode.

**Usage Guide** This command can only work in the ABR connected to the stub area.

**Configuration** 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

```
aaaaaaaaaaaaaaaaaaaaaaaaaaaaa.
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 nssa

Use this command to configure an NSSA area. Use the **no** form of this command to remove the



NSSA area configuration.

```
area area-id nssa [ no-redistribution ] [ default-information-originate [ metric value ]
[ metric-type type ] ] [ no-summary ] [ translator [ stability-interval seconds | always ] ]
no area area-id nssa [ no-redistribution ] [ default-information-originate [ metric ] [ metric-type ] ]
[ no-summary ] [ translator [ stability-interval | always ] ]
```

**Parameter  
Description**

Parameter	Description
<i>area-id</i>	ID of the NSSA area.
<b>no-redistribution</b>	(Optional) Used when the router is an NSSA Area Border Router (ABR) and you want the redistribute command to import routes only into the normal areas, but not into the NSSA area.
<b>default-information-originate</b>	(Optional) Used to generate a Type 7 default into the NSSA area. This keyword takes effect only on the NSSA ABR or the NSSA Autonomous System Boundary Router (ASBR).
<b>metric</b> <i>value</i>	(Optional) Specifies the OSPF default LSA metric. The range is from 0 to 16,777,214, and the default value is 1.
<b>metric-type</b> <i>type</i>	(Optional) Specifies the OSPF metric type for default routes. The value can be 1 or 2 and the default value is 2.
<b>no-summary</b>	(Optional) Allows an area to be an NSSA but not have summary routes injected into it.
<b>translator</b>	(Optional) Configures the NSSA ABR translator.
<b>stability-interval</b> <i>seconds</i>	(Optional) Configures the stability interval after the role of an NSSA ABR is changed from translator to non-translator. The range is from 0 to 2,147,483,647, the default value is 40 and the unit is second.
<b>always</b>	(Optional) Configures the NSSA ABR to be always translator. The default NSSA ABR is a non-translator.

**Defaults** No NSSA area is defined by default.

**Command**

**Mode** Routing process configuration mode

**Usage Guide** The **default-information-originate** parameter is used to generate a default Type 7 LSA. There is a small difference between NSSA ABR and NSSA ASBR on which this command can take effect. On the ABR, the Type-7 default route generates no matter whether a default route exists in the routing table, while on the ASBR, the Type-7 default route generates only when a default routes exists in the routing table.

The **no-redistribution** parameter is used when the router is an NSSA Area Border Router (ABR) and you want the redistribute command to import routes only into the normal areas, but not into the NSSA area. This parameter is generally used on the device acting as both ASBR and ABR in NSSA area to prevent the routes from being imported into the NSSA area.

The **no-summary** parameter allows an area to be an NSSA but not have summary LSAs injected into

it.

In an NSSA area involving two or more ABR devices, by default, the ABR of larger router ID is elected as the translator for Type-7 to Type-5 translation. You can configure the **translator always** parameter to specify an ABR to be always the translator.

When the translator of an ABR device is replaced, the ABR still has the translation capability within the **stability-interval** time. After the stability-interval timer expires and the ABR is not elected as the translator again, then the LSAs translated from Type-7 to Type-5 will be removed from the AS.

To prevent route loop, the Type-5 LSAs aggregated by the Type-7 are removed once the ABR device loses the translator capability, instead of waiting for the stability-interval expiration.

It is recommended to configure the **translator always** parameter on only one ABR device in an NSSA area.

**Configuration** The following example sets the area 1 as an NSSA area.

**Examples**

```
Ruijie(config)# ipv6 router ospf 1
Ruijie(config-router)# area 1 nssa
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

### 3.5 area-range

Use this command to set the range of the converged inter-area addresses. Use the **no** form of this command to restore the default setting.

**area** *area-id* **range** *ipv6-prefix/prefix-length* [ **advertise**|**not-advertise** ]

**no area** *area-id* **range** *ipv6-prefix/prefix-length*

**Parameter  
Description**

Parameter	Description
<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** N/A

**Description**

### 3.6 area stub

Use this command to create a stub area or set its attributes. Use the **no** form of this command to restore the default setting.

**area** *area-id* **stub** [ **no-summary** ]

**no area** *area-id* **stub** [ **no-summary** ]

**Parameter Description**

Parameter	Description
<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** Routing process configuration mode

**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
<code>area default-cost</code>	Sets the cost of the default route in the stub area.

**Platform** N/A

**Description**

### 3.7 area virtual-link




Use this command to create a virtual link or set its parameters. Use the **no** form of this command to restore the default setting.

```
area area-id virtual-link router-id [ hello-interval seconds ] [ dead-interval seconds ]
[ retransmit-interval seconds ] [ transmit-delay seconds ] [ instance instance-id ] [ authentication
ipsec spi spi [ md5 | sha1 ] [ 0 | 7 ] key ] [ encryption ipsec spi spi esp null [ md5 | sha1 ] [ 0 | 7 ]
key ]
```

```
no area area-id virtual-link router-id [ hello-interval ] [ dead-interval ] [ retransmit-interval ]
[ transmit-delay ] [ instance ] [ authentication ] [ encryption ]
```

**Parameter  
Description**

Parameter	Description
<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 [ md5   sha1 ] [ 0   7 ] key</i>	Specifies OSPFv3 authentication.   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.  <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. 0 indicates that a key is displayed in the plain-text format. 7 indicates that a key is displayed in the cipher-text format. <i>key</i> specifies an authentication key.
<b>encryption ipsec spi spi</b> <b>esp null [ md5  sha1 ] [ 0 7 ]</b> <i>key</i>	Specifies OSPFv3 encryption authentication.   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.  <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. 0 indicates that a key is displayed in the plain-text format. 7 indicates that a key is displayed in the cipher-text format. <i>key</i> specifies an authentication key.
<b>authentication ipsec spi</b> <i>spi [ md5   sha1 ] [ 0   7 ] key</i>	Specifies OSPFv3 authentication.   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.  <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. 0 indicates that a key is displayed in the plain-text format. 7 indicates that a key is displayed in the cipher-text format.


	<i>key</i> specifies an authentication key.
--	---

**Defaults** No virtual link is defined by default  
hello-interval: 10 seconds; dead-interval: four times of the hello-interval; retransmit-interval: five seconds; transmit-interval: one second.  
Authentication and encryption are not performed by default.

**Command Mode** Routing process configuration mode

**Usage Guide** In the OSPFv3 AS, all the areas must be connected with the backbone area to ensure that they can learn the routes of the whole OSPFv3 AS. If an area cannot be directly connected with the backbone area, it can connect it through a virtual link.

 The virtual link shall not be in the stub or NSSA area.

 configuration, **dead-interval** and **instance** shall be configured consistently on both sides of the virtual link neighbors, otherwise neighboring relationship cannot be set up between the virtual neighbors.

**Configuration** 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**

### 3.8 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 Description** N/A

### 3.9 bdf all-interfaces

Use this command to enable the BDF on all OSPFv3 interfaces. Use this command to enable the BDF on all OSPFv3 interfaces in the routing configuration mode. Use the **no** form of this command to restore the default setting.

**bdf all-interfaces**

**no bdf all-interfaces**

**Parameter Description**

Parameter	Description
N/A	N/A

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

**Command Mode** Routing process configuration mode.

**Usage Guide** The OSPFv3 protocol dynamically discovers the neighbors through the Hello packets. With the BFD function enabled, BFD sessions will be established for the neighbors that match the FULL rules and

the status of the neighbors will be detected through the BFD mechanism. Once the BFD neighbor fails, the OSPFv3 will perform the network convergence immediately.

You can also use the interface configuration mode command **ipv6 ospf bfd [disable]** to enable or disable the BFD function on the specified interface, which takes precedence over the command **bfd all-interfaces** in the routing process configuration mode.

**Configuration** 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

## 3.10 clear ipv6 ospf process

Use this command to clear and restart the OSPF process.

**clear ipv6 ospf { process | process-id }**

#### Parameter Description

Parameter	Description
<i>process-id</i>	OSPF process ID, in the range from 1 to 65535

**Defaults** N/A

#### Command Mode

Privileged EXEC mode

#### Usage Guide

In normal case, it is not necessary to use this command.

Use the parameter *process-id* to clear only one specific OSPFv3 instance. If no *process-id* is specified, all the OSPFv3 instances will be cleared.

**Configuration** The following example restarts the OSPF process.

#### Examples

```
enable
clear ipv6 ospf process
```

#### Related Commands

Command	Description
N/A	N/A



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

### 3.11 default-information originate

Use this command to generate a default route to the OSPFv3 routing domain in the routing process mode. Use the **no** form of this command to restore the default setting.

**default-information originate** [ **always** ] [ **metric** *metric* ] [ **metric-type** *type* ] [ **route-map** *map-name* ]

**no default-information originate** [ **always** ] [ **metric** ] [ **metric-type** ] [ **route-map** *map-name* ]

Parameter Description	Parameter	Description
	<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.

This command generates a default route of Type-5 LSA, which will not be flooded to the NSSA area. To generate a default route in the NSSA area, use the **area nssa default-information-originate** command.

The routers in the stub area cannot generate external default routes.

**Configuration** 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**

### 3.12 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**

### 3.13 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</b> <i>distance</i>	Sets the management distance of the inter-area route, in the range from 1 to 255.
<b>external</b> <i>distance</i>	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
<b>ipv6 router ospf</b>	Enables the OSPFv3 routing process .

**Platform**

N/A

**Description**

### 3.14 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).

```
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**

### 3.15 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> <i>process-id</i>   <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.

```
Ruijie(config)# ipv6 router ospf 1
Ruijie(config-router)# redistribute static subnets
```

```
Ruijie(config-router)# distribute-list prefix-list jjj out static
```

**Related  
Commands**

Command	Description
<b>redistribute</b>	Re-distributes routes that are carried by other routing processes.

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

### 3.16 enable mib-binding

Use this command to bind MIB to a specific OSPFv3 process. Use the **no** form of this command to restore the default setting.

**enable mib-binding**

**no enable mib-binding**

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults** MIB is bound to an OSPFv3 process with the smallest process number by default.

**Command  
Mode** Routing process configuration mode

**Usage Guide** OSPFv3 MIB has no configuration information about OSFPv3 processes. You can operate only one OSFPv3 process through SNMP. OSFPv3 MIB is bound to the OSFPv3 process with the smallest process number by default. Users' operations take effect on this process.  
To operate a specific OSFPv3 process through SNMP, you can bind OSFPv3 MIB to the process.

**Configuration  
Examples** The following example enables users to operate the OSPFv3 process with the process number of 100 through SNMP.

```
Ruijie(config)# ipv6 router ospf 100
Ruijie(config-router)# enable mib-binding
```

**Related  
Commands**

Command	Description
<b>show ipv6 ospf</b>	Displays global OSPFv3 configuration information.
<b>enable traps</b>	Enables the OSPFv3 trap function.

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

### 3.17 enable traps

OSPFv3 processes support eight types of trap information, which are classified into two categories. Use this command to send specific trap information. Use the **no** form of this command to restore the default setting.

**enable traps** [ **error** [ **IfConfigError** | **IfRxBadPacket** | **VirtIfConfigError** | **VirtIfRxBadPacket** ] | **state-change** [ **IfStateChange** | **NbrStateChange** | **NssaTranslatorStatusChange** | **VirtIfStateChange** | **VirtNbrStateChange** ] ]

**no enable traps** [ **error** [ **IfConfigError** | **IfRxBadPacket** | **VirtIfConfigError** | **VirtIfRxBadPacket** ] | **state-change** [ **IfStateChange** | **NbrStateChange** | **NssaTranslatorStatusChange** | **VirtIfStateChange** | **VirtNbrStateChange** ] ]

Parameter Description	Parameter	Description	
	<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>NssaTranslatorStatusChange</b>	Specifies status change of the NSSA translator.
		<b>VirtIfStateChange</b>	Specifies state change of a virtual interface;
		<b>VirtNbrStateChange</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**

### 3.18 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**

### 3.19 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**

## 3.20 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 Examples** The following example starts the OSPFv3 process on int fastethernet 0/0 for the specified area of the specified instance.

```
int fastethernet 0/0
ipv6 ospf 1 area 2 instance 2
```

Related Commands	Command	Description
	<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**

### 3.21 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	Parameter	Description
-----------	-----------	-------------

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 aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa.

```
Ruijie(config-if)# ipv6 ospf 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 Description** N/A

### 3.22 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 [ dsable ] [ instance instance-id ]
no ipv6 ospf bfd [ instance instance-id ]
```

Parameter Description	Parameter	Description

disable	Disables the BFD function on the specified OSPF interface.
instance <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
<code>ipv6 router ospf process-id</code>	Starts the OSPFv3 routing process and enter into the routing process configuration mode.
<code>bfd all-interfaces</code>	Enables the BFD on all OSPFv3 interfaces.

**Platform** N/A

**Description**

### 3.23 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 instance-id</b>	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).

<b>Command Mode</b>	Interface configuration mode.
<b>Usage Guide</b>	<p>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 <b>bandwidth</b> in the interface configuration mode.</p> <p>The default costs of OSPFv3 interfaces for several typical lines are:</p> <ul style="list-style-type: none"> <li>● 64K serial line: 1562;</li> <li>● E1 line: 48</li> <li>● 10M Ethernet: 10</li> <li>● 100M Ethernet: 1</li> </ul> <p>The OSPFv3 cost configured with the command <b>ipv6 ospf cost</b> will overwrite the default configuration.</p>

**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
```

<b>Related Commands</b>	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**

### 3.24 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* ]

<b>Parameter Description</b>	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 Examples** The following example sets the dead interval of neighbors to 60 seconds on an interface.

```
ipv6 ospf dead-interval 60
```

**Related Commands**

Command	Description
<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 Description** N/A

### 3.25 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 Mode** Interface configuration mode

**Usage Guide** RGOS supports the null encryption mode and two authentication modes: MD5 and SHA1.

 OSPFv3 encryption authentication parameters configured on interconnected interfaces must be consistent.

**Configuration Examples** The following example specifies null encryption and MD5 authentication in OSPFv3 interface configuration mode and sets the authentication password to aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa.

```
Ruijie(config-if)# ipv6 ospf encryption ipsec spi 300 esp null md5
aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa
```

Related Commands	Command	Description
	<b>area encryption</b>	Specifies area encryption authentication.
	<b>area virtual-link encryption</b>	Specifies virtual link encryption authentication.

**Platform Description** N/A



## 3.26 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 Examples** The following example sets the interval for the interface to send the Hello message to 20 seconds.

```
ipv6 ospf hello-interval 20
```

Related Commands	Command	Description
	<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**

## 3.27 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</b> <i>instance-id</i>	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**

## 3.28 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 Examples** The following example shows how to configure the OSPFv3 neighbor in NBMA network, IPv6 address: fe80::2d0:f8ff:fe22:3533, priority value: 1, polling interval: 150 seconds.

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ipv6 ospf network non-broadcast
Ruijie(config-if)# ipv6 ospf neighbor fe80::2d0:f8ff:fe22:3533 priority 1 poll-interval 150
```

**Related Commands**

Command	Description
<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**

### 3.29 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 Examples**

The following example sets the network type of the interface that participates in the OSPFv3 to point-to-point.

```
ipv6 ospf network point-to-point
```

Related Commands	Command	Description
	<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 Description**

N/A

### 3.30 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 Examples** The following example disables the interface from being elected as the DR/BDR.

```
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</b> <i>instance-id</i>	Configures the specific OSPFv3 instance on the interface.

**Platform Description** N/A

### 3.31 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**

### 3.32 ipv6 ospf subvlan

Use this command to enable OSPFv3 on super VLANs. Use the **no** form of this command to restore the default setting.

**ipv6 ospf subvlan [all | vid]**

**no ipv6 ospf subvlan**

**Parameter  
Description**

Parameter	Description
all	Indicates that packets are allowed to be sent to all sub VLANs.
vid	Specifies the sub VLAN ID. The value ranges from 1 to 4094.

**Defaults** The default setting takes effect only on super VLANs with OSPFv3 disabled.

**Command**

Interface configuration mode.

**Mode**

**Usage Guide** In normal cases, a super VLAN contains multiple sub VLANs. Multicast packets of a super VLAN are

also sent to its sub VLANs. In this case, when OSPF multicast packets are sent over a super VLAN containing multiple sub VLANs, the OSPF multicast packets are replicated multiple times, and the device processing capability is insufficient. As a result, a large number of packets are discarded, causing the neighbor down error. In most scenarios, the OSPF function does not need to be enabled on a super VLAN. Therefore, the OSPF function is disabled by default. However, in some scenarios, the OSPF function must be run on the super VLAN, but packets only need to be sent to one sub VLAN. In this case, run this command to specify a particular sub VLAN. You must be cautious in configuring packet transmission to all sub VLANs, as the large number of sub VLANs may cause a device processing bottleneck, which will lead to the neighbor down error.

**Configuration** The following example sends the OSPF multicast packets to sub VLAN 1024 of super VLAN 300.

**Examples**

```
Ruijie(config)# interface vlan 300
Ruijie(config-if-VLAN 300)# ipv6 ospf subvlan 1024
```

### 3.33 ipv6 ospf transmit-delay

Use this command to set the delay on the interface in sending the LSA. Use the **no** form of this command to restore the default setting.

**ipv6 ospf transmit-delay** *seconds* [ **instance** *instance-id* ]

**no ipv6 ospf transmit-delay** [ **instance** *instance-id* ]

**Parameter Description**

Parameter	Description
<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** Interface configuration mode.

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

### 3.34 ipv6 router ospf

Use this command to start the OSPFv3 routing process. Use the **no** form of this command to restore the default setting.

**ipv6 router ospf**

**ipv6 router ospf** *process-id* [ **vrf** *vrf-name* ]

**no ipv6 router ospf** *process-id*

Parameter Description	Parameter	Description
	<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**

### 3.35 ipv6 router ospf max-concurrent-dd

Use this command to set the maximum concurrent interacting neighbors allowed in all OSPFv3 routing processes. Use the **no** form of this command to restore the default setting.

**ipv6 router ospf max-concurrent-dd** *number*



**no ipv6 router ospf max-concurrent-dd****Parameter  
Description**

Parameter	Description
<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

**Examples**

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**

### 3.36 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**

### 3.37 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**

### 3.38 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

### 3.39 redistribute

Use this command to start the route redistribution in order to import the routing information of other routing protocols to the OSPFv3 routing process. Use the **no** form of this command to restore the default setting.


**redistribute** { **bgp** | **connected** | **isis** [ *area-tag* ] | **ospf** *process-id* | **rip** | **static** } [ { **level-1** | **level-1-2** | **level-2** } | **match** { **internal** | **external** [1|2] | **nssa-external** [ 1 | 2 ] } | **metric** *metric-value* | **metric-type** { 1|2 } | **route-map** *route-map-name* | **tag** *tag-value* ]

**no redistribute** { **bgp** | **connected** | **isis** [ *area-tag* ] | **ospf** *process-id* | **rip** | **static** } [ { **level-1** | **level-1-2** | **level-2** } | **match** { **internal** | **external** [1|2] | **nssa-external** [ 1 | 2 ] } | **metric** | **metric-type** { 1|2 } | **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>match</b>	It is used in the OSPFv3 route redistribution only and filters specific routes for redistribution; internal: inter-area and intra-area routes. external [1 2]: E1, E2 or all external routes. Nssa-external [ 1   2 ]: N1, N2 or all external routes of the NSSA area. All sub-type OSPFv3 routes are redistributed by default.
<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.

---

<b>Defaults</b>	<p>The function is disabled by default;</p> <p>Metric-type: 2;</p> <p>Level-2 routes are redistributed in the ISIS redistribution</p> <p>OSPFv3 routes of all sub-types are redistributed in the OSPFv3 redistribution</p> <p>No route-map is associated</p>
<b>Command</b>	
<b>Mode</b>	Routing process configuration mode
<b>Usage Guide</b>	<p>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.</p> <p>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</p> <p>When redistributing OSPFv3 routes, you can configure <i>match</i> to redistribute the routes of the corresponding sub-type among the redistributed OSPFv3 routes. All types of OSPFv3 routes are redistributed by default.</p> <p>The <i>match</i> parameter of route-map is specific to the source of routes. The parameters <i>tag</i>, <i>metric</i> and <i>metric-type</i> of the set rule of route-map take precedence over the ones configured for the redistribute command.</p> <hr/> <p> 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.</p> <hr/> <p>The rules for the <b>no</b> form of the <b>redistribute</b> command are as follows:</p> <p>If some parameters are specified in the no command, restore their default settings;</p> <p>If no parameters are specified in the <b>no</b> command, delete the whole command.</p> <p>For example, if the configuration is made below:</p> <p>Now modify the configuration with the command no redistribute isis 112 level-2</p> <p>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</p> <p>To delete the whole command, use the command below</p>
<b>Configuration</b>	The following example redistributes the direct route and associates route-map test :
<b>Examples</b>	<pre>ipv6 router ospf 1 redistribute connect metric 10 route-map test</pre> <p>The associated route-map is configured as follows:</p> <pre>route-map test permit 10 match metric 20 set metric 30</pre> <p>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</p>

---

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**

### 3.40 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**

### 3.41 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>

**Defaults** N/A

**Command** Privileged EXEC mode

**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 Adjency Changes : Enabled
Number of areas in this router is 2
Area BACKBONE(0)
Number of interfaces in this area is 1(1)
SPF algorithm executed 4 times
Number of LSA 3. Checksum Sum 0x1DDF1
Number of Unknown LSA 0
  Area 0.0.0.1 (NSSA)
    Number of interfaces in this area is 1(1)
    SPF algorithm executed 5 times
    Number of LSA 7. Checksum Sum 0x445FE
    Number of Unknown LSA 0

```

**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**

### 3.42 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: NSSA-external-LSA, AS-external-LSAs, Link-LSAs, Inter-Area-Prefix-LSAs, Inter-Area-Router-LSAs, Intra-Area-Prefix-LSAs, Network-LSAs, Router-LSAs If this parameter is not specified, all LSA information will be displayed.
<b>adv-router</b> <i>router-id</i>	Displays the LSA information generated by the specified router.



**Defaults** N/A

**Command** Privileged EXEC mode.

**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
<code>ipv6 router ospf</code>	Starts the OSPFv3 routing process.

**Platform** N/A

**Description**

### 3.43 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**

### 3.44 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**

### 3.45 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** N/A  
**Description**

### 3.46 show ipv6 ospf route

Use this command to display the OSPFv3 route information.

**show ipv6 ospf [ *process- id* ] route [ *count* ]**

#### Parameter Description

Parameter	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 Examples** The following example displays the information about OSPFv3 routes.

```

Ruijie# show ipv6 ospf route
OSPFv3 Process (1)
Codes: C - connected, D - Discard, O - OSPF, IA - OSPF inter area

```

```

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 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**

### 3.47 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** Privileged EXEC mode.

**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**

### 3.48 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 Description** N/A

### 3.49 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.
<b>show ipv6 ospf neighbor</b>	Displays the OSPFv3 neighbor information.

**Platform Description** N/A

### 3.50 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> <0-4294967295>	Tag value redistributed to the OSPFv3 inner route, in the range from 0 to 4294967295.

**Defaults** No converged route is configured by default.

**Command Mode** Routing process configuration mode.

**Usage Guide** When routes are redistributed by another routing process into the OSPFv3 routing process, every route is advertised to the OSPFv3-enabled device separately in the form of external link state. If the incoming routes are continuous addresses, the autonomous system border device can advertise only one converged route, thus reducing the scale of routing table greatly.

It is different from the **area range** command. The area range involves the convergence of routes between OSPFv3 areas, while the **summary-prefix** involves the convergence of external routes of the OSPFv3 routing domain.

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 Description** N/A

### 3.51 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**

<b>Parameter Description</b>	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><i>arrival-time</i></td> <td>Specifies the delay for receiving repeated LSAs. The range is from 0 to 600000 in the unit of milliseconds.</td> </tr> </tbody> </table>	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.
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.				
<b>Defaults</b>	The default is 1000.				
<b>Command Mode</b>	Routing process configuration mode				
<b>Usage Guide</b>	Configure the device not to process repeated LSAs received within the specific delay.				
<b>Configuration Examples</b>	The following example sets the delay for receiving repeated LSAs to 2 seconds. <pre>Ruijie(config)# ipv6 router ospf 1 Ruijie(config-router)# timers lsa arrival 2000</pre>				
<b>Related Commands</b>	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><b>show ipv6 ospf</b></td> <td>Displays OSPFv3 process information, including identifiers of routing devices.</td> </tr> </tbody> </table>	Command	Description	<b>show ipv6 ospf</b>	Displays OSPFv3 process information, including identifiers of routing devices.
Command	Description				
<b>show ipv6 ospf</b>	Displays OSPFv3 process information, including identifiers of routing devices.				
<b>Platform Description</b>	N/A				

### 3.52 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**

<b>Parameter Description</b>	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>seconds</td> <td>Specifies the LSA group pace interval. The range is from 10 to 1800 in the unit of seconds. The default value is 30.</td> </tr> </tbody> </table>	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.
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.				
<b>Defaults</b>	The default is 30.				
<b>Command Mode</b>	Routing process configuration mode				
<b>Usage Guide</b>	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** The following example sets the LSA group pace interval to 120 seconds.

**Examples**

```
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**

### 3.53 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**

### 3.54 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**

### 3.55 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** Routing process configuration mode

**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
<code>show ipv6 ospf</code>	Displays OSPFv3 process information.

**Platform** N/A

**Description**

### 3.56 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 <i>ia-delay</i> 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 <i>ase-delay</i> time runs out.

**Defaults** The default *ia-delay* is 0 and *ase-delay* is 0.

**Command** Routing process configuration mode

**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**

### 3.57 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.

- i The spf-holdtime cannot be smaller than spf-delay, or the spf-holdtime will be set to be equal to spf-delay;
- i 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;
- i The configuration of the timers spf command and of the timers throttle spf command are overwritten each other.
- i 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 OSFPv3
<b>timers spf</b>	Configures the SPF calculation delay .

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

### 3.58 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	Parameter	Description
-----------	-----------	-------------



<b>Description</b>		
	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
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show ipv6 ospf</b>	Displays global OSPFv3 configuration information.

**Platform Description** N/A

## 4 IS-IS Commands

### 4.1 address-family ipv6

Use this command to enter the **address-family ipv6** mode. Use the **no** form of this command to delete all configurations in the **address-family ipv6**.

**address-family ipv6** [ *unicast* ]

**no address-family ipv6** [ *unicast* ]

Parameter Description	Parameter	Description
	<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 Examples**

```
Ruijie(config)# router isis
Ruijie(config-router)# adjacency-check
Ruijie(config-router)# address-family ipv6
Ruijie(config-router-af)# adjacency-check
```

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

### 4.3 area-password

Use this command to set the plain-text authentication password for the Level-1 area. Use the **no** form of this command to cancel the password set.

**area-password** [ 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 Description** N/A

## 4.4 authentication key-chain

Use this command to specify the key-chain used by the IS-IS authentication. Use the **no** form of this command to cancel the key-chain specified.

**authentication key-chain** *name-of-chain* [ **level-1** | **level-2** ]

**no authentication key-chain** *name-of-chain* [ **level-1** | **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 254 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 Mode** IS-IS routing process configuration mode

**Usage Guide** To make the key-chain configured by the **authentication key-chain** command effective, you must use the **authentication mode** command to specify the authentication mode.

If no Level is specified, the authentication mode specified is applicable to both Level-1 and Level-2. When configuring the **authentication mode** command, if the **area-password** or **domain-password** command has been executed to configure the plaintext authentication before, the said commands will be overwritten by the new command.

If the **authentication mode** command has been configured, the **area-password** or **domain-password** will not be configured successfully, you need to delete the **authentication mode** command first.

**Configuration Examples** The following example specifies authentication in the IS-IS area to be the MD5 authentication mode.

```
Ruijie(config)# router isis
Ruijie(config-router)# authentication mode md5 level-1
```

**Related Commands**

Command	Description
<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 Description** N/A

## 4.6 authentication send-only

Use this command to specify the IS-IS authentication only applicable to the packets sent, but not to the packets received. Use the **no** form of this command to perform the authentication on the packets received.

**authentication send-only [ level-1 | level-2 ]**

**no authentication send-only [ level-1 | level-2 ]**

**Parameter Description**

Parameter	Description
<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** IS-IS routing process configuration mode
- Mode**
- Usage Guide** With this command configured, the IS-IS will set the authentication password in the packets sent, however, the authentication will not be performed on the packets received. It can apply to the following two occasions: 1. before deploying the IS-IS authentication for all devices in the network. 2. before changing the authentication password or authentication mode. Before the above two tasks start, you need to configure the **authentication send-only** command first to make each device perform no authentication on the packets received, so as to avoid the network oscillation caused during the subsequent authentication password deployment. After the deployment of the entire network authentication finished, execute the **no isis authentication send-only** command to cancel the **send-only** authentication mode.
- This command can apply to the plain-text authentication mode and MD5 authentication mode. You can use the **authentication mode** command to set the authentication mode.
- If the Level is not specified, the authentication mode specified is applicable to both Level-1 and Level-2.

**Configuration** 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
-----------	-------------

<b>Description</b>		
	anti-congestion	IS-IS BFD anti-flapping option

**Defaults** The IS-IS support for BFD is disabled on all interfaces by default.

**Command Mode** IS-IS routing process configuration mode

**Default Level** 14

**Usage Guide** There are two methods for enabling or disabling the IS-IS support for BFD on interfaces.

Method 1: In IS-IS routing process configuration mode, run the [ **no** ] **bfd all-interfaces [anti-congestion]** command to enable or disable the IS-IS support for BFD on all interfaces running the IS-IS protocol.



Method 2: In interface configuration mode, run the **isis bfd [disable | anti-congestion]** command to enable or disable the IS-IS support for BFD on a specified interface.

In normal cases, the BFD function enables to send detection packets to detect the link status at an interval of several milliseconds. When a link exception such as link interruption occurs, the BFD function enables to rapidly detect the link exception, and notify a device running the IS-IS protocol to delete neighbors and delete neighbor availability information from LSP packets. The device running the IS-IS protocol performs route re-calculation and generates a new route, to bypass the failure link, thereby implementing fast convergence. With the introduction of some new technologies such as the Multi-Service Transport Platform (MSTP), link congestion easily occurs in peak hours. When congestion occurs, the BFD function allows to rapidly detect a link exception, notify a device running the IS-IS protocol to delete a neighbor and delete neighbor availability information from LSP packets, and perform link switching to bypass the congested link. The interval for an IS-IS neighbor to send a Hello detection packet is 10 seconds and the timeout time is 30 seconds. When an exception is detected via the BFD function, IS-IS Hello packets can be normally received, an IS-IS neighbor relationship can be rapidly established, and the route is restored to pass the congested link. Then, BFD is performed again. If there is still a link exception, link switching is performed again, and the process repeats. The route switches between the congested link and other links and flapping occurs.

The anti-flapping function can be enabled to prevent route flapping in the case of link congestion. After the anti-flapping function is enabled, if a link is congested, the IS-IS neighbor status keeps alive but the neighbor availability information in LSP packets is deleted, and the route switches to a non-congested link. After the link is restored, that is, congestion is removed, the neighbor availability information is restored in LSP packets, and the route switches back to the originally congested link, thereby preventing route flapping.


When IS-IS anti-flapping is enabled, the BFD anti-flapping command (**bfd up-dampening**) must be configured on an interface. The two commands must be configured simultaneously. If only one of them is configured, the anti-flapping function does not take effect or a network exception is incurred.

For details about how to enable the BFD anti-flapping function on an interface, see the configuration example of the ISIS BFD command.

-  Before the IS-IS support for BFD is configured, a BFD session must be configured on an interface.
-  When the BFD anti-flapping command is configured on an interface, if the IS-IS support for BFD is



already configured on the interface, the anti-flapping function must be enabled for a device running the IS-IS protocol.

-  When the IS-IS anti-flapping option is configured, the BFD anti-flapping command must be configured on an interface.

**Configuration** 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

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** This command is used in the condition of needing to refresh the LSP immediately. For example, after executing the **area-password** and **domain-password** commands, the previous LSPs still exist in this router, you can use this command to clear these LSPs.

**Configuration Examples** Ruijie# **clear isis \***

Related Commands	Command	Description
		<b>clear clns neighbors</b>

**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>

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration Examples** The following example clears various statistics of IS-IS.

Ruijie# **clear isis counter**

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	Parameter	Description
<b>Description</b>	<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** IS-IS routing process configuration mode or address-family ipv6 mode.

**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** The following example generates a default routing information and advertises it by LSP

**Examples**

```
Ruijie(config)# router isis
Ruijie(config-router)# default-information originate
Ruijie(config-router)# address-family ipv6
Ruijie(config-router-af)# default-information originate
```

Related Commands	Command	Description
	N/A	N/A

**Platform** 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>

**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>

**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>
	<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** Ruijie(config)# **router isis**

**Examples** 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.
<i>traps set</i>	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.

 The IS-IS GR Restart function is only supported by device which supports hot backup.

**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** N/A  
**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>	 The IS-IS GR Restart function is only supported by device which supports hot backup.	
<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>	N/A	

## 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** IS-IS routing process configuration mode

**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 Mode** IS-IS routing process configuration mode

**Usage Guide** When the local IS-IS receives a LSP, it will calculate the checksum of LSP received and compare the calculated checksum with that in the LSP packets. By default, if the checksum in the LSP packets is different from the checksum calculated, this LSP will be discarded without processing. If we 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 Examples** Ruijie(config)# **router isis**

Ruijie(config-router)# **ignore-lsp-errors**

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 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 Mode** Interface configuration mode

**Usage Guide** Use this command to enable the IS-IS IPv4 routing protocol on the interface. The **no** form of this command disables the IS-IS IPv4 routing.

If the **no ipv4 unicast-routing** is executed in global configuration mode, the IS-IS will disable the IPv4 routing function on all interfaces, namely execute the **no ipv4 router isis** [tag] on all interfaces automatically, while other IS-IS configurations will remain unchanged.

**Configuration Examples** Ruijie(config)# **interface GigabitEthernet 0/1**

Ruijie(config-if)# **ip router isis**

Related Commands	Command	Description
	<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

**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 254 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** Interface configuration mode

**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** The following example specifies the authentication mode on the Level-2 of the interface

**Examples** 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>leve-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**

Interface configuration mode

**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**

```
Ruijie(config)# interface GigabitEthernet 0/1
```

**Examples**

```
Ruijie(config-if)# isis csnp-interval 20
```

**Related Commands**

Command	Description
N/A	N/A

**Platform**

N/A

**Description**

## 4.31 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

## 4.32 isis hello-interval

Use this command to set the interval for sending Hello packets on the interface, with the unit being second. Use the **no** form of this command to restore the default interval.

**isis hello-interval** { *interval* | **minimal** } [ **level-1** | **level-2** ]

**no isis hello-interval** [ **level-1** | **level-2** ]

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

<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** Interface configuration mode

**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**

## 4.33 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 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 Mode** Interface configuration mode

**Usage Guide** N/A

**Configuration** The following example sets the interval for the LSP PDU transmission to 100.

```
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 Mode** Interface configuration mode

**Usage Guide** Mesh-groups can control the exceeding and redundant LSP spreading in the NBMA network. In the normal condition, the IS-IS router spreads out the LSP from all interfaces except for the receiving one, that is, if a router is configured multiple 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 Commands	Command	Description
	<b>metic-style</b>	Sets the metric type.
	<b>isis wide-metric</b>	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
		<b>point-to-point</b>

**Defaults** By default, it is Broadcast type.

**Command Mode** Interface configuration mode

**Usage Guide** N/A

**Configuration Examples**

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)# isis network point-to-point
```

Related Commands	Command	Description
		<b>isis mesh-group</b>

**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** Interface configuration mode

**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 Description	Parameter	Description
	<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** Interface configuration mode

**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** Ruijie# **configure terminal**

**Examples** Ruijie(config)# **interface GigabitEthernet 0/1**

Ruijie(config-if)# **isis priority 127 level-1**

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 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 ]**

Parameter Description	Parameter	Description
	seconds	Indicates that the value range is 1 to 120 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.

<b>Configuration</b>	<pre>Ruijie(config)# interface serial 0/1</pre>				
<b>Examples</b>	<pre>Ruijie(config-if)# isis retransmit-interval 10 level-2</pre>				
<b>Related Commands</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #d0d0d0;"> <th style="text-align: left;">Command</th> <th style="text-align: left;">Description</th> </tr> </thead> <tbody> <tr> <td><b>isis lsp-interval</b></td> <td>Configures the interval for LSP advertisement on the interface.</td> </tr> </tbody> </table>	Command	Description	<b>isis lsp-interval</b>	Configures the interval for LSP advertisement on the interface.
Command	Description				
<b>isis lsp-interval</b>	Configures the interval for LSP advertisement on the interface.				
<b>Platform</b>	N/A				
<b>Description</b>					

## 4.42 isis subvlan

Use this command to enable IS-IS on super VLANs. Use the **no** form of this command to restore the default setting.

**isis subvlan** [**all** | *vid*]

**no isis subvlan**

Parameter Description	Parameter	Description
	<i>all</i>	Indicates that packets are allowed to be sent to all sub VLANs.
	<i>vid</i>	Specifies the sub VLAN ID. The value ranges from 1 to 4094.

**Defaults** The default setting takes effect only on super VLANs with IS-IS disabled.

**Command** Interface configuration mode.

**Mode**

**Usage Guide** In normal cases, a super VLAN contains multiple sub VLANs. Multicast packets of a super VLAN are also sent to its sub VLANs. In this case, when IS-IS multicast packets are sent over a super VLAN containing multiple sub VLANs, the IS-IS multicast packets are replicated multiple times, and the device processing capability is insufficient. As a result, a large number of packets are discarded, causing the neighbor down error. In most scenarios, the IS-IS function does not need to be enabled on a super VLAN. Therefore, the IS-IS function is disabled by default. However, in some scenarios, the IS-IS function must be run on the super VLAN, but packets only need to be sent to one sub VLAN. In this case, run this command to specify a particular sub VLAN. You must be cautious in configuring packet transmission to all sub VLANs, as the large number of sub VLANs may cause a device processing bottleneck, which will lead to the neighbor down error.

**Configuration** The following example sends the IS-IS multicast packets to sub VLAN 1024 of super VLAN 300.

**Examples**

```
Ruijie(config)# interface vlan 300
Ruijie(config-if-VLAN 300)# isis subvlan 1024
```

## 4.43 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 Description** N/A

## 4.44 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** Ruijie(config)# **interface GigabitEthernet 0/1**

**Examples** 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** N/A

**Description**

## 4.45 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 Mode** IS-IS routing process configuration 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>

**Platform** N/A

**Description**

## 4.46 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

**Defaults** By default, this function is enabled.

**Command Mode** IS-IS routing process configuration mode

**Usage Guide** You can also use the **debug** command to log the changes of the IS adjacency status. But using the IS-IS debug command will exhaust large numbers of resources.

**Configuration** Ruijie(config)# **router isis**

**Examples** Ruijie(config-router)# **log-adjacency-changes**

Related Commands	Command	Description
		N/A

**Platform** N/A

**Description**

## 4.47 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 Description** N/A

## 4.48 Isp-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.

**Isp-gen-interval** [ **level-1** | **level-2** ] *maximum-interval* [*initial-interval* *hold-interval*]

**no Isp-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.
	<i>maximum-interval</i>	Indicates the maximum interval for generating two consecutive LSP packets. The value range is <b>1</b> to <b>65535</b> (in seconds). The default value is <b>5</b> .
	<i>initial-interval</i>	Indicates the waiting time for generating an LSP packet for the first time. The value range is <b>0</b> to <b>60000</b> (in milliseconds). The default value is <b>50</b> .
	<i>hold-interval</i>	Indicates the minimum interval for generating an LSP packet for the second time. The value range is <b>10</b> to <b>60000</b> (in milliseconds). The default value is <b>200</b> .

**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 Mode** IS-IS routing process configuration mode

**Usage Guide** The LSP packet generation interval refers to the interval for generating two different LSP packets. A smaller generation interval indicates faster network convergence, which, however, will be accompanied by frequent flooding on the network.

The waiting time for generating an LSP packet for the first time is the initial interval. If the network becomes unstable, the LSP packet regeneration interval is changed to be less than the maximum interval, and the interval for generating an LSP packet for the second time becomes the hold interval. A corresponding penalty will be added to this interval: The next interval for regenerating a LSP packet doubles the previous interval for generating the same LSP packet, until the regeneration interval reaches the maximum interval. Subsequent LSP packets will be generated at the maximum interval. When the network becomes stable, the LSP packet regeneration interval becomes greater than the maximum interval, and the waiting time for LSP packet generation is restored to the initial interval.

Link changes have high requirements for convergence. The initial interval can be set to a small value. The preceding parameters can also be adjusted to larger values to reduce CPU consumption.

The value of **initial-interval** cannot be greater than that of **maximum-interval**. Otherwise, the value of **initial-interval** will be used as the value of **maximum-interval**.

The value of **hold-interval** cannot be greater than that of **maximum-interval**. Otherwise, the value of **hold-interval** will be used as the value of **maximum-interval**.

The value of **initial-interval** cannot be greater than that of **hold-interval**. Otherwise, the value of **initial-interval** will be used as the value of **hold-interval**.

**Configuration Examples** The following example sets the minimum interval for generating two duplicate LSP packets to 10 seconds, the interval for generating a duplicate LSP packet for the first time to 100 ms, and the interval for generating a duplicate LSP packet for the second time to 200 ms.

```
Ruijie(config)# router isis
Ruijie(config-router)# lsp-gen-interval 10 100 200
```

The following example sets the minimum interval for generating two duplicate LSP packets to 5 seconds.

```
Ruijie(config)# router isis
Ruijie(config-router)# lsp-gen-interval 5
```

**Related Commands**

Command	Description
<b>lsp-refresh-interval</b>	Configures the interval for LSP refresh.

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

## 4.49 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
<b>size</b>	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** The following example sets the maximum length for transmitting LSP packets at Level-2 to 1498 bytes.

**Examples**

```
Ruijie(config)# router isis 1
Ruijie(config-router)# lsp-length originate 1498 level-2
```

## 4.50 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.

**Defaults** The default value is **1492**.

**Command Mode** IS-IS routing process configuration mode

**Default Level** 14

**Usage Guide** This command is used to control the maximum length of LSP packets that can be received by the local device. In fact, to prevent a route convergence failure, intermediate nodes need to receive LSP packets with the maximum length of the interface MTU as long as the memory permits. In this sense, this command seems nominal. The maximum length for receiving LSP packets cannot be less than the maximum length for transmitting LSP packets. If the maximum length for receiving LSP packets is less than the maximum length for transmitting LSP packets, the maximum length for receiving LSP packets is automatically adjusted to the maximum length for transmitting LSP packets.

**Configuration** The following example configures the maximum length for receiving LSP packets to 1498 bytes.

**Examples**

```
Ruijie(config)# router isis
Ruijie(config-router)# lsp-length receive 1498
```

## 4.51 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.

**Defaults**

By default, the lsp-refresh-interval is 900 seconds.

**Command  
Mode**

IS-IS routing process configuration mode

**Usage Guide**

If the LSP stable status lasts for the time of refresh interval, LSP will refresh this LSP and update the LSP version and publish it.

It should be noted that the lsp-refresh-interval must be less than the max lifetime.

**Configuration**

```
Ruijie(config)# router isis
```

**Examples**

```
Ruijie(config-router)# lsp-refresh-interval 600
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform**

N/A

**Description**

## 4.52 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  
Mode**

IS-IS routing process configuration mode

**Usage Guide**

For the IS routers of Level-1, only the ones with the same max-area-addresses are allowed to establish the adjacency relation.

**Configuration** 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**

## 4.53 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 minimum number is 1, and the maximum number depends on the device capability.

**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
```

### 4.54 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.

**Configuration Examples**

```
Ruijie(config)# router isis
Ruijie(config-router)# max-lsp-lifetime 1500
```

Related Commands	Command	Description
	<b>lsp-refresh-interval</b>	Configures the interval for LSP refresh.

**Platform Description** N/A

### 4.55 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	Parameter	Description
-----------	-----------	-------------



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**

## 4.56 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** IS-IS address-family IPv6 configuration mode  
**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** N/A  
**Description**

## 4.57 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** N/A

**Description**

## 4.58 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** The following example configures interface GigabitEthernet 0/0 as passive.

**Examples**

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

## 4.59 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

	<p>Level-2 .</p> <p>The format is shown as below:</p> <p><b>level-1:</b> redistribute into the Level-1</p> <p><b>level-1-2:</b> redistribute into both Level-1 and Level-2.</p> <p><b>level-2:</b> redistribute into the Level-2.</p>
--	---

**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 redistribue { 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 Examples**

```
Ruijie(config)# router isis
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 Description** N/A

## 4.60 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> <i>route-map-name</i>	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> <i>access-list-name</i>	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>   <i>acl-name</i> } 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> .

**Defaults** If the IS-IS Level-2 instance exists, all IS-IS Level-1 routes are by default redistributed into the IS-IS Level-2 instace.

**Command** IS-IS routing process configuration mode or IS-IS **address-family ipv6** mode.

**Mode**

**Usage Guide** Use the **route-map** or **distribute-list** to filter the Level-1 route of the specified instance to be redistributed. Only the route that meets the condition can be redistributed into the Level-1 of current instance.

 You can only choose one of the two parameters **route-map** and **distribute-list**.

Configure the **no distribute isis** [ *tag* ] **level-2 into level-1** to disable the specified instance redistribution. If the **no redistribute** is followed by any other parameters, it means that this parameter is restored to the default setting instead of disabling the specified instance redistribution.

For example: "**no redistribute isis tag1 level-1 into level-2**" will disable the isis tag1 redistribution, while "**no redistribtue isis tag1 level-1 into level-2 route-map aa** " 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-1 into level-2

Related Commands	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.

**Platform** N/A

**Description**

## 4.61 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* )

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> <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> </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 redistribute 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>
	<b>redistribute isis level-1 into level-2</b>	Redistributes the reachable routing information from Level-1 into Level-2.

**Platform** N/A

**Description**

## 4.62 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>

**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**

## 4.63 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 <i>seconds</i></b>	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
```

## 4.64 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**

## 4.65 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**

## 4.66 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 Examples** The output results of the **show clns neighbors details** are displayed as below:

```

Ruijie# show isis counter
Area (null):
IS-IS Level-1 isisSystemCounterEntry:

```

```
isisSysStatCorrLSPs: 0
isisSysStatAuthTypeFails: 0
isisSysStatAuthFails: 0
isisSysStatLSPDbaseOloads: 0
isisSysStatManAddrDropFromAreas: 0
isisSysStatAttmptToExMaxSeqNums: 0
isisSysStatSeqNumSkips: 0
isisSysStatOwnLSPPurges: 0
isisSysStatIDFieldLenMismatches: 0
isisSysStatMaxAreaAddrMismatches: 0
isisSysStatPartChanges: 0
isisSysStatSPFRuns: 30
IS-IS Level-2 isisSystemCounterEntry:
isisSysStatCorrLSPs: 0
isisSysStatAuthTypeFails: 0
isisSysStatAuthFails: 0
isisSysStatLSPDbaseOloads: 0
isisSysStatManAddrDropFromAreas: 0
isisSysStatAttmptToExMaxSeqNums: 0
isisSysStatSeqNumSkips: 0
isisSysStatOwnLSPPurges: 0
isisSysStatIDFieldLenMismatches: 0
isisSysStatMaxAreaAddrMismatches: 0
isisSysStatPartChanges: 0
isisSysStatSPFRuns: 30
```

Related Commands	Command	Description
		N/A

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

### 4.67 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>
	<i>FLAGS</i>	The format is displayed as below: detail verbose

	<p>detail: detailed information</p> <p>Verbose: more detailed information than the detail.</p>
<i>LEVEL</i>	<p>The format is displayed as below:</p> <p>I1   I2   level-1   level-2</p> <p>I1 and level-1: specify the LSP database of the Level-1.</p> <p>I2 and level-2: specify the LSP database of the Level-2</p>
<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**

## 4.68 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 Examples** The following example displays the GR information of the IS-IS.

```

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**

## 4.69 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**

## 4.70 show isis interface

Use this command to display the information about IS-IS interface.

**show isis** [ *tag* ] **interface** [ *interface-type interface-number* ] [ *counter* ]

Parameter Description	Parameter	Description
	<i>tag</i>	
<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 Examples** The following example displays the IS-IS interface.

```
Ruijie# show isis interface
Area (null):
VLAN 1 is up, line protocol is up
  Routing Protocol: IS-IS ((null))
    Network Type: Broadcast
    Circuit Type: level-1-2
    Local circuit ID: 0x01
    Extended Local circuit ID: 0x00000001
    Local SNPA: 00d0.f822.33ab
    IP interface address:
      1.0.0.1/24
    Level-1 Metric: 10/10, Priority: 64, Circuit ID: r1.01
    Number of active level-1 adjacencies: 1
    Level-2 Metric: 10/10, Priority: 64, Circuit ID: r1.01
    Number of active level-2 adjacencies: 1
    Next IS-IS LAN Level-1 Hello in 5 seconds
```

```

Next IS-IS LAN Level-2 Hello in 5 seconds
BFD Enabled (Anti-congestion)
Eligible to backup traffic
FRR Protect Enabled (Link)

```

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****Command****Description**

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

**Platform** N/A

**Description**

## 4.71 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 [ I1 | I2 | level-1 | level-2 ]**

Parameter Description	Parameter	Description
	<i>tag</i>	IS-IS instance
	<b>I1</b>	Topology of a specified Level-1 router
	<b>level-1</b>	Topology of a specified Level-1 router
	<b>I2</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 Examples** The following example displays the IPv6 unicast topology information.

```
Ruijie#show isis ipv6 topology
Area (null):
IS-IS paths to level-1 routers
System Id    Metric  Next-Hop  SNPA          Interface
r1           10     r1        00d0.f822.33ad GigabitEthernet 0/0
Ruijie      --
IS-IS paths to level-2 routers
System Id    Metric  Next-Hop  SNPA          Interface
r1           10     r1        00d0.f822.33ad GigabitEthernet 0/0
Ruijie      --
```

Field description:

Field	Description
Area	Instance tag
System Id	System ID
Metric	Metric value

Next-Hop	Next hop
SNPA	SNPA address
Interface	Interface name

## 4.72 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

## 4.73 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 Mode** Privileged EXEC mode, global configuration mode or interface configuration 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**

## 4.74 show isis protocol

Use this command to display relevant protocol information about an IS-IS system.

**show isis [ tag ] protocol**

**Parameter Description**

Parameter	Description
tag	IS-IS instance.

**Command Mode** Privileged EXEC mode, global configuration mode, and interface configuration mode

**Default Level** 14

**Usage Guide** N/A

**Configuration Examples** The following example displays relevant protocol information about an IS-IS system.

```
Ruijie# show isis protocol
IS-IS Router: (null)
  Binding VRF: vrf
  Mib-Binding: off
  System ID: 0000.0000.0036  IS-type: level-1-2
  Virtual System ID:
    1111.1111.1111, 2222.2222.2222
  Manual area address(es):
    49.0001, 49.0003
  Interfaces supported by IS-IS:
    GigabitEthernet 0/0, GigabitEthernet 0/1
  Redistributing IPv4:
    isis 1, isis 2
  Redistributing IPv6:
    isis 3, isis 4
  Distance: 115
  Generate narrow metrics: Level-1-2
  Accept narrow metrics:   Level-1-2
  Generate wide metrics:   none
  Accept wide metrics:     none
  NSR: enable
  Two-way-maintain: enable
```

Field description:

Field	Description
IS-IS Router	Instance tag
Binding VRF	Name of the VRF bound to the instance
Mib-Binding	Indicates whether the instance is bound with SNMP.
System ID	System ID
IS-type	Level type supported by the instance
Virtual System ID	Extended system ID
Manual area address(es)	Area ID
Interfaces supported by IS-IS	Interface associated with the instance
Redistributing IPv4	Source of redistributed IPv4 routes
Redistributing IPv6	Source of redistributed IPv6 routes
Distance	IS-IS management weight

Generate narrow metrics	Type of the generated narrow metrics
Accept narrow metrics	Type of the accepted narrow metrics
Generate wide metrics	Type of the generated wide metrics
Accept wide metrics	Type of the accepted wide metrics
NSR	Indicates whether the NSR function is enabled for the instance.
Two-way-maintain	Indicates whether the two-way maintenance function is enabled for the instance.

## 4.75 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 Description	Parameter	Description
	<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 Examples** The following example displays all IS-IS neighbors:

```
Ruijie#show isis topology
Area (null):
IS-IS paths to level-1 routers
System Id    Metric    Next-Hop    SNPA                Interface
r1           10        r1          00d0.f822.33ad     GigabitEthernet 0/0
Ruijie      --
IS-IS paths to level-2 routers
System Id    Metric    Next-Hop    SNPA                Interface
r1           10        r1          00d0.f822.33ad     GigabitEthernet 0/0
Ruijie      --
```

Related	Command	Description
---------	---------	-------------



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

**Platform** N/A

**Description**

## 4.76 show isis virtual-neighbors

Use this command to display the virtual system neighbor information of an IS-IS system.

**show isis [ tag ] virtual-neighbors**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	tag	IS-IS instance.

**Defaults** -

**Command Mode** Privileged EXEC mode, global configuration mode, and interface configuration mode

**Default Level** 14

**Usage Guide** N/A

**Configuration 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.

## 4.77 spf-interval

Use this command to set the minimal interval for the SPF calculation. Use the **no** form of this command to restore the default minimal interval.

**spf-interval** [ **level-1** | **level-2** ] *maximum-interval* [*initial-interval* *hold-interval*]

**no spf-interval** [ **level-1** | **level-2** ]

Parameter Description	Parameter	Description
	<b>level-1</b>	Applies the configuration only to Level-1.
	<b>level-2</b>	Applies the configuration only to Level-2.
	<i>maximum-interval</i>	Indicates the maximum interval for performing two consecutive SPF calculations. The value range is <b>1</b> to <b>120</b> (in seconds). The default value is <b>10</b> .
	<i>initial-interval</i>	Indicates the waiting time for performing the SPF calculation for the first time. The value range is <b>0</b> to <b>60000</b> (in milliseconds). The default value is <b>50</b> .
	<i>hold-interval</i>	Indicates the minimum interval for performing the SPF calculation for the second time. The value range is <b>10</b> to <b>60000</b> (in milliseconds). The default value is <b>200</b> .

**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.

The waiting time for performing the SPF calculation for the first time is the initial interval. If the network becomes unstable, the SPF calculation interval is less than the maximum interval, and the interval for performing the SPF calculation for the second time becomes the hold interval. A corresponding penalty is added to this interval: The next interval for the SPF calculation doubles the previous interval for the same SPF calculation, until the SPF calculation interval reaches the maximum interval. Subsequent SPF calculations are performed at the maximum interval. When the network becomes stable, the interval for performing the SPF calculation becomes greater than the maximum interval, and the waiting time for performing the SPF calculation is restored to the initial interval.

Link changes have high requirements for convergence. The initial interval can be set to a small value. The preceding parameters can also be adjusted to larger values to reduce CPU consumption.

The value of **initial-interval** cannot be greater than that of **maximum-interval**. Otherwise, the value of **initial-interval** will be used as the value of **maximum-interval**.

The value of **hold-interval** cannot be greater than that of **maximum-interval**. Otherwise, the value of

**hold-interval** will be used as the value of **maximum-interval**.

The value of **initial-interval** cannot be greater than that of **hold-interval**. Otherwise, the value of **initial-interval** will be used as the value of **hold-interval**.

**Configuration Examples** The following example sets the minimum interval for generating two duplicate SPF packets to 5 seconds, the interval for generating a duplicate SPF packet for the first time to 100 ms, and the interval for generating a duplicate SPF packet for the second time to 200 ms.

```
Ruijie(config)# router isis
Ruijie(config-router)# spf-interval 5 100 200
```

The following example sets the 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

## 4.78 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** N/A

**Description**

## 4.79 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**

## 4.80 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
<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** N/A

**Description**

## 4.81 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	Parameter	Description
-----------	-----------	-------------

<b>Description</b>		
	<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** IS-IS routing process configuration mode

**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
```

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

**Platform** N/A

**Description**

## 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	<b>unicast</b>	Optional, detailed IPv4 unicast address prefix
Description	<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

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**.

**Usage**

You can enter the multicast mode to configure the BGP of the multicast topology, which is used for RPF detection

**Guide**

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** The following example enters the IPv4 address family configuration mode.

**Examples**

```
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	Parameter	Description
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**

The following example enters the IPv6 address family configuration mode.

**Examples**

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family ipv6
```

Related	Command	Description
Commands	<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	Parameter	Description
Description	<i>vrf-name</i>	VRF name

**Defaults** No vrf address family is defined by default.

**Command**

BGP configuration mode

**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 { vpls | vpws }**

**no address-family l2vpn { vpls | vpws }**

**default address-family l2vpn { vpls | vpws }**

**Parameter Description**

Parameter	Description
<b>vpls</b>	L2VPN VPLS address family.
<b>vpws</b>	L2VPN VPWS 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 **address-family l2vpn vpls** command to allow PEs to exchange L2VPN VPLS information, and enter VPLS address family configuration mode. Use the **address-family l2vpn vpws** command to allow PEs to exchange L2VPN VPWS information, and enter VPWS address family configuration mode.

Use the **exit-address-family** command to exit the L2VPN address family configuration mode.

### Configuration Examples

The following example enters the L2VPN VPLS address family configuration mode.

```
Ruijie(config)# router bgp 100
Ruijie(config-router)# address-family l2vpn vpls
```

### Related Commands

Command	Description
N/A	N/A

### Platform

Description N/A

## 5.6 address-family vpnv4

Use this command to enter the VPNv4 address family configuration mode and enable the exchange of VPN route information between PE peers. Use the **no** or **default** form of this command to restore the default setting.

**address-family vpnv4 [unicast]**

**no address-family vpnv4 [unicast]**

**default address-family vpnv4**

### Parameter Description

Parameter	Description
<b>unicast</b>	Optional, detailed VPNv4 unicast address prefix.

### Defaults

No VPNv4 address family is defined by default.

### Command


#### Mode

BGP configuration mode / BGP scope global configuration mode

### Usage

Use the **exit-address-family** command to exit the VPNv4 address family configuration mode.

### Guide

 The function is only supported by device which supports MPLS L3VPN.

### Configuration Examples

The following example enters the VPNv4 address family configuration mode.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family vpnv4
```

### Related Commands

Command	Description
<b>exit-address-family</b>	Exits the mode.

### Platform

Description N/A

## 5.7 address-family vpnv6

Use this command to enter the VPNv6 address family configuration mode and enable the exchange of VPN route information between PE peers. Use the **no** or **default** form of this command to restore the default setting.

**address-family vpnv6 [unicast]**

**no address-family vpnv6 [unicast]**

**default address-family vpn4**

Parameter	Description
<b>unicast</b>	Optional, detailed VPNv6 unicast address prefix. The command without this parameter takes the same effect as the command with this parameter.


**Defaults** No VPNv6 address family is defined by default.

**Command**

**Mode** BGP configuration mode / BGP scope global configuration mode.

**Usage** Use the **exit-address-family** command to exit the VPNv6 address family configuration mode.

**Guide**

 The function is only supported by device which supports MPLS L3VPN.

**Configuration**

**Examples**

The following example enters the VPNv6 address family configuration mode.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family vpnv6
```

**Related**

**Commands**

Command	Description
<b>exit-address-family</b>	Exits the mode.

**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
<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
```

Command	Description
<b>router bgp</b>	Enables the BGP protocol.

**Related Commands**

**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
<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.

**Parameter Description**

<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.

**i** 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
<b>router bgp</b>	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 Examples**

The following example compares Multi Exit Discriminator (MED) all the time.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp always-compare-med
```

**Related Commands**

Command	Description
<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	Parameter	Description
<b>Description</b>	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** The following example modifies the showing mode of the 4-byte AS notation.

**Examples**

```
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**

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**

<b>Parameter Description</b>	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>	Parameter	Description	N/A	N/A		
Parameter	Description						
N/A	N/A						
<b>Command Mode</b>	BGP requires that AS path attributes must be the same when calculating equal-cost multipath (ECMP) by default.						
<b>Defaults</b>	BGP configuration mode / Scope global configuration mode						
<b>Usage Guide</b>	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.						
<b>Configuration Examples</b>	<p>The following example enables AS path multipath-relax for BGP multipathing load.</p> <pre>Ruijie(config)# router bgp 65530 Ruijie(config-router)# bgp bestpath as-path multipath-relax</pre>						
<b>Related Commands</b>	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><b>router bgp</b></td> <td>Enables BGP.</td> </tr> <tr> <td><b>show ip bgp</b></td> <td>Displays BGP routing entries.</td> </tr> </tbody> </table>	Command	Description	<b>router bgp</b>	Enables BGP.	<b>show ip bgp</b>	Displays BGP routing entries.
Command	Description						
<b>router bgp</b>	Enables BGP.						
<b>show ip bgp</b>	Displays BGP routing entries.						
<b>Platform</b>	None						
<b>Description</b>							

## 5.15 bgp bestpath compare-confed-aspash

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-aspash**  
**no bgp bestpath compare-confed-aspash**

**default bgp bestpath compare-confed-aspath**

Parameter	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****Guide**

During the selection of the same routing information from the peer of the internal EBGP By default, the AS path of the confederation is not compared. This command is used to compare the AS path of the confederation.

Note that if a route contain no AS path of the confederation, it is impossible to implement the AS path comparison for that route.

**Configuration****Examples**

The following example compares the AS path length of the confederation.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp bestpath compare-confed-aspath
```

**Related****Commands**

Command	Description
<b>show ip bgp</b>	Displays the BGP route entry.
<b>bgp router-id</b>	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	Parameter	Description
Description	N/A	N/A

**Defaults**

If two paths received from different EBGP peers have the same path, the first one is considered with higher priority by default.

**Command****Mode** BGP configuration mode / Scope global configuration mode**Usage**

If two paths with identical path attributes are received from different EBGP peers during the selection of the optimal path, we will select the optimal path according to the sequence of receiving the paths by default. You can select the path with smaller Device ID as the optimal path by configuring the following commands.

**Configuration**

The following example compares the router ID of the same external routes.

**Examples**

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp bestpath compare-routerid
```

**Related  
Commands**

Command	Description
<b>show ip bgp</b>	Displays the BGP route entry.
<b>bgp router-id</b>	Sets the BGP Device ID.

**Platform****Description** 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 ]**

**Parameter****Description**

Parameter	Description
<b>missing-as-worst</b>	Sets the priority of the path without MED attribute as the lowest.

**Defaults**

The MED value of the path of the peer inside the AS confederation is not compared by default when selecting the optimal path.

**Command****Mode** BGP configuration mode / Scope global configuration mode**Usage**

The MED attribute of the path is transferred between the ASs inside the confederation. You may set always comparing this value.

**Guide****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 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 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
<b>Description</b>	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.

<b>Platform</b>	
<b>Description</b>	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	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

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.

### Guide

### Configuration

The following example configures the cluster ID of the route reflector.

### Examples

```
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.

<b>Platform</b>	
<b>Description</b>	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**

Parameter	Description
<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  
Commands**

Command	Description
<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**

Parameter	Description
<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 25 members of a confederation at one time. For more members, enter them for several times.
-  Use [ **default** | **no** ] **bgp confederation peers** command (no specified AS number) to delete the configuration of all member ASs.

**Configuration** The following example configures member ASs of the AS confederation.

**Examples**

```
Ruijie(config-router)# bgp confederation peers 65000 65100
```

**Related  
Commands**

Command	Description
<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 20000.
<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 L2VPN VPLS/VPWS address-family configuration mode, or BGP IPv6 VRF address-family configuration mode, 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	Parameter	Description
<b>Description</b>	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	Parameter	Description
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
```

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 default route-target filter

Use this command to enable the route-target filtering. For the VPNV4 routes, filter the community attributes of the route-target by default. Use the **no** or **default** form of this command to disable this function.

**bgp default route-target filter**

**no bgp default route-target filter**

**default bgp default route-target filter**

Parameter	Parameter	Description
Description	N/A	N/A

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

**Command Mode** BGP configuration mode, VPNv4 address-family configuration mode, or BGP L2VPN VPLS/VPWS address-family configuration mode.

**Usage Guide** After receiving the VPNv4 route, use the community attributes list of the route-target to filter and distribute different VRFs. With the no form of this command used, the BGP will receive all VPNv4 routes no matter whether these filtered VPNv4 routes will be received by route-target of local VRF. With the PE route-reflector-client configured for the BGP, the VPNv4 route will not be processed through the route-target filtering. In this case, whether the BGP is enabled, the actions are the same without the route-target filtering.

 The function is only supported by device which supports BGP MPLS/VPN.

**Configuration Examples** The following example enables the route-target filtering.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# no bgp default route-target filter
```

Related Commands	Command	Description
	<b>neighbor route-reflector-client</b>	Configures the route-reflector-client, and sets itself as the route reflector.

**Platform Description** N/A

## 5.27 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
-----------	-----------	-------------

<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** They will be compared with each other according to the sequence the paths are received when the optimal path is selected by default. Execute the following operations in the BGP configuration mode to compare paths of peers from the same AS firstly:

**Configuration Examples** The following example sets the comparing preferentially MED values.

```
Ruijie(config-router)# bgp deterministic med
```

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

## 5.28 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	Description
<b>Parameter Description</b>	N/A	N/A

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

**Command**

**Mode** BGP configuration mode or BGP Scope Global configuration mode

**Usage** The AS number of the device is put into the path section by default to update the update message.

**Guide****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

## 5.29 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****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**

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
<b>router bgp</b>	Enables the BGP protocol.

**Platform****Description**

None

## 5.30 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	Parameter	Description
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 Examples

The following example enables BGP Fast Reroute.

```
Ruijie(config)# router bgp 65530
Ruijie(config-router)# bgp faster-reroute
```

Related Commands	Command	Description
	N/A	N/A

### Platform Description

N/A

## 5.31 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	Description
Parameter		
Description	N/A	N/A

**Defaults** By default, BGP graceful restart is enabled so as to help neighbors to perform graceful restart.


**Command**

**Mode** BGP configuration mode 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  
Commands**

Command	Description
<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

## 5.32 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**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** The function is enabled by default.

**Command Mode** BGP configuration mode, IPv4 unicast address family mode, VPNv4 address family mode, IPv4 tag address family mode and IPv6 unicast address family 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
```

Configuration Examples	Command	Description
	<b>bgp graceful-restart</b>	Enables BGP's GR capability.
	<b>address-family ipv4</b>	Enters BGP IPv4 address family mode.

**Platform Description** N/A

## 5.33 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
<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.

**Parameter**  
**Description**

**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.

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
```

**Configuration**  
**Examples**

**Related**  
**Commands**

Command	Description
<b>bgp graceful-restart</b>	Enables the BGP graceful-restart.

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

## 5.34 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
<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

## 5.35 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**

	Parameter	Description
<b>Parameter Description</b>	<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.

**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.

This command is used by the administrator to adjust the BGP route advertisement behavior during device restart based on the hardware conditions, number of neighbors, number of routes, and actual deployment requirements.

**Configuration**

The following example configures initial delay to 60 seconds within 500 seconds after BGP restart.

**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**

N/A

**Description**

## 5.36 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	N/A	N/A
Description	N/A	N/A

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

**Command**

**Mode** BGP configuration mode or BGP Scope Global configuration mode

**Usage** The debug command can also be used to log BGP status changes. But this command may  
**Guide** consume many resources.

**Configuration** The following example logs the BGP status changes without turning on debug.

**Examples** Ruijie(config-router)# bgp log-neighbor-changes

	Command	Description
<b>Related</b>		
<b>Commands</b>	<b>router bgp</b>	Enables the BGP protocol.

**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	<i>number</i>	The maximum number of ASs in the BGP AS-PATH attribute. The range is from 1 to 512.
Description		

**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 <i>time</i></b>	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** The following example retains BGP sessions when BGP protocol detects errors in multi-protocol route attributes.

**Examples**

```
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>

Defaults The default is 5.

Command Mode BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6/L2VPN VPWS/VPLS address family configuration mode or BGP Scope configuration mode.

Usage Guide This command is used to configure the delay time for updating the routing table when the nexthop changes, it takes effect when the bgp nexthop trigger enable switch is opened.

Configuration Examples The following example retains BGP sessions when BGP protocol detects errors in multi-protocol route attributes.

```
Ruijie(config-router)# bgp nexthop trigger delay 30
```

Related Commands	Command	Description
		<b>bgp nexthop trigger enable</b>

Platform  
Description None



## 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**

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, BGP VPNv4/VPNv6/L2VPN VPWS/VPLS address-family configuration mode or BGP Scope configuration mode.

**Usage**

**Guide** This command is used to enable the nexthop trigger update function.

**Configuration Examples** The following example enables the nexthop trigger update function.

```
Ruijie(config-router)# bgp nexthop trigger enable
```

Related Commands	Command	Description
	<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 unsupported-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 unsupported-capability**

**no bgp notify unsupported-capability**

**default bgp notify unsupported-capability**

Parameter	Parameter	Description
Description	N/A	N/A

<b>Defaults</b>	This function is disabled by default.
<b>Command Mode</b>	BGP configuration mode or BGP Scope Global configuration mode
<b>Usage Guide</b>	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.
<b>Configuration Examples</b>	The following example enables the neighbor address family capability detection function.
<b>Examples</b>	<pre>Ruijie(config)# router bgp 65000 Ruijie(config-router)# bgp notify unsupport-capability</pre>

<b>Configuration Examples</b>	Command	Description
	<b>router bgp</b>	Enables BGP protocol.

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

## 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**

<b>Parameter Description</b>	Parameter	Description
	N/A	N/A

<b>Defaults</b>	IBGP routes are allowed by default to be redistributed to the IGP protocol.
<b>Command Mode</b>	BGP configuration mode, IPv4/IPv6 Unicast address family configuration mode, IPv4/IPv6 VRF address family configuration mode or BGP Scope configuration mode.
<b>Usage Guide</b>	This command is used to control whether IBGP routes are allowed to be redistributed to the IGP protocol.
<b>Configuration Examples</b>	The following example enables the BGP to learn the redistributing routes from IBGP.
<b>Examples</b>	<pre>Ruijie(config-router)# bgp redistribute-internal</pre>

Related	Command	Description
Commands	<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**

The following example configures the ID-IP address of the device.

**Examples**

```
Ruijie(config-router)# bgp router-id 10.0.0.1
```

Related	Command	Description
Commands	<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	Parameter	Description
Description	N/A	N/A

**Defaults** Timely scan and update is enabled by default.

**Command Mode** BGP configuration mode, BGP IPv4/IPv6 Unicast address-family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6/L2VPN VPWS/VPLS address family configuration mode and BGP Scope 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 Examples** The following example configures the timely scan for the BGP protocol.

```
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 [*time*]**

**default bgp scan-time [*time*]**

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

<b>Description</b>	<i>time</i>	Interval of the timely scan, in the range from 5 to 60 in the unit of seconds				
<b>Defaults</b>	The default is 60.					
<b>Command Mode</b>	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.					
<b>Usage Guide</b>	This command is used to configure the interval for the BGP timely scan; it takes effect when <code>bgp scan-rib enable</code> is configured.					
<b>Configuration Examples</b>	The following example configures the interval for the BGP timely scan.					
	<pre>Ruijie(config-router)# bgp scan-time 30</pre>					
<b>Related Commands</b>	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><code>bgp scan-rib enable</code></td> <td>Enables timely scan of the routing table by BGP.</td> </tr> </tbody> </table>	Command	Description	<code>bgp scan-rib enable</code>	Enables timely scan of the routing table by BGP.	
Command	Description					
<code>bgp scan-rib enable</code>	Enables timely scan of the routing table by BGP.					
<b>Platform Description</b>	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
	-	-

<b>Defaults</b>	This function is enabled by default.
<b>Command Mode</b>	BGP configuration mode or BGP Scope Global configuration mode
<b>Usage Guide</b>	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.
<b>Configuration</b>	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 Examples** The following example configures BGP's internal timer accuracy control.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp timer accuracy-control
```

**Configuration Examples**

Command	Description
<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
<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.

**Parameter  
Description**

**Defaults** The default is 120.

**Command**

**Mode** BGP configuration mode or BGP Scope Global configuration mode

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.

**Usage Guide**

The **bgp update-delay** command is used to adjust the initial waiting time of the software, which is the maximum time, from establishing the connection with the first neighbor to performing the routing optimization calculation and sending the route advertisement. When the BGP graceful-restart is enabled, this command is also used to set the maximum waiting time to receive EOR messages from all neighbors. You can increase this value if there are many neighbors or the routing information of the neighbors is huge. If the number of neighbors is 100 and the average amount of routes is 5000, the update sending time that each neighbor completes all the routing is 1 second, then the update of all the routing needs 100 seconds; if the number of neighbors increases to 200, the Update Delay time can be set to 240 seconds, ensuring that all the routing can be updated with the Update Delay period. The specific time is also related to data transmission rate.

**Configuration  
Examples**

The following example sets the update-delay time to 200 seconds.

```
Ruijie(config)# router bgp 500
Ruijie(config-router)# bgp graceful-restart
```

```
Ruijie(config-router)# bgp update-delay 200
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>bgp graceful-restart</b>	Enables the BGP graceful-restart.

**Platform**  
**Description** None

## 5.49 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 }**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<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
```

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

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



## 5.50 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
<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** This command is used to reset sessions of all supported address-families, including the vrf session  
**Guide** in every address-family.

**Configuration**

**Examples** N/A

Related	Command	Description
<b>Commands</b>	<b>clear bgp ipv4 unicast</b>	Resets the IPv4 unicast address-family.

**Platform**

**Description** None

## 5.51 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**

## 5.52 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>	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** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** This command is the same as **clear ip bgp** in terms of the function and parameters.

**Configuration Examples** N/A

Configuration Examples	Command	Description
	N/A	N/A

**Platform Description** N/A

## 5.53 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 Examples** The following example clears the flap information and disables route dampening.

```
Ruijie# clear ip bgp dampening 192.168.0.0 255.255.0.0
```

Related	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 and sets the dampening parameters.

**Platform****Description** None

## 5.54 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.
<b>in</b>	Without parameter soft, resets the session of the peer to establish active connection.
<b>out</b>	Without parameter soft, resets the session of the local BGP speaker to establish active connection.
<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 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
<b>clear ip bgp</b>	Resets the BGP session.
<b>show ip bgp neighbors</b>	Displays the neighbor information.

**Platform****Description** None

## 5.55 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
<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

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

## 5.56 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
<i>vrf-name</i>	VRF name
<i>peer-group-name</i>	Name of the peer group
<b>in</b>	Without parameter soft, resets the session of the peer to establish active connection.
<b>out</b>	Without parameter soft, resets the session of the local BGP

	speaker to establish active connection.
<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

## 5.57 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

## 5.58 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>	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 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**

## 5.59 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 Examples** The following example clears flap information and disables route dampening.

```
Ruijie# clear bgp ipv6 unicast dampening 192.168.0.0 255.255.0.0
```

Configuration Examples	Command	Description
	<b>bgp dampening</b>	Enables the route dampening function and sets dampening parameters.

**Platform** -  
**Description**

## 5.60 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
-----------	-----------	-------------



Description	
<i>vrf-name</i>	VRF name
<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** Privileged EXEC mode

**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

Configuration Examples	Command	Description
	clear ip bgp	Resets BGP sessions.
show ip bgp neighbors	Displays BGP neighbors' information.	

**Platform** -

**Description**

## 5.61 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 ] ]**

Parameter Description	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** Privileged EXEC mode

**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**

## 5.62 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>	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** 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**

## 5.63 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	Parameter	Description
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**

## 5.64 clear bgp l2vpn vpls

Use this command to reset BGP EVPN address families.

**clear bgp l2vpn evpn { \* | *as-number* | *peer-address* } [ **soft** ] [ **in** | **out** ]**

Parameter	Parameter	Description
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>	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** 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**

## 5.65 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**

## 5.66 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 ]
```

<b>Parameter Description</b>	<table border="1"><thead><tr><th>Parameter</th><th>Description</th></tr></thead><tbody><tr><td><b>in</b></td><td>Soft-resets received route information.</td></tr><tr><td><b>out</b></td><td>Soft-resets allocated route information.</td></tr><tr><td><b>soft</b></td><td>Soft-resets received and sent route information.</td></tr><tr><td><b>soft in</b></td><td>Soft-resets received route information.</td></tr><tr><td><b>soft out</b></td><td>Soft-resets allocated route information.</td></tr></tbody></table>	Parameter	Description	<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.
Parameter	Description												
<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.												
<b>Defaults</b>	N/A												
<b>Command Mode</b>	Privileged EXEC mode												
<b>Usage Guide</b>	You can use this command to reset all the specified external BGP connection.												
<b>Configuration</b>	The following example resets all EBGP connection of L2VPN EVPN address families.												
<b>Examples</b>	<pre>Ruijie# clear bgp l2vpn evpn external in</pre>												
<b>Platform Description</b>	N/A												

## 5.67 clear bgp l2vpn evpn flap-statistics

Use this command to clear BGP EVPN address families' route flap statistics.

**clear bgp l2vpn evpn flap-statistics**

<b>Parameter Description</b>	Parameter	Description
	N/A	N/A
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Privileged EXEC mode	
<b>Usage Guide</b>	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 <b>clear bgp l2vpn evpn dampening</b> command.	
<b>Configuration Examples</b>	The following example clears L2VPN EVPN address families' route flap statistics.	
<b>Examples</b>	<pre>Ruijie# clear bgp l2vpn evpn flap-statistics</pre>	
<b>Platform Description</b>	N/A	

## 5.68 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** ]

<b>Parameter Description</b>	Parameter	Description
	<i>peer-group-name</i>	Peer group name
	<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.
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Privileged EXEC mode	

**Usage Guide** Use this command to reset BGP sessions of all members in the peer group.

**Configuration Examples** The following example displays that the L2VPN EVPN address family soft-resets received route information of all members in the peer group my-group.

```
Ruijie# clear bgp l2vpn evpn peer-group my-group in
```

**Platform** N/A

**Description**

## 5.69 clear bgp l2vpn vpls

Use this command to reset BGP VPLS address families.

```
clear bgp l2vpn vpls { * | 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>	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** The function is similar with **clear bgp ipv4 unicast**, but applies to different address families.

**Configuration Examples** -

**Examples**

Configuration Examples	Command	Description
	<b>clear bgp ipv4 unicast</b>	Resets BGP IPv4 unicast address families.



**Platform** -  
**Description**

## 5.70 clear bgp l2vpn vpls dampening

Use this command to clear flap information and disable route dampening.

**clear bgp l2vpn vpls dampening** [ *ve\_id:offset* ]

Parameter Description	Parameter	Description
	-	Clears all routes' flap information.
	<i>ve_id:offset</i>	Clears specified <i>ve_id:offset</i> 's vfi instance route flap information.

**Defaults** -

**Command Mode** Privileged EXEC mode

**Usage Guide** You can use this command to clear BGP's route flap information and relieve damped routes. The command can restart BGP's route flap.

**Configuration Examples** The following example clears flap information and disables route dampening.

```
Ruijie# clear bgp l2vpn vpls dampening
```

Configuration Examples	Command	Description
	<b>bgp dampening</b>	Enables the route dampening function and sets dampening parameters.

**Platform** -  
**Description**

## 5.71 clear bgp l2vpn vpls external

Use this command to reset all EBGp connection of BGP VPLS address families.

**clear bgp l2vpn vpls external** [ *soft* ] [ *in* | *out* ]

Parameter Description	Parameter	Description
	<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** You can use this command to reset all the specified external BGP connection.

**Configuration Examples** The following example resets all EBGp connection of BGP VPLS address families.

```
Ruijie# clear bgp l2vpn vpls external in
```

<b>Configuration Examples</b>	<b>Command</b>	<b>Description</b>
	<b>clear ip bgp</b>	Resets BGP sessions.
<b>show ip bgp neighbors</b>	Displays BGP neighbors' information.	

**Platform** -

**Description**

## 5.72 clear bgp l2vpn vpls flap-statistics

Use this command to clear BGP VPLS address families' route flap statistics.

**clear bgp l2vpn vpls flap-statistics** [ *ve\_id:offset* ]

Parameter Description	Parameter	Description
	-	Clears all routes' flap information.
	<i>ve_id:offset</i>	Clears specified <i>ve_id:offset</i> 's vfi instance route flap information.

**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 l2vpn vpls dampening** command.

**Configuration Examples** The following example clears BGP VPLS address families' route flap statistics.

**Examples** Ruijie# clear bgp l2vpn vpls 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**

## 5.73 clear bgp l2vpn vpls peer-group

Use this command to reset sessions of all members in the peer group.

**clear bgp l2vpn vpls peer-group** *peer-group-name* [ **soft** ] [ **in** | **out** ]

Parameter Description	Parameter	Description
	<i>peer-group-name</i>	Peer group name
	<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** Privileged EXEC mode

**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 VPLS address family soft-resets received route

**Examples** information of all members in the peer group my-group.

```
Ruijie# clear bgp l2vpn vpls peer-group my-group in
```

**Configuration**  
**Examples**

Command	Description
<b>clear ip bgp</b>	Resets BGP sessions.
<b>show ip bgp</b>	Displays BGP route entries.

**Platform** -

**Description**

## 5.74 clear bgp l2vpn vpws

Use this command to reset BGP's VPWS address families.

```
clear bgp l2vpn vpws { * | 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>	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** 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**

## 5.75 clear bgp l2vpn vpws dampening

Use this command to clear flap information and disable route dampening.

**clear bgp l2vpn vpws dampening** [ *ve\_id:offset* ]

Parameter Description	Parameter	Description
	-	Clears all routes' flap information.
	<i>ve_id:offset</i>	Clears specified <i>ve_id:offset</i> 's vfi instance route flap information.

**Defaults** -

**Command** Privileged EXEC mode  
**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 vpws dampening

Configuration Examples	Command	Description
	<b>bgp dampening</b>	Enables the route dampening function and sets dampening parameters.

**Platform** -  
**Description**

## 5.76 clear bgp l2vpn vpws external

Use this command to reset all EBGP connection of BGP VPWS address families.

**clear bgp l2vpn vpws external [ soft ] [ in | out ]**

Parameter Description	Parameter	Description
	<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** You can use this command to reset all the specified external BGP connection.

**Configuration Examples** The following example resets all EBGP connection of BGP VPWS address families.

**Examples** Ruijie# clear bgp l2vpn vpws external in

Configuration Examples	Command	Description
	<b>clear ip bgp</b>	Resets BGP sessions.
	<b>show ip bgp neighbors</b>	Displays BGP neighbors' information.

**Platform** -

**Description**

## 5.77 clear bgp l2vpn vpws flap-statistics

Use this command to clear BGP VPWS address families' route flap statistics.

**clear bgp l2vpn vpws flap-statistics [ ve\_id:offset ]**

Parameter Description	Parameter	Description
	-	Clears all routes' flap information.
	<i>ve_id:offset</i>	Clears specified <i>ve_id:offset</i> 's vfi instance route flap information.

**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 l2vpn vpws dampening** command.

**Configuration Examples** The following example clears BGP VPWS address families' route flap statistics.

```
Ruijie# clear bgp l2vpn vpws 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**

## 5.78 clear bgp l2vpn vpws peer-group

Use this command to reset sessions with all members in the peer group.

```
clear bgp l2vpn vpws peer-group peer-group-name [ soft ] [ in | out ]
```

Parameter Description	Parameter	Description
	<i>peer-group-name</i>	Peer group name
	<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** Use this command to reset BGP sessions with all members in the peer group.

**Configuration Examples** The following example resets sessions with all members in the peer group.

```
Ruijie# clear bgp l2vpn vpws peer-group my-group in
```

Configuration Examples	Command	Description
	<code>clear ip bgp</code>	Resets BGP sessions.
	<code>show ip bgp</code>	Displays BGP route entries.

Platform -

Description

## 5.79 clear bgp vpnv4 unicast

Use this command to reset BGP's VPNV4 unicast address families.

**clear bgp vpnv4 unicast** { \* | *as-number* | *peer-address* } [ **soft** ] [ **in** | **out** ]

Parameter Description	Parameter	Description
		*
	<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>	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 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
	<code>clear bgp ipv4 unicast</code>	Resets BGP's IPv4 unicast address families.

Platform -

Description



## 5.80 clear bgp vpnv4 unicast dampening

Use this command to clear flap information and disable route dampening.

**clear bgp vpnv4 unicast dampening** [ *ip-address* [ *mask* ] ]

Parameter Description	Parameter	Description
	-	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 relieve damped routes. The command can restart BGP's route flap.

**Configuration Examples** The following example clears flap information and disables route dampening.

```
Ruijie# clear bgp vpnv4 unicast dampening
```

Configuration Examples	Command	Description
	<b>bgp dampening</b>	Enables the route dampening function and sets dampening parameters.

**Platform** -

**Description**

## 5.81 clear bgp vpnv4 unicast external

Use this command to reset all EBGp connection of VPNv4 address families.

**clear bgp vpnv4 unicast external** [ *soft* ] [ *in* | *out* ]

Parameter Description	Parameter	Description
	<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** Privileged EXEC mode  
**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 VPNv4 address families.

**Examples** Ruijie# clear bgp vpnv4 unicast external in

**Configuration**  
**Examples**

Command	Description
<b>clear ip bgp</b>	Resets BGP sessions.
<b>show ip bgp neighbors</b>	Displays BGP neighbors' information.

**Platform** -

**Description**

## 5.82 clear bgp vpnv4 unicast flap-statistics

Use this command to clear VPNv4 address families' route flap statistics.

**clear bgp vpnv4 unicast flap-statistics** [ *ip-address* [ *mask* ] ]

**Parameter**  
**Description**

Parameter	Description
-	Clears all routes' flap information.
<i>ip-address</i>	IP address
<i>mask</i>	Mask code

**Defaults** -

**Command** Privileged EXEC mode  
**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 vpnv4 unicast dampening** command.

**Configuration** The following example clears VPNv4 address families' route flap statistics.

**Examples** Ruijie# clear bgp vpnv4 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

## 5.83 clear bgp vpnv4 unicast peer-group

Use this command to reset sessions with all members in the peer group.

**clear bgp vpnv4 unicast peer-group** *peer-group-name* [ **soft** ] [ **in** | **out** ]

Parameter Description	Parameter	Description
		<i>peer-group-name</i>
	<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 Privileged EXEC mode

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 vpnv4 unicast peer-group my-group in

Configuration Examples	Command	Description
	<b>clear ip bgp</b>	Resets BGP sessions.
	<b>show ip bgp</b>	Displays BGP route entries.

Platform -

Description

## 5.84 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
<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>	Soft-reset the received routing information.
<b>out</b>	Soft-reset the redistributed routing 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


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.

**Usage Guide**

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

## 5.85 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**

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.

**Guide****Configuration**

The following example clears the dampening information and disables route dampening.

**Examples**

```
Ruijie# clear ip bgp dampening 192.168.0.0 255.255.0.0
```

**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

## 5.86 clear ip bgp external

Use this command to reset all EBGP connections.

**clear ip bgp [ vrf *vrf-name* ] external [ soft ] [ in | out ]**

Parameter	Description
<i>vrf-name</i>	VRF name.
<b>in</b>	Without parameter soft, resets the session through which the peer establishes active connection.
<b>out</b>	Without parameter soft, resets the session through which the local BGP speaker establishes active connection.
<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

Command	Description
<b>clear ip bgp</b>	Resets the BGP session.
<b>show ip bgp neighbors</b>	Displays the neighbor information.

**Platform**

**Description** None

## 5.87 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	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 **clear ip bgp dampening** command.

**Configuration**

The following example clears the routes vibration statistics of the IPv4 unicast address family.

**Examples**

```
Ruijie# clear ip bgp 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

## 5.88 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>	Without parameter <b>soft</b> , resets the session through which the peer establishes active connection.
<b>out</b>	Without parameter <b>soft</b> , resets the session through which the local BGP speaker establishes active connection.
<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**

This command resets the BGP session with all members in the peer group.

**Guide**

**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
clear ip bgp	Resets the BGP session.
show ip bgp	Displays the BGP route entry.

**Platform**

**Description** None

## 5.89 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	Parameter	Description
<b>Description</b>	<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** The following example updates the table-map's route information applied by IPv4 unicast address family.

**Examples** Ruijie# clear ip bgp table-map

**Related  
Commands**

Command	Description
clear ip bgp	Resets the BGP session.
show ip bgp	Displays the BGP route entry.

**Platform**

**Description** None



## 5.90 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

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.

### Usage Guide

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

## 5.91 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
-----------	-----------	-------------

<b>Description</b>	<i>number</i>	Metric number, in the range from 1 to 4294967295				
<b>Defaults</b>	No metric is set 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 or BGP Scope configuration mode.					
<b>Usage Guide</b>	<p>This command sets the metric of routes to be redistributed for integrity.</p> <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>					
<b>Configuration Examples</b>	<p>The following example sets the metric for route redistribution.</p> <pre>Ruijie(config-router)# default-metric 45</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 routes of other protocol.</td> </tr> </tbody> </table>	Command	Description	<b>redistribute</b>	Redistributes routes of other protocol.	
Command	Description					
<b>redistribute</b>	Redistributes routes of other protocol.					
<b>Platform Description</b>	None					

## 5.92 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
<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:

<b>Defaults</b>	<i>external-distance</i> - 20
	<i>internal-distance</i> - 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 Guide**
- The management distance of "external-distance" must be shorter than those of other IGP routing protocols (such as OSPF and RIP);
  - The internal-distance and local-distance should have longer management distances than other IGP routing protocols.

**Configuration Examples** The following example sets different management distances for different types of BGP routes.

```
Ruijie(config-router)# distance bgp 20 20 200
```

### Related Commands

Command	Description
<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

## 5.93 exit-address-family

Use this command to exit BGP address-family configuration mode.

### exit-address-family

Parameter	Parameter	Description
<b>Description</b>	N/A	N/A

**Defaults** N/A

### Command

**Mode** BGP address-family configuration mode

**Usage Guide** This command can be used to exit from various address-family modes of BGP to BGP configuration mode.

**Configuration Examples** The following example exits the BGP address-family configuration mode.

```
Ruijie(config-router-af)#exit-address-family
```

### Related

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

<b>Commands</b>	<b>address-family ipv4</b>	Enters IPv4 address family configuration mode.
-----------------	----------------------------	--

**Platform**

**Description** None

## 5.94 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 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 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** N/A

**Description**

## 5.95 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	Parameter	Description
<b>Description</b>	<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**

## 5.96 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**

**default maximum-prefix**

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 number of prefixes in the routing database of address families is not limited.

**Command Mode**


BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF configuration mode, BGP VPNv4/VPNv6/L2VPN VPWS/VPLS address family configuration mode or BGP Scope configuration mode.


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.

**Usage Guide**

 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.

**Configuration Examples**

The following example sets the maximum number of prefixes in the BGP routing database in the ipv4 multicast address family.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family ipv4 multicast
Ruijie(config-router-af)# maximum-prefix 65535
```

**Related Commands**

Command	Description
<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

## 5.97 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
<b>Parameter Description</b>	<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, BGP IPv4/ IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6/L2VPN VPWS/VPLS address family configuration mode, or BGP Scope configuration mode.

**Usage Guide** The function is enabled by default for IPv4 address families. You need to set this command in other address-family configuration modes for exchanging routes.

**Configuration Examples** The following example activates the neighbor or peer group in the current address mode.

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 100
Ruijie(config-router)# address-family vpnv4
Ruijie(config-router-af)# neighbor 10.0.0.1 activate
```

**Related**

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

<b>Commands</b>	<b>router bgp</b>	Enables the BGP protocol.
	<b>neighbor remote-as</b>	Configures the BGP peer.

**Platform****Description** None

## 5.98 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**

<b>Parameter Description</b>	<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>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**

The following example sets the time interval to send the BGP route update message.

**Examples**

```
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**

<b>Command</b>	<b>Description</b>
<b>router bgp</b>	Enables the BGP protocol.
<b>neighbor remote-as</b>	Configures the BGP peer.

**Platform****Description** None



## 5.99 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
<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

### Parameter Description

### Defaults

This function is disabled by default.

### Command Mode

BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode, BGP VPNv4/VPNv6/L2VPN VPWS/VPLS address family configuration mode or BGP Scope 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

## 5.100 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 Guide

If you specify a peer group name in this command, the configuration takes effect on all members of the peer group.

### Configuration Examples

The following example configures the interval at which the device advertises local original BGP routes to the peer in the BGP IPv4 VRF address family configuration mode.

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# address-family ipv4 vrf vpn1
Ruijie(config-router-af)# neighbor 10.0.0.1 remote-as 100
Ruijie(config-router-af)# neighbor 10.0.0.1 as-origination-interval 10
```

### Related Commands

Command	Description
N/A	N/A

### Platform

### Description

N/A

## 5.101 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
<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

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.

**Usage Guide** 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.

The following example allows the PE to override the AS number of a site.

**Configuration Examples**

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.1.1.1 remote-as 100
Ruijie(config-router)# address-family ipv4 vrf vpn1
Ruijie(config-router-af)# neighbor 10.1.1.1 as-override
```

Command	Description
<b>router bgp</b>	Enables the BGP protocol.
<b>neighbor remote-as</b>	Configures the BGP peer.

**Platform**

**Description** None

## 5.102 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
<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.

The following example allows the BGP speaker to advertise the default route to the peer (group).

**Configuration**

```
Ruijie(config)# router bgp 60
```

**Examples**

```
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

## 5.103 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
<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** This command is used to add descriptive characters for the peer (group). This may help remember features and characteristics of the peer (group).

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
```

Command	Description
<b>router bgp</b>	Enables the BGP protocol.
<b>neighbor remote-as</b>	Configures the BGP peer.

**Platform**  
**Description** None

## 5.104 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
<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, BGP VPNv4/VPNv6 address family configuration mode or BGP Scope configuration mode.

**Usage** 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.

**Guide** 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.

The following example implements the routing policy based on the ACL when receiving/sending route information from/to the specified BGP peer.

**Configuration**

```
Ruijie(config)# router bgp 60
```

**Examples**

```
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

## 5.105 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** [*tll*]

**no neighbor** {*peer-address* | *peer-group-name*} **ebgp-multihop** [*tll*]

**default neighbor** { *peer-address* | *peer-group-name* } **ebgp-multihop** [ *tll* ]

**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>tll</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 tll 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.

The following example allows establishing BGP connection between EBGP peers that are not directly connected.

**Configuration Examples**

```
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

## 5.106 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.

The following example enables BFD correlation to detect the forwarding path between local and the neighbor 172.16.0.2.

**Configuration Examples**

```
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.

<b>Platform</b>	
<b>Description</b>	None

## 5.107 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
<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
```

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** None



## Description

## 5.108 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

## 5.109 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, BGP VPNv4/VPNv6/L2VPN VPWS/VPLS address family configuration mode or BGP Scope configuration mode.

### Usage Guide

The BGP connection will be torn down when the received routes exceeds the upper limit by default. To prevent tearing down the connection, set the "warning-only" to control that.

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

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

<b>Commands</b>	<b>router bgp</b>	Enables the BGP protocol.
	<b>neighbor remote-as</b>	Configures the BGP peer.

**Platform**

**Description** None

## 5.110 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
<b>Parameter</b> <b>Description</b>	<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, BGP VPNv4/VPNv6 address family configuration mode or BGP Scope 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
```

	Command	Description
<b>Related Commands</b>	<b>router bgp</b>	Enables the BGP protocol.
	<b>neighbor remote-as</b>	Configures the BGP peer.

**Platform**

**Description** None

## 5.111 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
<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 VPNv4/VPNv6/L2VPN VPLS/VPWS address family configuration mode or BGP Scope Global configuration mode.

**Usage Guide** This command is used to control to maintain the next-hop route transmitting between multi-hop EBGp peer sessions. This command cannot be configured on the route reflector. And for the client of the route reflector, if this function is enabled, the **neighbor next-hop-self** command cannot be used to change the next-hop of routes. This function is mainly applied to the cross-domain VPN. In the implementation with the Option C adopted, to reduce the complete connectivity between the PEs of the cross-domain CPN, a route reflector can be set in every autonomous domain to establish the Multihop MP-EBGP connection to implement the VPN route interaction. As the next-hop route is changed as itself while sending routes to the EBGp peer by default, PE stations of other autonomous domains will consider the final next-hop of the VPN route as the route reflector when receiving the VPN route at last, which will result in all cross-domains VPN flow going through the reflector. However, usually this is not the optimal forwarding path, and the requirement for the forwarding performance of the RR is higher. To avoid this condition, use the **neighbor next-hop-unchanged** command in the address-family VPNv4 configuration mode to maintain the next-hop of the VPNv4 route sent to the BGP peer when establishing the cross-domain Multihop MP-EBGP connection on the router reflector.

The following example maintains the next-hop when sending routes to the peer (group).

**Configuration Examples**

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# address-family vpnv4
Ruijie(config-router-af)# neighbor 10.1.1.1 next-hop-unchanged
```

Related Commands	Command	Description
	<b>router bgp</b>	Enables the BGP protocol.

<b>neighbor remote-as</b>	Configures the BGP peer.
---------------------------	--------------------------

**Platform**

**Description** None

## 5.112 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.

<b>Platform</b>	
<b>Description</b>	None

## 5.113 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
<b>Parameter Description</b>	<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, BGP VPNv4/VPNv6/L2VPN VPWS/VPLS address family configuration mode or BGP Scope 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
```

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

## 5.114 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
```

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

## 5.115 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
<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, BGP VPNv4/VPNv6 address family configuration mode or BGP Scope 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
```

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



## 5.116 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
<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, BGP VPNv4/VPNv6/L2VPN VPWS/VPLS 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 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

## 5.117 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
<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.

This command takes effect only on EBGp peers.

**Usage Guide** 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
```

Command	Description
<b>router bgp</b>	Enables the BGP protocol.
<b>neighbor remote-as</b>	Configures the BGP peer.

**Platform Description** None

## 5.118 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
<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, BGP VPNv4/VPNv6/L2VPN VPWS/VPLS address family configuration mode or BGP Scope 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

## 5.119 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, BGP VPNv4/VPNv6/L2VPN VPWS/VPLS address family configuration mode or BGP Scope configuration mode.

**Usage** By default, all IBGP speakers in the autonomous system must establish neighbor relationship with

**Guide** each other. The BGP speaker does not forward the routes learned from an IBGP peer to other IBGP peers to avoid route loop.

This command can be used to set route reflector, so that there is no need for all IBGP speakers to establish full neighboring relationship between each other. This will allow the route reflector to forward learned IBGP routes to other IBGP peers.

**Configuration Examples**

The following example configures the local device as the route reflector and specifies its client.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 route-reflector-client
```

**Related Commands**

Command	Description
<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

## 5.120 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 Unicast VRF address family configuration mode, BGP IPv6 Unicast/VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration mode, BGP L2VPN VPWS/VPLS address family configuration mode, BGP scope configuration mode

**Usage**

**Guide** This command transmits the community to the neighbor or neighbor group.

**Configuration** The following example transmits community attributes to the specified BGP neighbor.

**Examples**

```
Ruijie(config-router)# neighbor 10.1.1.1 send-community both
```

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.

**Related****Commands****Platform**

**Description** None

## 5.121 neighbor send-label

Use this command to specify the device to send the route carrying the MPLS label to a neighbor. Use the **no** or **default** form of this command to restore the default setting.

**neighbor {peer-address | peer-group-name} send-label**

**no neighbor {peer-address | peer-group-name} send-label**

**default neighbor { peer-address | peer-group-name } send-label**

**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** 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.

**Usage****Guide**

Use this command to allow the BGP sending the routes with MPLS label requiring two ends of the peer should be configured this command. The configuration of this command takes effect only after the neighbor is restarted. This command is configured in BGP configuration mode and takes effect on the ipv4 unicast address-family only by default. For AS border routers, only when this command is configured, the MPLS label can be forwarded on the AS border.

The following example specifies the device to send the route carrying the MPLS label to a neighbor.

**Configuration****Examples**

```
Ruijie(config)# router bgp 100
Ruijie(config-router)# neighbor 192.168.0.1 remote-as 101
Ruijie(config-router)# neighbor 192.168.0.1 send-label
```

	Command	Description
Related Commands	<b>router bgp</b>	Enables the BGP protocol.
	<b>neighbor remote-as</b>	Configures the BGP peer.

Platform  
Description N/A

## 5.122 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 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).

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 disconnects the BGP connection established with the specified BGP peer.

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.0.0.1 shutdown
```

	Command	Description
Related Commands	<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

## 5.123 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
<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 Unicast VRF address family configuration mode, BGP IPv6 Unicast/VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration mode, BGP L2VPN VPWS/VPLS address family configuration mode, BGP scope configuration mode

This command restarts the BGP session, and keeps the unchanged routing information sent from the BGP peer (group).

**Usage Guide** 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
```

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

## 5.124 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
<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.

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



## 5.125 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
<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.  
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** 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

## 5.126 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 Unicast/VRF address family configuration mode, BGP IPv6 Unicast/VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration mode, BGP L2VPN VPWS/VPLS address family configuration mode, BGP scope configuration mode

### Usage

This command advertises the specified suppressed routes.

### 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 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

## 5.127 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.

**Usage  
Guide**

The interface address specified for BGP connection must be valid in local, otherwise the BGP connection may be faulty.

All members in a BGP peer group inherit the settings of this command. Particularly, if the interface address is used, only the member whose address type is same as the interface address's can inherit the settings of this command.

If the IPv6 address of the loopback interface is used for neighbor connection, both peers need to be configured with the loopback interface. The BGP connection can be established only when the address of the egress interface on the peer is same as that of the neighbor in local.

A loopback interface address can be configured on different interfaces. You need to specify only the interface name,

The peer configured with the IPv6 address of loopback interface support only one-hop BGP neighbor connection.

### Configuration Examples

The following example establishes the BGP connection.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 update-source 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

## 5.128 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
<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 Examples

The following example displays the number of the BGP protocol version used by the specific BGP neighbor.

```
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

## 5.129 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** BGP configuration mode, BGP IPv4 Unicast/VRF address family configuration mode, BGP IPv6 Unicast/VRF address family configuration mode, BGP VPNv4/VPNv6 address family configuration mode, BGP L2VPN VPWS/VPLS address family configuration mode, BGP scope configuration mode

**Usage Guide** When the command is used, routes learnt from the neighbor use this value as the initial weight value. The higher the weight, the higher the priority is.

Executing the **set weight** command in the route map of the neighbor will overwrite this value.

**Configuration Examples** The following example sets the weight for the specific neighbor.

```
Ruijie(config-router)# neighbor 10.1.1.1 weight 73
```

Related Commands	Command	Description
	<b>router bgp</b>	Enables the BGP protocol.
	<b>neighbor remote-as</b>	Configures the BGP peer.

**Platform**  
**Description** None

## 5.130 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** ]

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.

Parameter  
Description

**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
```

**Related Commands**

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

## 5.131 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	Description
Parameter		
Description	N/A	N/A

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

**Command Mode** BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/IPv6 VRF address family configuration mode 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
```

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

## 5.132 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	Description
Parameter		
Description	N/A	N/A

**Defaults** Allow the BGP to enter the OVERFLOW state when the memory is insufficient.

**Command Mode** BGP configuration mode 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**

The following example sets BGP not to enter the OVERFLOW configuration status when the memory is insufficient.

**Examples**

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# no memory-lack
```

**Related****Commands**

Command	Description
<b>clear bgp</b> { <i>addressfamily</i>   <b>all</b> } *	Resets the BGP address family.
<b>show bgp</b> { <i>addressfamily</i>   <b>all</b> } <b>summary</b>	Displays the summary of the BGP address family.

**Platform****Description**

None

## 5.133 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**  When you configure the **no** form of this command with parameters, the corresponding  
**Guide** 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

## 5.134 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.

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 filtering rule of ISIS routing is: filtering the ISIS routing type according to the configured level option before filtering the route-map rule. The route metric generated by the route-map command takes precedence over the one generated by the metric option of this command. If both are unavailable, the redistributed one is used.

**Configuration Examples**

The following example redistributes routes between ISIS and BGP.

```
Ruijie(config-router)# redistribute isis route-map static-rmap
Ruijie(config-router)# no redistribute isis test route-map isis-rmap
Ruijie(config-router)# no redistribute isis
```

**Related Commands**

Command	Description
<b>show ip protocol</b>	Displays the protocol configuration.

**Platform**

**Description** None

## 5.135 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** *metric-value*] [**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
<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.


**Parameter  
Description**


**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.

**Configuration  
Examples**

The following example redistributes routes between OSPF and BGP.

```
Ruijie(config-router)# redistribute ospf 2 route-map static-rmap
Ruijie(config-router)# no redistribute ospf 4 match external 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

## 5.136 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

This command is used to start the BGP protocol.

### Usage 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**

```
Ruijie(config)# router bgp 65000
```

### 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

## 5.137 scope

Use this command to enter the scope configuration mode and associate VRF with BGP. Use the **exit** command to exit the scope configuration mode. Use the **no** or **default** form of this command to remove the association between the VRF instance and BGP protocol.

**scope** { **global** | **vrf** *vrf-name* }

**exit**

**no scope** { **global** | **vrf** *vrf-name* }

**default scope** { **global** | **vrf** *vrf-name* }

	Parameter	Description
Parameter Description	<b>global</b>	Global routing table.
	<b>vrf</b> <i>vrf-name</i>	VRF name.

**Defaults** No scope address family is defined by default.

**Command**


**Mode** BGP configuration mode.

Enter the scope configuration mode to perform the configuration.

To exit the scope configuration mode, use the **exit** command.

**Usage**

**Guide**

 In the scope configuration mode, the commands configured in the BGP configuration mode are converted to the form in the scope configuration mode. To restore the commands, execute the command **no route bgp** and configure the commands again.

**Configuration**

**Examples**

The following example enters the scope global configuration mode.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# scope global
```

**Related**

**Commands**

Command	Description
N/A	N/A

**Platform**

**Description** N/A

## 5.138 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 policy</i>	Displays the related routing policy information of BGP neighbors. (General)
<b>neighbors</b> <i>peer-address policy detail</i>	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.

```
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
```

**Configuration Examples**

```

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

## 5.139 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**

**show bgp ipv4 unicast [ vrf *vrf-name* ] labels**



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.

Parameter  
Description

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.

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

## 5.140 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  
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 IPv4 unicast route dampening parameters configured for BGP.

The following example displays the IPv4 unicast route dampening parameters configured for the BGP.

```
Ruijie(config-router)# bgp dampening 25 10000 10000 200
Ruijie# show bgp ipv4 unicast dampening parameters
dampening 25 10000 10000 200
Dampening Control Block(s):
Reachability Half-Life time : 25 min
Reuse penalty      : 10000
Suppress penalty   : 10000
Max suppress time  : 200 min
Max penalty (ceil) : 29800000
Min penalty (floor) : 5000
```

**Configuration****Examples****Related****Commands** N/A**Platform****Description** None

## 5.141 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	Description
<i>vrf-name</i>	VRF name
<i>neighbor-address</i>	Neighbor IPv4 address
<b>neighbors <i>neighbor-address</i> policy</b>	Displays the related routing policy information of BGP neighbors. (General)
<b>neighbors <i>neighbor-address</i> 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
```

**Configuration****Examples**

```

BGP state = Established, up for 00:06:37
Last read 00:06:37, hold time is 180, keepalive interval is 60 seconds
Neighbor capabilities:
Route refresh: advertised and received (old and new)
Address family IPv4 Unicast: advertised and received
Graceful restart: advertised and received
Remote Restart timer is 120 seconds
Received 14 messages, 0 notifications, 0 in queue
open message:1 update message:4 keepalive message:9
refresh message:0 dynamic cap:0 notifications:0
Sent 12 messages, 0 notifications, 0 in queue
open message:1 update message:3 keepalive message:8
refresh message:0 dynamic cap:0 notifications:0
Route refresh request: received 0, sent 0
Minimum time between advertisement runs is 0 seconds
For address family: IPv4 Unicast
BGP table version 2, neighbor version 1
Index 2, Offset 0, Mask 0x4
Inbound soft reconfiguration allowed
8 accepted prefixes
0 announced prefixes
Connections established 2; dropped 1
Local host: 192.168.195.239, Local port: 1074
Foreign host: 192.168.195.183, Foreign port: 179
Nexthop: 192.168.195.239
Nexthop global: ::
Nexthop local: ::
BGP connection: non shared network
Last Reset: 00:06:43, due to BGP Notification sent
Notification Error Message: (Cease/Unspecified Error Subcode)
Using BFD to detect fast fallover

```

**Related****Commands** N/A**Platform****Description** None

## 5.142 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
-----------	-----------	-------------

<b>Description</b>	N/A	N/A
<b>Defaults</b>	N/A	
<b>Command</b>		
<b>Mode</b>	Privileged EXEC mode	
<b>Usage</b>		
<b>Guide</b>	This command is used to view the path information in the route database.	
<b>Configuration Examples</b>	<p>The following example displays the path information of the IPv4 unicast in the route database.</p> <pre>Ruijie# show bgp ipv4 unicast paths Address Refcnt Path [0x1d7806a0:0] (67) [0x1d7389a0:13] (20) 10</pre>	
<b>Related Commands</b>	N/A	
<b>Platform Description</b>	None	

## 5.143 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
<b>Description</b>	<i>vrf-name</i>	VRF name
<b>Defaults</b>	N/A	
<b>Command</b>		
<b>Mode</b>	Privileged EXEC mode	
<b>Usage</b>		
<b>Guide</b>	This command is used to display the related information of BGP IPv4 unicast.	
<b>Configuration Examples</b>	<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</pre>	

```
Neighbor V AS MsgRcvd MsgSent TblVer InQ OutQ Up/Down State/PfxRcd
192.168.195.79 4 24 0 0 0 0 0 never Active
192.168.195.183 4 23 17 15 1 0 0 00:09:04 8
Total number of neighbors 2
```

Related Commands	Command	Description
	<b>router bgp</b>	Enables the BGP protocol

#### Platform

Description None

## 5.144 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
<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	Command	Description
Commands	<b>show bgp ipv4 unicast</b>	Displays the IPv4 unicast route information of BGP.

**Platform**

**Description** None

## 5.145 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	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 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	Command	Description
Commands	<b>show bgp ipv4 unicast dampening parameters</b>	Displays the IPv4 unicast route dampening parameters configured for BGP.

**Platform**

**Description** None

## 5.146 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	Parameter	Description
Description	<i>vrf-name</i>	VRF name
	<i>neighbor-address</i>	Neighbor IPv6 address.
	<b>neighbors <i>neighbor-address</i> policy</b>	Related route policy information of BGP neighbor.

	(General)
<b>neighbors neighbor-address policy detail</b>	Related route policy information of BGP neighbor. (Detail)

**Defaults** N/A

**Command**

**Mode** Privileged EXEC mode

**Usage**

This command is used to view the information of the connection with BGP IPv6 unicast neighbor.

**Guide**

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

## 5.147 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**

**Description**

Parameter	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
```

	Command	Description
Related Commands	<b>show bgp ipv4 unicast paths</b>	Displays the path information of the IPv4 unicast in the route database.

Platform Description	None
----------------------	------

## 5.148 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	Description
Parameter 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 Examples	N/A
------------------------	-----

	Command	Description
Related Commands	<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
----------------------	------

## 5.149 show bgp l2vpn

Use the following command to display the BGP L2VPN routing information.

**show bgp l2vpn { vpls | vpws } all**

Use the following command to display the routing information of the BGP L2VPN address family of the *ve\_id:offset*.

**show bgp l2vpn { vpls | vpws } all ve\_id:offset**

Use the following command to display the neighbor information of the BGP L2VPN address family.

**show bgp l2vpn { vpls | vpws } all neighbor [ peer-address [ policy [ detail ] ] ]**

Use the following command to display the neighbor summary information of the BGP L2VPN address family.

**show bgp l2vpn { vpls | vpws } all summary**

Use the following command to display the L2VPN VPLS/VPWS information on the specified RD.

**show bgp l2vpn { vpls | vpws } rd vpn\_rd [ ve\_id:offset ]**

Use the following command to display the L2VPN VPLS/VPWS information on the specified VFI.

**show bgp l2vpn { vpls | vpws } vfi vfi\_name [ ve\_id:offset ]**

Parameter	Description
<i>vpls</i>	Displays VPLS information.
<i>vpws</i>	Displays VPWS 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>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.

**Parameter  
Description**

**Defaults**

N/A

**Command**

**Mode**

Privileged EXEC mode

**Usage**

Use the command **show bgp l2vpn vpls** to display the VPLS information of local configuration, including Site ID, LABEL BASE and so on.

**Guide**

**Configuration**

The following example displays all L2VPN VPLS address family routing information.

**Examples**

```
Ruijie(config)# show bgp l2vpn vpls all
BGP table version: 4, local router ID is 172.168.201.1
Status codes: s suppressed, d damped, h history, * valid, > best, i -
internal,r RIB-failure, S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete

Network      Next Hop      Metric  LocPrf   Path
Route Distinguisher: 45000:100
*> 2:0       0.0.0.0              ?
*> 100:3     172.168.201.2    0       100      ?
Route Distinguisher: 45000:200
*>01:10     0.0.0.0           0       32768    ?
*>i200:11   172.168.201.2    0       100      ?
```

The following example displays all L2VPN VPWS address family routing information.

```
Ruijie(config)# show bgp l2vpn vpws all
BGP table version: 4, local router ID is 172.168.201.1
Status codes: s suppressed, d damped, h history, * valid, > best, i -
internal,r RIB-failure, S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete

Network      Next Hop      Metric  LocPrf   Path
Route Distinguisher: 45000:100
*> 3:0       0.0.0.0              ?
*> 300:3     172.168.201.2    0       100      ?
Route Distinguisher: 45000:200
*>01:30     0.0.0.0           0       32768    ?
*>i300:11   172.168.201.2    0       200      ?
```

The following example displays the routing information of the BGP L2VPN VPLS of the *ve\_id:offset*.

```
Ruijie(config)# show bgp l2vpn vpls all 4:0
BGP routing table entry for 100:100:4:0
 77 100
   192.168.250.77 from 192.168.250.77 (0.54.121.150)
     Origin IGP, metric 0, localpref 100, valid, external, best
     Extended Community: RT:1:200 RT:12345:11 SoO:12345:11
SoO:0.0.48.58:11 Unknown:12345:0:11 Layer2:5.0.1500
   ve id: 4 offset: 0 block size: 10 label base: 8196
   Last update: Wed Aug 19 04:06:17 1970
```

The following example displays the neighbor summary information of the BGP L2VPN VPLS peer group.

```
Ruijie(config)# show bgp l2vpn vpls summary
BGP router identifier 192.168.250.8, local AS number 23
BGP table version is 1
2 BGP AS-PATH entries
0 BGP Community entries
```

```

0 BGP Prefix entries (Maximum-prefix:4294967295)

Neighbor      V AS  MsgRcvd  MsgSent  TblVer  InQ  OutQ  Up/Down
State/PfxRcd
192.168.250.77 4  77  6        5        1      0    0    00:01:55 11

Total number of neighbors

```

Command	Description
BGP table version	BGP table version.
Local Router ID	Local Router ID. Generally it is a loopback address.
status codes	Status codes: s :The route is dampened. d :Shielded route flap. h: Historical routes that no longer available * : Valid routes > : Optimal routes i : IBGP routes r : Fails to install the RIB routing table. S: Old routes.
Origin Codes	Origin Codes: i: IGP. e: EGP. ?: Incomplete.
Network	Routing information in the form aa:bb. The aa here represents site ID and the bb represents label model offset.
Next hop	Next hop IP address.
Metric	Metric value of the represent route (if be displayed.)
LocPrf	Local priority.
Path	AS path that reach the destination network.
Route Distinguisher	RD of VPLS.

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 5.150 show bgp l2vpn all connections

Use the following command to display connection information of the Kompella VPLS or the VPWS PW.

```
show bgp l2vpn { vpls | vpws } all connections [ vfi vfi_name ] [ neighbor peer-address [ policy
[ detail ] ] [ site-id id ] [ detail ]
```

**Parameter  
Description**

Parameter	Description
<i>vpls</i>	Displays VPLS information.
<i>vpws</i>	Displays VPWS information.
<b>vfi</b> <i>vfi_name</i>	Displays PW information of the specified VFI instance.
<b>neighbor</b> [ <i>peer-address</i> ]	Displays information on the Kompella VFI PW connected with neighbor.
<b>neighbor</b> <i>peer-address</i> <b>policy</b>	Displays summarized routing policy information on the BGP neighbor.
<b>neighbor</b> <i>peer-address</i> <b>policy</b> <b>detail</b>	Displays detailed routing policy information on the BGP neighbor.
<b>site-id</b> <i>id</i>	Displays all connection information of all VFI instances of the specified site ID.
<b>detail</b>	Displays the detailed L2VPN connection information.

**Defaults** N/A

**Command**

**Mode** Privileged EXEC mode

**Usage**

Use this command to display local configuration and the remote STA information on L2 VFI. If there is no remote STA, only local information is displayed.

**Guide**

The following example displays the PW connection information of the BGP L2VPN VPLS address family.

**Configuration  
Examples**

```
Ruijie# show bgp l2vpn vpls all connections
vfi: vpls1 (VPLS: vpnid 1)
  Local Site: 1
  Connect-Site  Status  Neighbor  Remote-Label  local-Label
  2              up      2.2.2.2   1024           80000
  3              up      3.3.3.3   1025           9192
  4              up      4.4.4.4   1024           8192
vfi: vpls2 (VPLS: vpnid 2)
  Local Site: 1
  Connect-Site  Status  Neighbor  Remote-Label  local-Label
  2              up      2.2.2.2   1124           80001
  3              up      3.3.3.3   1125           9193
  4              down    4.4.4.4   --             --

Ruijie# show bgp l2vpn vpws all connections
vfi: vpws1 (VPWS: vpnid 3)
  Local Site: 1
```

Connect-Site	Status	Neighbor	Remote-Label	Local-Label
5	up	2.2.2.2	1124	73728
6	up	3.3.3.3	1125	73729
7	up	4.4.4.4	1124	73730

Parameter	Description
vfi	Name of the VFI instance. (n) indicates the VPN ID of the VFI instance.
Local Site	Local site ID.
Connect-Site	Remote site ID.
Status	Whether the PW connection is up or down.
Neighbor	The PW neighbor's IP address.
Remote-Label	The PW remote tag (outbound tag).
Local-Label	The PW local tag (inbound tag).

The following example displays all VFI instance connection information of Site ID 1 of the L2VPN VPWS address family.

```
Ruijie# show bgp l2vpn vpws all connections site 1 detail
vfi: vpws1 (VPWS:vpnid 1)
  Local site: 1
  Label-base      offset      range
  73728           1           10
  73738           11          10
  Remote site: 2 (connected)
  Neighbor address: 172.10.10.2
  Label-base      offset      range
  9000             1           10
  Incoming label: 73729, Outgoing label: 9000
```

```
Ruijie# show bgp l2vpn vpls all connections site 1 detail
vfi: vpls1 (VPLS:vpnid 1)
  Local site: 1
  Label-base      offset      range
  8192             1           10
  8292             11          10
  Remote site: 2 (connected)
  Neighbor address: 172.10.10.2
  Label-base      offset      range
  9000             1           10
  Incoming label: 8193, Outgoing label: 9000
  Remote site: 25 (unconnected)
  Neighbor address: 172.10.10.3
  Label-base      offset      range
  10000            1           10
  Incoming label: --, Outgoing label: --
```

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



vfi	Name of the VFI instance. (n) indicates the VPN ID of the VFI instance.
Local Site	Local site ID.
Label-base	Label block base.
Offset	Label block offset.
Range	The maximum number of connected sites.
Remote site	Remote site ID. One local site can be connected with multiple remote sites.  Connected; The remote site is connected with the local site.  Unconnected: The remote site is not connected with the local site.

**Related  
Commands**

Command	Description
N/A	N/A

**Platform**

**Description** N/A

## 5.151 show bgp vpnv4 unicast

Use this command to display the VPN or neighbor information of all the VRFs or RDs.

**show bgp vpnv4 unicast all**

**show bgp vpnv4 unicast all** *network*

**show bgp vpnv4 unicast all neighbor** [ *address* [ **policy** [ **detail** ] ] ]

**show bgp vpnv4 unicast all summary**

**show bgp vpnv4 unicast all summar**

**show bgp vpnv4 unicast vrf** *vrf\_name* [*network* | **summary** | **label**]

**show bgp vpnv4 unicast rd** *rd\_value* [*network* | **summary**| **label**]

**Parameter  
Description**

Parameter	Description
<i>network</i>	Network IP address
<b>neighbor</b>	Displays neighbor information.
<b>neighbor</b> <i>address</i> <b>policy</b>	Displays the related routing policy information of BGP neighbors. (General)
<b>neighbor</b> <i>address</i> <b>policy</b> <b>detail</b>	Displays the related routing policy information of BGP neighbors. (Detail)

<b>summary</b>	Displays the route summary information.
<b>label</b>	Displays the label information of routes.
<i>vrf_name</i>	VRF name
<i>rd_value</i>	RD value, for example, 100:1 or 202.118.239.165:1

**Defaults** N/A

**Command**

**Mode** Privileged EXEC mode

**Usage**

**Guide** This command is used to display the VPN information of all VRFs or RDs.

The following example displays the route information of VPNv4 address family.

```
Ruijie# show bgp vpnv4 unicast all
BGP table version is 0, 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
Route Distinguisher: 78:90 (Default for VRF this)
  Network    Next Hop    Metric  LocPrf  Path
*> 202.210.10.0 177.36.51.3  0      10     i
*>i208.208.1.0 192.168.195.183  0    100    i
*>i208.208.2.0 192.168.195.183  0    100    i
*> 211.158.0.0 0.0.0.0      0       i
*>i211.158.1.0 192.168.195.183  0    100    i
*> 212.210.0.0 0.0.0.0      0       i
*> 212.210.1.0 0.0.0.0      0       i
Total number of prefixes 7
```

**Configuration**

**Examples**

```
Ruijie# show bgp vpnv4 unicast vrf this summary
BGP router identifier 192.168.183.1, local AS number 23
BGP VRF this Route Distinguisher: 78:90
BGP table version is 1
2 BGP AS-PATH entries
1 BGP community entries
Neighbor  V AS MsgRcvd MsgSent TblVer  InQ  OutQ  Up/Down State/PfxRcd
177.36.51.2 4 10  0  0  0  0  0 never Active
177.36.51.3 4 10  85  87  1  0  0 01:12:25 5
Total number of neighbors 2
```

**Related**

**Commands**

Command	Description
N/A	N/A

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

## 5.152 show bgp vpnv6 unicast

Use this command to display the VPNv6 or neighbor information of all the VRFs or RDs.

**show bgp vpnv6 unicast all**

**show bgp vpnv6 unicast all** *network*

**show bgp vpnv6 unicast all neighbor** [ *address* [ **policy** [ **detail** ] ] ]

**show bgp vpnv6 unicast all summary**

**show bgp vpnv6 unicast all label**

**show bgp vpnv6 unicast vrf** *vrf\_name* [ *network* | **summary** | **label** ]

**show bgp vpnv6 unicast rd** *rd\_value* [ *network* | **summary** | **label** ]

### Parameter Description

Parameter	Description
<i>network</i>	Network IP address
<b>neighbor</b> [ <i>address</i> ]	Displays the BGP VPNv6 neighbor information. All BGP VPNv6 neighbor information is displayed by default.
<b>neighbor</b> <i>address</i> <b>policy</b>	Displays the summarized BGP neighbor routing policy.
<b>neighbor</b> <i>address</i> <b>policy</b> <b>detail</b>	Displays the detailed BGP neighbor routing policy.
<b>summary</b>	Displays the route summary information.
<b>label</b>	Displays the route label information.
<i>vrf_name</i>	VRF name
<i>rd_value</i>	RD value, for example, 100:1 or 202.118.239.165:1.

**Defaults** N/A

### Command

**Mode** Privileged EXEC mode

### Usage

Use this command to display the VRF that supports IPv6 address family or the VPNv6 routing information of the RD.

### Guide

The following example displays all routing information of the VPNv6 address family.

### Configuration

### Examples

```
Ruijie# show bgp vpnv6 unicast all
BGP table version is 0, 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
```

```

Route Distinguisher: 78:90 (Default for VRF this)
  Network          Next Hop          Metric    LocPrf  Path
*> 10::/64        177.36.51.3      0         10     i
*>i10:1::/64      192.168.195.183  0         100    i
*>i10:2::/64      192.168.195.183  0         100    i
*> 10:3::/64      0.0.0.0          0          0      i
*>i10:4::/64      192.168.195.183  0         100    i
*> 10:5::/64      0.0.0.0          0          0      i
*> 10:6::/64      0.0.0.0          0          0      i
Total number of prefixes 7

Ruijie# show bgp vpnv6 unicast vrf this summary
BGP router identifier 192.168.183.1, local AS number 23
BGP VRF this Route Distinguisher: 78:90
BGP table version is 1
2 BGP AS-PATH entries
1 BGP community entries
Neighbor      V   AS  MsgRcvd  MsgSent  TblVer  InQ  OutQ  Up/Down
State/PfxRcd
20::2         4   10    0         0        0     0    0    never
Active
20::3         4   10   85        87        1     0    0    01:12:25  5
Total number of neighbors 2

```

Parameter	Description
BGP table version	BGP table version.
Local Router ID	Local Router ID. Generally it is an IP address of a loopback interface.
status codes	Status codes: s :The route is dampened. d :Shielded route flap. h: Historical routes that are no long 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.
Route Distinguisher	Routing information in the form aa: bb. The aa here represents site ID and the bb represents label model offset.
Network	Next hop IP address.
Next hop	Metric value of the represent route (if be displayed.)

Metric	BGP table version.
LocPrf	Local Router ID, usually it is an IP address of a loopback interface.
Path	The path to the destination AS,

**Related  
Commands**

Command	Description
N/A	N/A

**Platform**

**Description** N/A

## 5.153 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**

Display related information under VRF.

**show ip bgp vrf** *vrf-name*

**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> <i>community-name</i>	Displays the BGP route information of the specified community list. 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>	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>	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	Command	Description
---------------	---------	-------------

<b>Examples</b>		
	<code>show bgp ipv4 unicast</code>	Displays IPv4 unicast route information in BGP route information.

**Platform** -  
**Description**

## 5.154 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**

	Parameter	Description
<b>Parameter</b>		
<b>Description</b>	N/A	N/A

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

**Command Mode** BGP configuration mode, BGP IPv4/IPv6 Unicast address family configuration mode, BGP IPv4/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).

The following example enables the synchronization mechanism of BGP and IGP routing information.

**Configuration Examples**

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# synchronization
```

	Command	Description
<b>Related Commands</b>	<code>router bgp</code>	Enables the BGP protocol.

**Platform**  
**Description** None

## 5.155 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	Parameter	Description
Description	<i>route-map-name</i>	Name of the route-map

**Defaults** No table-map is configured 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** BGP uses the table-map to control the information distributed to the kernel routing table. The table-map is used to modify attributes of that route information, and it only takes effect on the IPv4 address-family.

**Configuration Examples** The following example controls the route information distributed to the kernel table.

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# table-map bgp_tm
```

Related Commands	Command	Description
	<b>route-map</b>	Configures the route-map

**Platform Description** None

## 5.156 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	Parameter	Description
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.

*keepalive*: 60 seconds

**Defaults**

*holdtime*: 180 seconds

*minum-holdtime*: 0 seconds

**Command****Mode**

BGP configuration mode / BGP scope global configuration mode

A proper keepalive value must not exceed one-third of the holdtime value.

**Usage**

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

## 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 Examples** The following example clears the IPv4 PBR forwarded packet count.

```
Ruijie#clear ip pbr statistics
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

### 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** Privileged EXEC mode.

**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** N/A

**Description**

## 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** Global configuration mode

**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 | redundance }**

**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 Examples** 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**


Interface configuration mode

**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**

An IPv6 packet is received on the fastEthernet 0/0. If the packet is sent from 10::/64 network

**Examples**

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>
	<b>local</b>	Displays the IPv4 PBR information on the local interface

**Defaults** N/A

**Command** Privileged EXEC mode

**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        : redundance
Nexthop Count : 1
Nexthop[0] : 192.168.8.100
Weight[0]   : 1
Ifindex[0]  : 2

```

Parameter	Description
PBR IPv4 Route Summay	IPv4 PBR route count.
Interface	Interface where IPv4 PBR is enabled.
Sequence	The PBR serial number.
ACL	The ACL ID used in the match rule.
ACL_CLS	The ACL type used in the match rule, such as the IP standard ACL.
Min Length	The minimum match length.
Max Length	The maximum match length.
VRF ID	Port-correlated VRF ID.
Route Flags	<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>

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration Examples** The following example displays the IPv4 PBR route-map information.

```
Ruijie#show ip pbr route-map rm
Pbr VRF: GLOBAL, ID: 0
  Forward Mode: redundance
  Forwarding: On

route-map rm
  route-map index: sequence 10, permit
    Match rule:
      ACL ID :      0, ACL CLS: 0, Name: acl1
    Set rule:
      IPv4 Nexthop: 192.168.8.100, (VRF Name: , ID: 0), Weight: 0, Flags: 0
      PBR state info ifx: GigabitEthernet 0/1, Connected: true, Track State:
valid, Flags: 0
```

Field	Description
Pbr VRF	VRF name and VRF ID.
Forward Mode	Sets the load balance mode or the redundancy mode for the next hop.
Forwarding	Displays whether the IP route forwarding is enabled.

Route-map index	The serial number and the type of the sub-map.
Match rule	Match rule.
Set rule	Set rule.
PBR state info	PBR private data information, such as outbound interface and the link state of the next hop.

Related Commands	Command	Description
	N/A	N/A

**Platform** 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>	
<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	<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 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** N/A  
**Description**

## 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 Description** N/A

### 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**

**Parameter Description**

Parameter	Description
N/A	N/A

**Defaults** N/A

**Command mode** VRF address family configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example defines a multiprotocol VRF *vrf1* and configures an IPv4 address family.

```
Ruijie(config)#vrf definition vrf1
```

```
Ruijie(config-vrf)#address-family ipv4
Ruijie(config-vrf-af)# exit-address-family
Ruijie(config-vrf)#
```

Related Commands	Command	Description
	<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 Examples** The following example creates a VRF.

```
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 Examples** The following example adds an interface or sub-interface to a VRF.

```
Ruijie(config-if-GigabitEthernet 0/0)# ip vrf forwarding redvrf
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 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
-----------	-------------

Description	
<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.

**Defaults** N/A

**Command Mode** Single-protocol VRF is configured in VRF configuration mode; multiple-protocol VRF is configured in address family mode.

**Usage Guide** This command is used to set the maximum number of routes for the VRF.

**Configuration Examples** The following example sets the maximum number of routes for vrf1 to 1,000, and enables the device to only print the warning.

```
Ruijie(config)# ip vrf vrf1
Ruijie(config-vrf)# maximum routes 1000 warning-only
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 7.8 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** Privileged EXEC mode

**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**

## 7.9 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>count</b>	Displays the capacity of VRF and its current value.
<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	V11

:

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**

N/A

**Description**

## 7.10 vrf definition

Use this command to create the multiprotocol VRF.

**vrf definition** *vrf-name*

**Parameter Description**

Parameter	Description
<i>vrf-name</i>	VRF name, no more than 31 characters.

**Defaults**

N/A

**Command mode**

Global configuration mode

**Usage Guide** The single-protocol VRF configuration command **ip vrf** cannot be used to edit a multiprotocol VRF; the multiprotocol VRF configuration command **vrf definition** cannot be used to edit a single-protocol IPv4 VRF.

**Configuration** 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**

## 7.11 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**

## 7.12 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 mode** Interface configuration mode

**Usage Guide** This command is not used to bind an interface to a VRF, and the interface is still a global interface. If the administrator needs to use PBR to choose VRF, the **vrf receive** command should be configured on the interfaces where PBR is applied for each selected VRF.

When an IPv4 address family is configured for a multiprotocol VRF, the local host's route and direct route with the interface's IPv4 address is added to the IPv4 routing table of the specified VRF, and the local host's route with the IPv4 address of the master VRRP group on the interface is added to the IPv4 routing table of the specified VRF. When an IPv6 address family is configured for a multiprotocol VRF, the local host's route and direct route with the interface's IPv6 address is added to the IPv6 routing table of the specified VRF, and the local host's route with the IPv6 address of the master VRRP group on the interface is added to the IPv6 routing table of the specified VRF.

The **ip vrf forwarding** and **vrf receive** commands are mutually exclusive on an interface, and so are the **vrf forwarding** and **vrf receive** commands. If both commands are configured on an interface, an error message will be shown.

If the **ip vrf forwarding** or **vrf forwarding** command is configured first, and then the **vrf receive** command is configured, the following message will be displayed:

```
% Cannot configure 'vrf receive' if interface is under a VRF
```

If the **vrf receive** command is configured first, and then the **ip vrf forwarding** or **vrf forwarding** command is configured, the following message will be displayed:

```
% Cannot configure 'vrf forwarding vrf2' on this interface, please delete 'ip vrf receive' and 'vrf receive' first.
```

**Configuration Examples** The following example selects a VRF using IPv6 PBR on VLAN 1.

```
Ruijie(config)#vrf definition vrf1
Ruijie(config-vrf)#address-family ipv6
Ruijie(config-vrf-af)#exit-address-family

Ruijie(config-vrf)#vrf definition vrf2
Ruijie(config-vrf)#address-family ipv6
Ruijie(config-vrf-af)#exit-address-family

Ruijie(config-vrf)#route-map pbr-vrf-selection permit 10
Ruijie(config-route-map)#match ipv6 address acl1
Ruijie(config-route-map)#set vrf vrf1
Ruijie(config-route-map)#route-map pbr-vrf-selection permit 20
Ruijie(config-route-map)#set vrf vrf2

Ruijie(config-route-map)#interface vlan 1
Ruijie(config-if)#ipv6 policy route-map pbr-vrf-selection
Ruijie(config-if)#ipv6 address 1000::1/64
Ruijie(config-if)#vrf receive vrf1
```

```
Ruijie(config-if)#vrf receive vrf2
```

**Related  
Commands**

Command	Description
<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  
Description**

N/A

## 8 RIPng Commands

### 8.1 clear ipv6 rip

Use this command to clear the RIPng routes.

**clear ipv6 rip**

<b>Parameter Description</b>	Parameter	Description
	N/A	N/A

**Defaults** None

**Command mode** Privileged EXEC mode

**Usage Guide** Running this command removes all RIPng routes and this operation may have great impact on the RIPng protocol. This command should be used with caution.

**Configuration Examples** The following example clears the RIPng routes:

```
Ruijie# clear ipv6 rip
```

<b>Related Commands</b>	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 graceful-restart

Use this command to configure the graceful restart (GR) function for the RIPng process.

**graceful-restart** [ **grace-period** *grace-period* ]

Use the **no** form of this command restore the default configurations.

**no graceful-restart** [ **grace-period** ]

Parameter Description	Parameter	Description
		<b>graceful-restart</b>
	<b>grace-period</b>	Displays the configured grace period.
	<i>grace-period</i>	Indicates the configured GR period, ranging from 1 to 1800 seconds. The default value is the smaller between twice of the update time and 60s.

**Defaults** The GR function is enabled by default.

**Command Mode** Routing process configuration mode

**Default Level** 14

**Usage Guide** The GR function is configured based on RIPng instances. Different parameters can be configured for different RIPng instances as required.

The GR period indicates the maximum duration from RIPng restart to RIPng GR completion. In this time period, the forwarding table before restart is used and the RIPng route is restored to the status before



restart. After the GR period expires, the RIPng process exits the GR status and the common RIPng operation is performed.

The **graceful-restart grace-period** command allows a user to modify the GR period in explicit mode. Note that GR is completed and the RIPng route is updated once before the RIPng route becomes invalid. If the GR period is improperly set, continuous data forwarding in the GR process cannot be ensured. A typical case is as follows:

If the GR period is greater than the invalid time of the neighbor route, GR is not completed before the route becomes invalid and the route is not advertised to the neighbor again. The neighbor route stops forwarding data after the route becomes invalid, resulting in data forwarding interruption. Therefore, unless otherwise specified, it is not recommended to adjust the GR period. If the GR period needs to be configured, check configuration of the **timers** command to ensure that the GR period value is greater than the route update time and smaller than the route invalid time.

When GR is performed for the RIPng process, ensure that the network environment is stable.

**Configuration** The following example enables the GR function for the RIPng process and configures the GR period.

**Examples**

```
Ruijie(config)# ipv6 router rip
Ruijie(config-router)# graceful-restart grace-period 90
```

**Verification** Run the **show ipv6 rip** command to check whether the GR function is configured and query the configured grace period.

**Prompts** N/A

**Common Errors** N/A

**Platform Description** N/A

## 8.6 ipv6 rip default-information

Use this command to generate a default IPv6 route to the RIPng. Use the **no** form of this command to remove the default route.

```
ipv6 rip default-information { only | originate } [ metric metric-value ]
```

```
no ipv6 rip default-information
```

Parameter Description	Parameter	Description
	<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 Description** N/A

## 8.7 ipv6 rip enable

Use this command to enable the RIPng on the interface. Use the **no** form of this command to disable RIPng on the interface.

**ipv6 rip enable**

**no ipv6 rip enable**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** 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** The following example shows how to enable the RIPng on the interface 0/0:

**Examples**

```
Ruijie(config)# interface ethernet 0/0
Ruijie(config-if)# ipv6 rip enable
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 8.8 ipv6 rip metric-offset

Use this command to set the interface metric value. Use the **no** form of this command to remove the metric configurations.

**ipv6 rip metric-offset** *value*

**no ipv6 rip metric-offset**

### Parameter Description

Parameter	Description
<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 Description

N/A

## 8.9 ipv6 rip subvlan

Use this command to enable RIPng on super VLANs. Use the **no** form of this command to restore the default setting.

**ipv6 rip subvlan** [*all* | *vid*]

**no ipv6 rip subvlan**

### Parameter Description

Parameter	Description
<i>all</i>	Indicates that packets are allowed to be sent to all sub VLANs.
<i>vid</i>	Specifies the sub VLAN ID. The value ranges from 1 to 4094.

### Defaults

The default setting takes effect only on super VLANs with RIPng disabled.

### Command Mode

Interface configuration mode.

### Usage Guide

In normal cases, a super VLAN contains multiple sub VLANs. Multicast packets of a super VLAN are also sent to its sub VLANs. In this case, when RIPng multicast packets are sent over a super VLAN containing multiple sub VLANs, the RIPng multicast packets are replicated multiple times, and the device processing capability is insufficient. As a result, a large number of packets are discarded, causing the neighbor down error. In most scenarios, the RIPng function does not need to be enabled on a super VLAN. Therefore, the RIPng function is disabled by default. However, in some scenarios, the RIPng function must be run on the super VLAN, but packets only need to be sent to one sub VLAN. In this case, run this command to specify a particular sub VLAN. You must be cautious in configuring packet transmission to all sub VLANs, as the large number of sub VLANs may cause a device processing bottleneck, which will lead to the neighbor down error.

### Configuration Examples

The following example sends the RIPng multicast packets to sub VLAN 1024 of super VLAN 300.

#### Examples

```
Ruijie(config)# interface vlan 300
Ruijie(config-if-VLAN 300)# ipv6 rip subvlan 1024
```

## 8.10 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
<b>ipv6 rip enable</b>	Enables the RIPng on the specified interface.

**Platform  
Description**

N/A

## 8.11 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 Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 8.12 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  
mode**

Routing process configuration mode.

**Usage Guide**

This command is used to redistribute the external routes to RIPng.

It is unnecessary to transform the metric of one routing protocol into another routing protocol in the process of the route redistribution, for the metric calculation methods of the different routing protocols are different. The RIP and OSPF metric calculations are incomparable for the reason that the RIP metric calculation is hop-based while the OSPF one is bandwidth-based.

The instance, from where the routing information is redistributed to the RIPng, must be specified in



the process of configuring the multi-instance protocol redistribution.

**Configuration Examples** The following example 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**

## 8.13 show ipv6 rip

Use this command to show the parameters and each statistical information of the RIPng routing protocol process.

**show ipv6 rip**

**Parameter Description**

Parameter	Description
N/A	N/A

**Defaults** N/A

**Command mode** Privileged EXEC mode 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
```

**Related Commands**

Command	Description
<b>show ipv6 rip</b>	Displays the parameters and each statistical information of the RIPng process.

**Platform Description** N/A

## 8.14 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 Description** N/A

## 8.15 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 Examples** The following example shows how to disable the RIPng horizontal split:

```
Ruijie(config)# ipv6 router rip
Ruijie(config-router)# no split-horizon
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 8.16 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** 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.

**Examples**

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

## 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	<i>vrf 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.
	<i>network</i>	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
```

	Command	Description
Related Commands	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

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.

#### Usage

**Guide** 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* ]

### 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.
<i>network</i>	Network address of the destination
<i>net-mask</i>	Mask of the destination
<i>ip-address</i>	The next hop IP address of the static route
<i>interface</i>	(Optional) The next hop egress of the static route
<i>distance</i>	(Optional) The administrative distance of the static route
<i>tag</i>	(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

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>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.

```
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
```

### Examples

**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

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.

### Usage Guide

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	Parameter	Description
<b>Description</b>	<i>number</i>	Upper threshold of static routes in the range from 1 to 10000
<b>Defaults</b>	The default is 1024.	
<b>Command Mode</b>	Global configuration mode	
<b>Usage Guide</b>	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.	
<b>Examples</b>	<p>The following example sets the upper threshold of the static routes to 900 and then restores the setting to the default value.</p> <pre>ip static route-limit 900</pre>	
<b>Related Commands</b>	N/A	
<b>Platform Description</b>		

## 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	Parameter	Description
<b>Description</b>	<i>ipv6-address</i>	Sets the default gateway IPv6 address.
<b>Defaults</b>	No gateway IPv6 address is configured by default.	
<b>Command Mode</b>	Global configuration mode	
<b>Usage Guide</b>	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.	
<b>Examples</b>	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 thought 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
vrf vrf-name	(Optional) Specifies the VRF name of the static route. By default, it is global VRF,
interface-type interface-number	Interface type and interface number.
gateway	Specifies the gateway IP address, that is, the BFD neighbor IP address. If the next hop of the static route is the neighbor, the BFD will detect whether this neighbor is reachable.
source ipv6-address	(Optional) The source IP address of the BFD session. If the neighbor device is multi hops away, you should specify the

	source IP address for the BFD session. No source IP address is specified by default.
--	--

**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	Description
<b>Description</b> <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.

英文缺少

**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
<b>Description</b>	<i>number</i>	Number of equivalent routes in the range from 1 to 32

**Defaults** The default is 32 for routers. For switches, it depends on switch models.

**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 redirects

Use this command to display the default gateway IP address.

**show ip redirects**

Use this command to display the default gateway IP address.

**show ip redirects**

Parameter	Parameter	Description
<b>Description</b>	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** Use this command to display the default gateway IP address. This command is supported on 2-layer devices or 3-layer devices with the **no ip routing** command executed.

The following example displays the default gateway.

```
Ruijie# show ip redirects
Default Gateway: 192.168.195.1
```

#### Examples

Field	Description
Default Gateway	IP address of the default gateway.

**Related Commands**

Command	Description
N/A	N/A

**Platform Description**

## 9.17 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 Description**

Parameter	Description
<i>vrf 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** Privileged EXEC mode/ Global configuration mode/Interface configuration mode/ Routing protocol

**Mode** 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(include ecmp: 9)
```

```
Ruijie# show ip route weight
-----[distance/metric/weight]-----
S   23.0.0.0/8 [1/0/2] via 192.1.1.20
S   172.0.0.0/16 [1/0/4] via 192.0.0.1
```

```
Ruijie#show ip route normal

Codes: C - Connected, L - Local, S - Static
       R - RIP, O - OSPF, B - BGP, I - IS-IS, V - Overflow route
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       SU - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       IA - Inter area, * - candidate default

Gateway of last resort is no set

S   20.0.0.0/8 is directly connected, VLAN 1
S   22.0.0.0/8 [1/0] via 20.0.0.1
O E2 30.0.0.0/8 [110/20] via 192.1.1.1, 00:00:06, VLAN 1
R   40.0.0.0/8 [120/20] via 192.1.1.2, 00:00:23, VLAN 1
B   50.0.0.0/8 [120/0] via 192.1.1.3, 00:00:41
C   192.1.1.0/24 is directly connected, VLAN 1
C   192.1.1.254/32 is local host
```

```
Ruijie#show ip route ecmp

Codes: C - Connected, L - Local, S - Static
       R - RIP, O - OSPF, B - BGP, I - IS-IS, V - Overflow route
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       SU - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       IA - Inter area, * - candidate default

Gateway of last resort is 192.168.1.2 to network 0.0.0.0
S*  0.0.0.0/0 [1/0] via 192.168.1.2
      [1/0] via 192.168.2.2
O IA 192.168.10.0/24 [110/1] via 35.1.10.2, 00:38:26, VLAN 1
      [110/1] via 35.1.30.2, 00:38:26, VLAN 3
```

```
Ruijie#show ip route fast-reroute

Codes: C - Connected, L - Local, S - Static
       R - RIP, O - OSPF, B - BGP, I - IS-IS, V - Overflow route
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       SU - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       IA - Inter area, * - candidate default

Status codes: m - main entry, b - backup entry, a - active entry

Gateway of last resort is 192.168.1.2 to network 0.0.0.0
S*  0.0.0.0/0 [ma] via 192.168.1.2
      [b] via 192.168.2.2
O IA 192.168.10.0/24 [m] via 35.1.10.2, 00:38:26, VLAN 1
      [ba] via 35.1.30.2, 00:38:26, VLAN 3
```

```
Ruijie# show ip route fast-reroute 30.0.0.0
Routing entry for 30.0.0.0/8
Distance 110, metric 20
Routing Descriptor Blocks:
[m] 192.1.1.1, 00:01:11 ago, via VLAN 1, generated by OSPF, extern 2
[ba]192.1.1.1, 00:01:11 ago, via VLAN 1, generated by OSPF, extern 2
```

## 9.18 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**

## 9.19 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	vrf-name	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

## 9.20 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	Description
<b>Description</b> 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**

## 9.21 show ipv6 redirects

Use this command to display the IPv6 default gateway IP address.

**show ipv6 redirects**

Use this command to display the IPv6 default gateway IP address.

**show ipv6 redirects**

**Parameter Description**

Parameter	Description
N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

The following example displays the default gateway IPv6 address.

**Examples**

```
Ruijie# show ipv6 redirects
Default Gateway: 10::1
```

Field	Description
Default Gateway	IPv6 address of the default gateway

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

.

## 9.22 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
```

**Examples**

```
IPv6 routing table - Default - 7 entries
Codes: C - Connected, L - Local, S - Static
       R - RIP, O - OSPF, B - BGP, I - IS-IS, V - Overflow route
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
```

```

SU - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
IA - Inter area

C 10::/64 via Loopback 1, directly connected
L 10::1/128 via Loopback 1, local host
S 20::/64 [20/0] via 10::4, Loopback 1C
C FE80::/10 via Null 0, directly connected
C FE80::/64 via Loopback 1, directly connected
L FE80::2D0:F8FF:FE22:33AB/128 via Loopback 1, local host
    
```

Field	Description
O	Source routing protocol, which may be: C: directly connected route S: static route R: RIP route B: BGP route O: OSPF route I: IS-IS route
E2	Route type, which may be: E1: OSPF external route type 1 E2: OSPF external route type 2 N1: OSPF NSSA external type 1 N2: OSPF NSSA external type 2 IA: OSPF area internal route SU: IS-IS summary route L1: IS-IS level-1 route L2: IS-IS level-2 route IA: IS-IS area internal route
20::/64	Network address and mask of the destination network
[20/0]	Administrative distance/metric

**Related  
Commands**

Command	Description
ipv6 route	Configures the IPv6 static route.

**Platform  
Description**

## 9.23 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>	<b>vrf vrf-name</b>
	(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**

## 9.24 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>Description</b>	<b>vrf-name</b>
	(Optional) VRF name. If no VRF name is specified, statistics of the IPv6 routing table of the global VRF are displayed.



	.
--	---

**Defaults** N/A

**Command**

**Mode** Privileged EXEC mode

**Usage Guide** 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
```

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
```

**Examples**

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 description	Parameter	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* ]

Parameter	Parameter	Description
<b>description</b>	<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$
```

Related command	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
<i>community-list-name</i>	Name of the community list.
standard	Indicates standard community list numbered in 1 to 99.
expanded	Indicates expanded community list numbered in 100 to 199.
permit	Permits access to the community list.
deny	Denies access to the community list.
<b>Parameter description</b>  <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
<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).

**Parameter description**  
**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.

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.

**Examples**

```
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
<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****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)# 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

The ipv6 prefix-list command configures the prefix list, with the permit or deny keyword to determine the action in case of matching.

**Usage guideline**

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

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.

**Examples**

```
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	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
	<b>0</b>	Use plaintext.
	<b>7</b>	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.

The match as-path can be followed by an access list number or name.

**Usage guidelines** 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.

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.

**Usage 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>	<b><i>standard-list-number</i></b>	Standard extcommunity list number, ranging from 1 to 99. An extcommunity list may contains multiple extcommunity values.
	<b><i>standard-list-name</i></b>	Standard extcommunity name. An extcommunity list may contains multiple extcommunity values.
	<b><i>expanded-list-num</i></b>	Expanded extcommunity list number, ranging from 100 to 199. An extcommunity list may contains multiple extcommunity values.
	<b><i>expanded-list-name</i></b>	Expanded extcommunity name. An extcommunity list may contains multiple extcommunity values.

**Default** The rule is not defined in the associated route map.

**Command mode** Route map configuration mode.

**Usage guideline** There are the following scenarios for a route map with an extcommunity:

1. The route map associated with **import map** uses the RT attribute to filter imported VRF routes.
2. The route maps associated with **neighbor route-map in** and **neighbor route-map out** are configured in the BGP VPNv4 address family mode and use the RT attribute to filter VPNv4 routes sent to or by BGP peers.

**Examples**

1. Define two extcommunity:

```
Ruijie(config)# ip extcommunity-list 1 permit rt 100: 1
Ruijie(config)# ip extcommunity-list 1 permit rt 100: 2
```
2. Define match rules in the route map:

```
Ruijie(config)# route-map rt
Ruijie(config-route-map)# match extcommunity 1
```
3. Use the route map.

```
Ruijie(config)# router bgp 100
Ruijie(config-router)# address-family vpnv4
Ruijie(config-router-af)# neighbor 3.3.3.3 route-map rt in
```

<b>Related command</b>	<b>Command</b>	<b>Description</b>
	<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*]]

Parameter description	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

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.

### Examples

The following example enables the OSPF routing protocol to redistribute RIP routes that match access list 10, with the route type being type-1 external type and the default metric being 40.

```
router ospf
 redistribute rip subnets route-map redrip
 network 192.168.12.0 0.0.0.255 area 0
```

```

access-list 10 permit 200.168.23.0

route-map redrip permit 10
match ip address 10
set metric 40
set metric-type type-1!

```

#### Related commands

Command	Description
<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

Multiple access list numbers or names may follow match ip next-hop.

#### guidelines

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.

```
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
```

### Examples

### 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
<b>Parameter description</b>	<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	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

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 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 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.

## 10.22 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**

None

**configuration****Command**

**mode** Route map configuration mode

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****guideline**

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 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.

**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 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
<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  
description

Parameter	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 mpls-label

Use this command to specify the filtering conditions of a route map. When the BGP receives routes from its peers, only routes that meet the filtering conditions and have the required labels are accepted. Use the no form of this command to cancel this function.

**match mpls-label**

**no match mpls-label**

### Parameter description

Parameter	Description
-	-

### Default

If the associated route map does not define the rule, MPLS labels will not be required for receiving routes.

### Command mode

Route map configuration mode.

### Usage guideline

This command is used only for the route map associated with **neighbor route-map in**. It applies only to the receive direction. If this command is not included in the rules specified by the route map, then the MPLS labels will not be required for receiving routes.

This command does not apply to VPNv4 routes. It applies only to IPv4 routes with labels.

### Examples

The following example creates a route map. Only routes that meet the following two conditions will be received.

1. The route prefix meets the acl1-defined rules.
2. The route includes MPLS labels.

```
Ruijie(config)# route-map infiltrer permit 10
Ruijie(config-route-map)# match ip address acl1
Ruijie(config-route-map)# match mpls-label
Ruijie(config-route-map)# exit
Ruijie(config)# router bgp 1
Ruijie(config-router)# neighbor 1.1.1.1 route-map infiltrer in
```

**Related  
command**

Command	Description
<b>neighbor send-label</b>	Enable the function for the BGP and its peer to exchange routes with MPLS labels.
<b>neighbor route-map out</b>	Manage the policy for the BGP sending routes to its peers.
<b>neighbor route-map in</b>	Manage the policy for the BGP receiving routes from its peers.
<b>set mpls-label</b>	Assign an MPLS label to routes that meet the filtering conditions.

**Platform  
description** -

## 10.26 match origin

Use this command to redistribute the routes whose source IP address is permitted by the ACL in the route map configuration mode. Use the **no** form of this command to remove the setting.

**match origin {egp | igp | incomplete}**

**no match origin [egp | igp | incomplete]**

**Parameter  
description**

Parameter	Description
egp	Redistribute the routes from the remote EGP.
igp	Redistribute the routes from the local IGP.
incomplete	Redistribute the routes from an incomplete type.

**Default  
configuration** None

**Command  
mode** Route map configuration mode

**Usage  
guideline** Use this command to set the origin of the routes to be redistributed. Only one origin can be set.

**Examples**

```
Ruijie(config)# route-map MY_MAP 10 permit
Ruijie(config-route-map)# match origin egp
Ruijie(config-route-map)# set community 109
Ruijie(config-route-map)# exit
Ruijie(config)# route-map MAP20 20 permit
Ruijie(config-route-map)# match origin incomplete
Ruijie(config-route-map)# set community no-export
```

**Related commands**

Command	Description
<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.

## 10.27 match route-type

Use this command to redistribute the network routes of the specified type. Use the **no** form of this command to delete the setting.

**match route-type** { **static** | **connect** | **rip** | **local** | **internal** | **external** [ **type-1** | **type-2** ] | **level-1** | **level-2**}

**no match route-type** [ **static** | **connect** | **rip** | **local** | **internal** | **external** [ **type-1** | **type-2** ] | **level-1** | **level-2**]

**Parameter description**

Parameter	Description
<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.

**Default**

**configuration** None

**Command**

**mode** Route map configuration mode

**Usage**

You can redistribute the routing information from one routing process to another routing process. For

**guideline** 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.

## 10.28 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.

## 10.29 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** -

## 10.30 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	Parameter	Description
-----------	-----------	-------------



<b>description</b>	<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 match is met, The set command controls the redistributed routes. For policy-based routing, the set command controls the packet forwarding, and exits the route map operation.  If the permit keyword is defined but the rule defined by match is not met, the system performs the routing policy of the second route map till the set command is executed finally.
	<b>deny</b>	(Optional) If the deny keyword is defined and the rule defined by match is met, no operation will be performed. Neither route redistribution nor policy-based routing is supported in the route map. The system exits the route map operation.  If the deny keyword is defined but the rule defined by match is not met, the system performs the routing policy of the second route map till the set command is executed finally.
	<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.

**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.

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.

## 10.31 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>	Duration of the encryption key after the start time. The value ranges from 1 to

<i>seconds</i>	2147483646.
----------------	-------------

**Default** infinite

**Command mode** Encryption key configuration mode

**Usage guideline** Use this command to specify the lifetime of an encryption key in its send direction.

**Examples** The following example configures the lifetime from 0:00 on September 9, 2000 to 0:00 on October 12, 2011

```
Ruijie(config)# key chain ripkeys
Ruijie(config-keychain)# key 1
Ruijie(config-keychain-key)# send-lifetime 00:00:00 Sep 9 2000 00:00:00 Dec 12 2011
```

Related command	Command	Description
	-	-

**Platform description** -

## 10.32 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.

### 10.33 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**

<b>Parameter Description</b>	Parameter	Description
	N/A	N/A
<b>Defaults</b>	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**

<b>Parameter description</b>	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
<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
<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 default interface

Use this command to specify the default interface for forwarding the packets whose route matches the rule but without an egress in the route map configuration mode. Use the **no** form of this command to remove the setting.

**set default interface** *interface-type interface-number* [...*interface-type interface-number*]  
**no set default interface** *interface-type interface-number* [...*interface-type interface-number*]



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

**Default** None

**Command mode** Route map configuration mode

Multiple interfaces may follow the set default interface command.

Policy-based routing is a packet forwarding mechanism more flexible than the routing based on the target network. If policy-based routing is used, the device will determine how to process the packets to be routed according to the route map, which determines 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.

If the first defined interface becomes down, the interface set by the second set command will be attempted. A route-map policy may contain multiple set operations.

In the example below, the policy-based routing is enabled on serial 1/0 to send the traffic whose packet size is less than 500 bytes and the route is not defined through fastEthernet 1/0 interface.

```
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip policy route-map smallpak
Ruijie(config-if)# exit
Ruijie(config)# route-map smallpak permit 10
Ruijie(config-route-map)# match length 0 500
Ruijie(config-route-map)# set default interface fastethernet 1/0
```

#### Examples

#### Related commands

Command	Description
<b>route-map</b>	Define a route map.
<b>match ip address</b>	Match the IP address.
<b>match length</b>	Match the packet length.
<b>set interface</b>	Set the outgoing interface.
<b>set ip default next-hop</b>	Set the default next hop of the packets.
<b>set ip next-hop</b>	Set the next-hop IP address of the packets.
<b>set ip precedence</b>	Set the priority of the packets.

## 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
<b>Parameter description</b> 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
```


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**

<b>Parameter description</b>	<b>Parameter</b>	<b>Description</b>
	<i>interface-type interface-number</i>	Backup outgoing interface.
	<i>ip-address</i>	Backup next-hop.
<b>Default</b>	-	
<b>Command mode</b>	Route map configuration mode.	
<b>Usage guideline</b>	<p>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.</p> <p>This command is used for fast reroute configuration.</p>	
	<p> IP FRR backup routes must not be direct-connection or local host routes.</p>	
<b>Examples</b>	<pre>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</pre>	
<b>Related command</b>	<b>Command</b>	<b>Description</b>
	<b>match ip-address</b>	Match IP address list.
<b>Platform description</b>	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* ] ] ]


<b>Parameter description</b>	<b>Parameter</b>	<b>Description</b>
	<i>ip-address</i>	IP address of the next hop.
	<i>weight</i>	Weight of the next hop.
<b>Default configuration</b>	None	
<b>Command</b>	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 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.

 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**

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 description	Parameter	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 description	Parameter	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 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 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.

### Examples

The following example enables policy-based routing on serial 1/0. When the interface receives the packets from 10.0.0.0/8, they will be sent to 192.168.100.1; when the interface receives the packets

from 172.16.0.0/16, they will be sent to 172.16.100.1; all other packets will be discarded.

```
Ruijie(config)#interface serial 1/0
Ruijie(config-if)#ip policy route-map load-balance
Ruijie(config)#access-list 10 permit 10.0.0.0 0.255.255.255
Ruijie(config)#access-list 20 permit 172.16.0.0 0.0.255.255
Ruijie(config)#route-map load-balance permit 10
Ruijie(config-route-map)#match ip address 10
Ruijie(config-route-map)#set ip next-hop 192.168.100.1
Ruijie(config)#route-map load-balance permit 20
Ruijie(config-route-map)#match ip address 20
Ruijie(config-route-map)#set ip next-hop 172.16.100.1
Ruijie(config)#route-map load-balance permit 30
Ruijie(config-route-map)#set interface Null 0
```

#### Related commands

Command	Description
<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.

## 10.44 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

The following example verifies the availability of the next hop IP address being 192.168.1.2 and the number of the object to be tracked to 1.

**Examples**

```
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   flash   flash-override   immediate   internet   network   priority   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.

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:

**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 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.

### Usage

#### guideline




Packets select the egress from the policy-based routing and routing table in following priority.

`set ipv6 next-hop;`

usual route (the non default route)

`set ipv6 default next-hop`

default route.

-  For the switches, this function does not take effect if the mask length is beyond 64.
-  If this command and the `set ipv6 next-hop verify-availability` are both configured, the next hop set by the `set ipv6 next-hop verify-availability` command will take effect preferentially.
-  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.

The following example 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`

**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 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
<code>match ipv6 address</code>	Set the matching rule of policy-based routing.
<code>ipv6 policy route-map</code>	Use the policy-based routing on the interface.
<code>set ipv6 next-hop</code>	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


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.

**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.

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

```
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
```

**Examples****Related commands**

Command	Description
match ipv6 address	Set the matching rule of policy-based routing.
ipv6 policy route-map	Use the policy-based routing on the interface.

<b>set ipv6 next-hop</b>	Set the next hop of the policy-based routing.
--------------------------	---

<b>Platform description</b>	N/A
-----------------------------	-----

## 10.49 set ipv6 next-hop verify-availability

Use this command to determine the availability of the next-hop IP address.

**set ipv6 next-hop verify-availability** *global-ipv6-address* [**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* [**bfd** *interface-type interface-number gateway*]

Parameter Description	Parameter	Description
	<i>global-ipv6-address</i>	Specifies the next-hop IPv6 address.
	<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.

<b>Defaults</b>	N/A
-----------------	-----

<b>Command Mode</b>	Routing map configuration mode
---------------------	--------------------------------

<b>Default Level</b>	14
----------------------	----

<b>Usage Guide</b>	This command is used only to configure PBR.
--------------------	---

<b>Examples</b>	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.
	0~7	The configurable precedence range.

Default configuration N/A

Command mode Route map configuration mode

The following table shows the corresponding relationship between the value and type.

	Value	Type
Usage guideline	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

### Examples

```
Ruijie(config-route-map)# set ipv6 precedence immediate
```

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 guideline** Use this command to set the local preference for the matched routes. Only one local preference can be set.

### Examples

```
Ruijie(config)# route-map SET_PREF permit 10
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set local-preference 6800
Ruijie(config-route-map)# exit
Ruijie(config)# route-map SET_PREF permit 20
Ruijie(config-route-map)# match as-path 2
Ruijie(config-route-map)# set local-preference 50
```

### Related commands

Command	Description
<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	+	Increase based on the metric of the original route
	-	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

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.

### 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.

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
```

	Command	Description
Related commands	<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

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.

Examples        The following example enables the OSPF routing protocol to redistribute the RIP route and sets the type as type-1.

```
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 mpls-label

Use this command to enable the system to assign an MPLS label to routes that meet the filter condition of the route map when route updates are sent to BGP peers. Use the no form of this command to disable this function.

**set mpls-label**

**no set mpls-label**

**Parameter  
description**

Parameter	Description
-	-

**Default**

If the rule is not specified in the associated route map policy, MPLS labels will not be assigned to IPv4 routes sent to BGP peers.

**Command  
mode**

Route map configuration mode.

**Usage  
guideline**

This command applies only to the route map associated in **neighbor route-map out**, which is used to manage the policy of the BGP for filtering IPv4 routes sent to its peers.

This command takes effect only if you have used **neighbor send-label** to enable the BGP and its peers to exchange MPLS-labeled routes. Otherwise, routes will not be labeled. If this exchange function has been enabled but the associated route map does not configure **set mpls-label**, then routes that meet the filtering condition will be assigned only IPv4 routes and not an MPLS label.

**Examples** The following example creates a route map. The route prefixed with 1.1.1.1/32 is assigned an MPLS label. The one prefixed with 1.1.1.2/32 is assigned only a common IPv4 route update without a label. Routes that do not meet the rules defined by acl1 and acl2 will not send route updates to neighbors.

```
Ruijie (config)# ip access-list standard acl1
Ruijie (config-std-nacl) # permit host 1.1.1.1
Ruijie (config-std-nacl) # exit
Ruijie (config)# ip access-list standard acl2
Ruijie (config-std-nacl) # permit host 1.1.1.2
Ruijie (config-std-nacl) # exit
Ruijie (config)# route-map out-as permit 10
Ruijie (config-route-map)# match ip address acl1
Ruijie (config-route-map)# set mpls-label
Ruijie (config-route-map) # exit
Ruijie (config)# route-map out-as permit 20
Ruijie (config-route-map)# match ip address acl2
```

**Related command**

Command	Description
<b>neighbor send-label</b>	Enable the function for the BGP and its peer to exchange routes with MPLS labels.
<b>neighbor route-map out</b>	Manage the policy for the BGP sending route updates to its peers.
<b>match mpls-label</b>	Manage the policy for BGP peers receiving routes. Only routes with labels will be received.
<b>show ip bgp labels</b>	Show BGP-learned and BGP-sent routes with MPLS labels.

**Platform description**

-

## 10.56 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

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 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.

## 10.57 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.

## 10.58 set originator-id

Use this command to set the source of the routes to be redistributed in the route map configuration mode. Use the **no** form of this command to remove the setting.

**set originator-id** *ip-addr***no set originator-id** [*ip-addr*]**Parameter description**

Parameter	Description
<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.

## 10.59 set tag

Use this command to set the tag for the routes to be redistributed. Use the **no** form of this command to remove the setting.

**set tag tag**

**no set tag**

**Parameter description**

Parameter	Description
<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.	

## 10.60 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
description	<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	Command	Description
---------	---------	-------------

<b>commands</b>	<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.

## 10.61 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* ]**

<b>Parameter description</b>	<b>Parameter</b>	<b>Description</b>
	<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$
```

<b>Field</b>	<b>Description</b>
AS path access list	AS path access list number
permit	Permits advertisement based on matching conditions.
^30\$	Regular expression.

<b>Related command</b>	<b>Command</b>	<b>Description</b>
	-	-

**Platform description** -

## 10.62 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.

## 10.63 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**

## 10.64 show ip prefix-list

Use **show ip prefix-list** to display the prefix list or the entries.

**show ip prefix-list** [*prefix-name*]

**Parameter**  
**description**

Parameter	Description
<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
```

## 10.65 show ip protocols

Use this command to display information about the status of the currently running IPv4 routing protocol.

**show ip protocols** [ *vrf vrf-name* ] { **bgp** | **isis** | **ospf** | **rip** }

Parameter Description	Parameter	Description
	<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

## 10.66 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
<b>description</b>	<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

```

## 10.67 show key chain

Use this command to display the key chain configuration.

**show key chain** [*key-chain-name*]

Parameter	Parameter	Description
<b>description</b>	<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** -

## 10.68 show route-map

Use the command to display the configuration of the route map.

**show route-map** [*route-map-name*]

Parameter	Description
<b>description</b> <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.

```
Ruijie# show route-map
route-map AAA, permit, sequence 10
Match clauses:
ip address 2
Set clauses:
metric 10
```

### Examples

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

---

1. IPv4 Multicast Routing Commands
2. IPv6 Multicast Routing Commands
3. IGMP Snooping Commands
4. MLD Commands
5. PIM-DM Commands
6. PIM-SM Commands
7. PIM-SMv6 Commands
8. IGMP Snooping Commands
9. MLD Snooping Commands

# 1 IPv4 Multicast Routing Commands

## 1.1 clear ip mroute

Use this command to remove the forwarding information of the IP multicast routes.

**clear ip mroute** { \* | *group-address* [*source -address*] }

Parameter	Description
*	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 routes.

**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
```

Command	Description
show ip mroute	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
*	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 RFF 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

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.

**Usage Guide**

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.

The following example configures svi1 as the boundary of all IP multicast groups.

**Examples**

```
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	Parameter	Description
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

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.

**Usage Guide**

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 192.168.43.4 225.1.1.5 G2/6
Ruijie(config)# ip multicast static 192.168.43.4 225.1.1.5 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

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
<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 recv from fwd: 1/0/0
Total NOCACHE/WRONGVIF/WHOLEPKT sent to clients: 1/0/0
Immediate/Timed stat updates sent to clients: 0/0
Reg ACK recv/Reg NACK recv/Reg pkt sent: 0/0/0
Next stats poll: 00:01:10
Forwarding Counts: Pkt count/Byte count, Other Counts: Wrong If pkts
Fwd msg counts: WRONGVIF/WHOLEPKT recv
Client msg counts: WRONGVIF/WHOLEPKT/Imm Stat/Timed Stat sent
Reg pkt counts: Reg ACK recv/Reg NACK recv/Reg pkt sent
(10.10.1.52, 224.0.1.3), Forwarding: 2/19456, Other: 0
Fwd msg: 0/0, Client msg: 0/0/0/0, Reg: 0/0/0
```

The following example 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
<i>rd 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 IPv6 Multicast Routing Commands

### 2.1 clear ipv6 mroute

Use this command to remove the specific or all IPv6 multicast forwarding entries.

**clear ipv6 mroute** { \* | *v6group-address* [*v6source -address*]}

Parameter	Description
*	Removes all the forwarding information in the IPv6 multicast route table.
<i>v6group-address</i>	Group IPv6 address of IPv6 multicast routes
<i>v6source-address</i>	Source IPv6 address of multicast routes

**Command Mode** Privileged EXEC mode

**Configuration Examples** The following example removes all the multicast routing entries.

```
Ruijie# clear ip mroute *
```

Command	Description
<b>show ipv6 mroute</b>	N/A
<b>clear ipv6 mroute statistics</b>	N/A

### 2.2 clear ipv6 mroute statistics

Use this command to remove the statistics of IPv6 multicast routes.

**clear ipv6 mroute statistics** { \* | *v6group-address* [*v6source -address*]}

Parameter	Description
*	Removes all the forwarding entries in the multicast route table.
<i>v6group-address</i>	Group IPv6 address of IPv6 multicast routes
<i>v6source-address</i>	Source IPv6 address of multicast route

**Command Mode** Privileged EXEC mode

**Usage Guide** This command allows you to clear the statistics information of IPv6 multicast routes.

**Configuration Examples** The following example clears all the statistical information of the multicast routing entries.

```
Ruijie# clear ip mroute statistics *
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show ipv6 mroute</b>	Displays the multicast route forwarding information.
	<b>clear ipv6 mroute</b>	Clears the multicast route forwarding information.

## 2.3 ipv6 mroute

Use this command to configure static IPv6 multicast routes. Use the **no** form of this command to restore the default setting.

**ipv6 mroute** *ipv6-prefix/prefix-length* [*protocol as-number*] { *v6rpf-address* | *interface-type interface-number* } [*distance*]

**no ipv6 mroute** *ipv6-prefix/prefix-length* [*protocol as-number*] { *v6rpf-address* | *interface-type interface-number* } [*distance*]

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<i>ipv6-prefix/prefix-length</i>	Source IPv6 address of the multicast route
	<i>mask</i>	Mask of the source IPv6 address
	<i>protocol</i>	(Optional) The unicast routing protocol being used
	<i>v6rpf-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.

**Defaults** The static IPv6 multicast routing is not configured by default.

**Command Mode** Global configuration mode

**Usage Guide** This command is used to configure the route for the purpose of RPF check. Note that the configured route is prior to the route learned in the unicast form. If the outgoing direction of static multicast route but not the next-hop IP shall be specified, the outgoing direction must be of the point-to-point type. The RPF rule is that when a best multicast route from the multicast list is selected, if the BGP multicast route and the static multicast route coexist, the latter one takes the precedence; select a best unicast route from the unicast list and compare the mask length of the best multicast and unicast routes, the one with greater mask length becomes the RPF route; if both mask length are the same, you shall compare the distance, and the one with smaller distance becomes the RPF route; if both distance values are the same, the multicast route becomes the RPF route.

**Configuration Examples** The following example allows the static multicast route 2233::/64 to pass 3333::3333:

```
Ruijie(config)# ipv6 mroute 2233::/64 3333::3333
```

## 2.4 ipv6 multicast boundary

Use this command to configure the boundary of an IPv6 multicast group. Use the **no** form of this command to restore the default setting.

**ipv6 multicast boundary** *access-list-name*

**no ipv6 multicast boundary** *access-list-name*


Parameter	Parameter	Description
Description	<i>access-list-name</i>	Access list associated with the multicast boundary

**Defaults** The boundary of a specified IPv6 multicast group is not defined by default.

**Command Mode** Interface configuration mode

Note that the ACL associated with the multicast boundary is either standard ACL or extended ACL. But the extended ACL only match the destination IPv6 address.

### Usage Guide

 This command filters MLD, PIM-SMv6 packets of the specified IPv6 address range. Multicast packets will not be received and sent through the interface of the boundary.

The following example configures svi1 as the boundary of all IPv6 multicast groups.

### Configuration

### Examples

```
Ruijie(config)# ip access-list mul-boun
Ruijie(config-std-nacl)# permit ip 233.3.3.0 0.0.0.255
Ruijie(config-std-nacl)#exit
Ruijie(config)# interface vlan 1
Ruijie(config-if)# ip multicast boundary mul-boun
```

## 2.5 ipv6 multicast route-limit

Use this command to limit the number of the entries that can be added to the IPv6 multicast routing table. Use the **no** form of this command to restore the default setting.

**ipv6 multicast route-limit** *limit* [*threshold*]

**no ipv6 multicast route-limit** *limit* [*threshold*]

Parameter	Parameter	Description
Description	<i>limit</i>	The number of the entries that can be added to the IPv6 multicast routing table is 1 to 2147483647
	<i>threshold</i>	(Optional) Number of IPv6 multicast routes at which alarms will be triggered


### Defaults

The default value of *limit* is 1024.

The default value of *threshold* is 2147483647.

**Command Mode** Global configuration mode

This command is used to restrict the number of route adding to the IPv6 multicast table.

 The hardware resources of different devices are limited. The routes exceeding the hardware resource will be forwarded by software, which leads to lower product performance.

**Usage Guide** Packets that exceed this value will be discarded.. If you want to use the PIM protocol to create more than 128 entries in the multicast routing table, you are advised to set the CPP value of PIM packets to the number of entries in the multicast routing table. If you want to use the IGMP protocol to create more than 1000 entries in the multicast routing table, you are advised to set the CPP value of IGMP packets to the number of entries in the multicast routing table.

**Configuration** The following example sets the route limit to 500 and the warning value 90.

**Examples**

```
Ruijie(config)# ipv6 multicast route-limit 500 90
```

## 2.6 ipv6 multicast rpf longest-match

Use the RPF rule to select the static multicast route, MBGP route and the unicast route for the purpose of RPF check from the static multicast route list, the MBGP route list and the unicast route list.

Use this command to select one route with the longest-matched mask from the above-mentioned three routes. If the priority values of all three routes are the same, the routes will be selected in order of static multicast route, MBGP route and unicast route.

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

**ipv6 multicast rpf longest-match**

**no ipv6 multicast rpf longest-match**

Parameter	Parameter	Description
Description	N/A	N/A

Use the RPF rule to select the static multicast route, MBGP route and the unicast route for the purpose of RPF check from the static multicast route list, the MBGP route list and the unicast route list.

**Defaults** Use this command to select one route, which is prior to the other two routes, with the longest-matched mask from the above-mentioned three routes. If the priority values of all three routes are the same, the routes will be selected in order of static multicast route, MBGP route and unicast route.

**Command**

**Mode** Global configuration mode

**Usage****Guide** N/A**Configuration**

The following example selects one route with the longest-matched mask from the above-mentioned three routes.

**Examples**

```
Ruijie(config)# ipv6 multicast rpf longest-match
```

## 2.7 ipv6 multicast static

Use this command to enable flow control for multicast packets on the Layer 2 interface. Use the **no** form of this command to restore the default setting.

**ipv6 multicast static** *source-address group-address interface-type interface-number*

**no ipv6 multicast static** *source-address group-address interface-type interface-number*

**Parameter  
Description**

Parameter	Description
<i>source-address</i>	Source IPv6 address
<i>group-address</i>	IPv6 address of the multicast group
<i>interface-type interface number</i>	2-layer interface on which multicast packets are allowed to forward

**Defaults**

This function is disabled by default.

**Command****Mode**

Global configuration mode

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.

**Usage Guide**

This command controls the forwarding of multicast flows on an interface without any direct influence on the packet processing of multicast protocols. However, the action of a multicast protocol (for instance, PIM-SMv6) may be affected because some features of the multicast protocol are driven by multicast flows.

**Configuration****Examples**

The following example configures forwarding multicast flows (2222::3333, ff66::100) through GigabitEthernet 2/6 and FastEthernet 3/2.

```
Ruijie(config)# ipv6 multicast static 2222::3333 ff66::100 G2/6
Ruijie(config)# ipv6 multicast static 2222::3333 ff66::100 F3/2
```

## 2.8 ipv6 multicast-routing

Use this command to enable the IPv6 multicast routing forwarding. Use the **no** form of this command to restore the default setting.

**ipv6 multicast-routing**

**no ipv6 multicast-routing**


Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** This function is disabled by default

**Command Mode** Global configuration mode

Use this command to enable the IPv6 multicast routing forwarding. With this function disabled, the multicast protocol cannot be enabled.

### Usage Guide

 This command must be configured to enable the IPv6 multicast routing forwarding. This function conflicts with IGMP Snooping.

**Configuration** The following example enables the IPv6 multicast routing forwarding.

**Examples** Ruijie(config)# ipv6 multicast-routing

## 2.9 msf6 nsf

Use this command to configure parameters for multicast non-stop forwarding. Use the no form of this command to restore the default setting.

**msf6 nsf { convergence-time *time* | leak *interval* }**

**no msf6 nsf { convergence-time | leak }**

Parameter	Parameter	Description
Description	<b>convergence-time</b> <i>time</i>	Maximum duration for which the system waits for multicast protocol convergence The unit is second. The value ranges from 0 to 3600.
	<b>leak</b> <i>interval</i>	Interval at which multicast packets are leaked The unit is second. The value ranges from 0 to 3600.

**Defaults** The default convergence-time is 20 seconds and leak interval is 30 seconds.

**Command Mode** Global configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example sets the maximum duration for which the system waits for multicast protocol convergence.

```
Ruijie (config)# msf6 nsf convergence-time 300
```

The following example sets the interval at which multicast packets are leaked.

```
Ruijie (config)# msf6 nsf leak 200
```

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 2.10 show ipv6 mrf6 mfc

Use this command to display the IPv6 multicast forwarding table.

```
show ipv6 mrf6 mfc [ v6source-address v6group-address ]
```

**Parameter Description**

Parameter	Description
<i>v6group-address</i>	IPv6 address of a multicast group
<i>v6source-address</i>	IPv6 address of a multicast source

**Defaults** N/A

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

**Usage Guide** This command is used to display the entries of the multicast data stream forwarding table. The forwarding table displayed in the command output is basically consistent with the multicast routing forwarding table displayed in the command output of **show ipv6 mroute**. The difference is that in the multicast data stream forwarding table, the protocols based on which entries are generated are not recorded.

The two parameters are optional. The source address and group address must be specified together. If the two parameters are not specified, all mrf table entries will be displayed.

If the two parameters are specified, the mrf entries of the specified source address and group address are displayed.

**Configuration Examples** The following example displays the 3-layer multicast forwarding table entries of IPv6 (the source address is 2000::1 and the group address is FF55::1).

```
Ruijie#show ipv6 mrf6 mfc 2000::1 FF55::1
Multicast Routing and Forwarding Cache6 Table
(2000::1, FF55::1)
FAST_SW, SWITCHED, MIN_MTU: 1500, MIN_MTU_IFINDEX: 4099, WRONG IF: 0
Incoming interface: VLAN 1[4097]
Outgoing interface list:
VLAN 3 (1)
```

Field	Description
2000::1	Source address of entries
FF55::1	Group address of entries
FAST_SW	Indicates whether the entries allow fast forwarding, that is, whether the entries can be forwarded by using hardware or software forwarding. If the entries include an interface that does not support the multicast function (for example, the GRE tunnel interface), fast forwarding is not allowed.
SWITCHED	Indicates whether the entries have been placed in the forwarding table on the next layer.
MIN_MTU MTU	Minimum MTU value of entries
MIN_MTU_IFINDEX	Index of the interface that has the minimum MTU value
WRONG IF	Number of multicast packets sent from the wrong inbound interface
VLAN 1[4097]	Indicates that the rpf inbound interface is VLAN1. 4097 indicates the IFINDEX of the interface.
VLAN 3 (1)	Indicates that the 3-layer outbound interface of the entries is VLAN 3. 1 indicates the ttl threshold of the 3-layer interface.

**Related****Commands**

Command	Description
N/A	N/A

**Platform**

N/A

**Description**

## 2.11 show ipv6 mroute

Use this command to display the IPv6 multicast forwarding table.

**show ipv6 mroute** [*group-or-source-address* [*group-or-source-address*]] [**sparse**] [**summary** | **count**]

**Parameter  
Description**

Parameter	Description
<i>v6group-address</i>	Multicat group IPv6 address
<i>v6source-address</i>	Multicast source IPv6 address
<b>sparse</b>	Displays the core entry of the multicast routing table.
<b>summary</b>	Displays the summary of the multicast routing table.



<b>count</b>	Displays the count of the multicast routing table.
--------------	--

**Command**

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

The following example displays all information of the IPv6 multicast routing table.

```
Ruijie# show ipv6 mroute
IPv6 Multicast Routing Table
Flags: I - Immediate Stat, T - Timed Stat, F - Forwarder installed
Timers: Uptime/Stat Expiry
Interface State: Interface (TTL)
(2222::1234, ff56::1234), uptime 00:00:31, stat expires 00:02:59
Owner PIM-SMv6, Flags: TF
Incoming interface: FastEthernet 2/1
Outgoing interface list:
FastEthernet 1/3
```

The following example displays the count of the routing table.

**Configurati  
on  
Examples**

```
Ruijie# show ipv6 mroute count
IPv6 Multicast Statistics
Total 1 routes using 168 bytes memory
Route limit/Route threshold: 1024/2147483647
Total NOCACHE/WRONGVIF/WHOLEPKT recv from fwd: 77/147/0
Total NOCACHE/WRONGVIF/WHOLEPKT sent to clients: 77/147/0
Immediate/Timed stat updates sent to clients: 0/29
Reg ACK recv/Reg NACK recv/Reg pkt sent: 0/0/0
Next stats poll: 00:00:09
Forwarding Counts: Pkt count/Byte count, Other Counts: Wrong If pkts
Fwd msg counts: WRONGVIF/WHOLEPKT recv
Client msg counts: WRONGVIF/WHOLEPKT/Imm Stat/Timed Stat sent
Reg pkt counts: Reg ACK recv/Reg NACK recv/Reg pkt sent
(2222::1234, ff56::1234), Forwarding: 1/0, Other: 0
Fwd msg: 0/0, Client msg: 0/0/0/0, Reg: 0/0/0
```

The following example displays the summary of the routing table.

```
Ruijie# show ipv6 mroute summary
IPv6 Multicast Routing Table
Flags: I - Immediate Stat, T - Timed Stat, F - Forwarder installed
Timers: Uptime/Stat Expiry
Interface State: Interface (TTL)
(2222::1234, ff56::1234), 00:00:28/00:03:25, PIM-SMv6, Flags: TF
```

**Related**

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

<b>Commands</b>	<b>clear ipv6 mroute</b>	N/A
	<b>clear ipv6 mroute statistics</b>	N/A

## 2.12 show ipv6 mroute static

Use this command to display the static IPv6 multicast routing information.

**show ipv6 mroute static**

Parameter	Parameter	Description
Description	N/A	N/A

### Command

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

**Usage** This command is used to display the statically-configured multicast route. Under the same condition,  
**Guide** the static multicast route is prior to the unicast route.

The following example displays the static IPv6 multicast routing information.

**Configuration** Ruijie#show ipv6 mroute static

**Examples** Mroute: 2233::/64, RPF neighbor: 3333::3333  
 Protocol: , distance: 0

## 2.13 show ipv6 mvif

Use this command to display the basic information of the multicast interface.

**show ipv6 mvif** { *interface-type interface-number* }

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

### Command

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

The following example displays the basic information of the multicast interface of svil.

```
Ruijie#show ipv6 mvif
Interface  Mif Owner    Uptime
Examples  Idx Module
Register   0      03d03h09m
VLAN 1     1  PIMSMV6  03d03h09m
```

## 2.14 show ipv6 rpf

Use this command to display the RPF information of the specified source IPv6 address.

**show ipv6 rpf** *v6source-address*

Parameter	Parameter	Description
Description	<i>v6source-address</i>	Specified source IPv6 address

**Command**

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

The following example displays the information of the RPF to 2222::3333:

```
Ruijie# show ipv6 rpf 2222::3333
RPF interface: GigabitEthernet 0/1
RPF neighbor: ::
Configuration RPF route: 2222::/64
Examples RPF type: unicast (connected)
RPF recursion count: 0
Doing distance-preferred lookups across tables
Distance: 0
Metric: 0
```

## 2.15 show msf6 msc

Use this command to display entries of the IPv6 routing multicast data stream exchange table.

**show msf6 msc** [ *v6source-address* ] [ *v6group-address* ] [ *vlan-id* ]

Parameter	Parameter	Description
Description	<i>v6group-address</i>	IPv6 address of a multicast group
	<i>v6source-address</i>	IPv6 address of a multicast source
	<i>vlan-id</i>	VLAN ID of the inbound interface of the entries If the value is greater than 4096, the interface is a routing interface.

**Defaults** N/A

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

**Usage Guide** This command is used to display entries of the IPv6 routing multicast data stream exchange table. The three parameters are all optional.

If only the source address is specified and set to s1, msc entries of this source address will be displayed.

If the source address is set to s1 and the group address is set to g1, msc entries of this source address and group address will be displayed.

If the source address is set to s1, the group address is set to g1, and the VLAN ID is set to v1, then msc entries that meet these three conditions will be displayed.

You must specify these three parameters in sequence. That is, you must specify the current parameter before specifying the next.

**Configuration Examples** The following example displays entries of the IPv6 routing multicast data exchange table of source address 2000::1:

```
Ruijie# show msf6 msc 2000::1
Multicast Switching Cache Table
(2000::1, FF55::1, 1), SYNC, MTU:0, 1 OIFs
  VLAN 4094(8190): 1 OPORTs, REQ: DONE
  OPORT 6, MLD-SNP, REQ: DONE
```

Field	Description
2000::1	Source address of entries
FF55::1	Group address of entries
1	VLAN ID of the inbound interface of the entries
SYNC	Indicates that the entries have been synchronized to the bottom-layer hardware.
MTU	MTU value of the entries
OIFs	Number of 3-layer interfaces of the entries
VLAN 4094(8190)	Indicates a 3-layer outbound interface VLAN xxx (yyy). If the 3-layer interface is an SVI interface, the value of xxx is the VLAN VID of the SVI, and the value of yyy is the VLAN vid+4096. If the 3-layer interface is a routing interface, the value of xxx is the IFINDEX of the interface+4096, and the value of yyy is the IFINDEX. This facilitates the index management of all 3-layer interfaces.
1 OPORTs	Number of 2-layer interfaces owned by this 3-layer exit oif
REQ: DONE	Indicates that the oif has been set to the bottom-layer hardware. The value may be: Waiting to be added. Usually it is waiting for a data stream to be triggered. DEL: Being deleted. DONE: Synchronized to the hardware.
OPORT 6	Indicates that the oif has a 2-layer interface with the interface number of 6.
MLD-SNP	Indicates that the interface is created based on MLD SNOOPING. Alternatively, the value may be one of the following options: ROUTER: Indicates that the interface is created based on the 3-layer protocol.

	INHERIT_FM_MLD_SNP: Indicates that the interface is created based on the MLD SNOOPING protocol inherited from other entries.
REQ: DONE	Indicates that the interface has been set to the bottom-layer hardware. The value may be: ADD: Waiting to be added. Usually it is waiting for a data stream to be triggered. DEL: Being deleted. DONE: Synchronized to the hardware.

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description** N/A

## 2.16 show msf6 nsf

Use this command to display the multicast non-stop forwarding configuration.

**show msf6 nsf**

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 multicast non-stop forwarding configuration.

**Examples**

```
Ruijie# show msf6 nsf
Multicast HA Parameters
-----+-----
protocol convergence timeout    120 secs
flow leak interval              20 secs
```

Related Commands	Command	Description
	msf6 nsf	Multicast non-stop forwarding

**Platform  
Description** N/A

## 3 IGMP Commands

### 3.1 clear ip igmp group

Use this command to clear dynamic group member information obtained from the response messages in the IGMP buffer.

**clear ip igmp group** [*group-address* [*interface-type interface-number*]]

Parameter Description	Parameter	Description
	<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

### 3.2 clear ip igmp interface

Use this command to clear the IGMP entry for the interface.

**clear ip igmp interface** *interface-type interface-number*

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

<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

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 3.3 ip igmp access-group

Use this command to control a multicast group on the interface.

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

**ip igmp access-group** *access-list*

**no ip igmp access-group**


**default ip igmp access-group**

Parameter Description	Parameter	Description
	<i>access-list</i>	

**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**

### 3.4 ip igmp enforce-router-alert

Use this command to receive IGMP packets with **router-alert** option , and discard those without the 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

### 3.5 ip igmp enforce-source-subnet

Use this command to receive only the IGMP report packet containing the source address in the same network segment as the port.

**ip igmp enforce-source-subnet**

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

**no ip igmp enforce-source-subnet**

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

**default ip igmp enforce-source-subnet**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** The source IP address is not checked by default.

**Command Mode** Global configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example receives only the IGMP report packet containing the source address in the same network segment as the port.

```
Ruijie# configure terminal
Ruijie(config)# ip igmp enforce-source-subnet
```

**Platform** N/A

**Description**

### 3.6 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**

### 3.7 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 Examples** The following example adds a host group member manually.

```
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 Description** N/A

### 3.8 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 Examples**

The following example sets the value of last member query count to 3.

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0
Ruijie(config-if-Ethernet 0/1)# ip igmp last-member-query-count 3
```

**Related Commands**

Command	Description
N/A	N/A

**Platform**

N/A

**Description**

### 3.9 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 Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 3.10 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>	
<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** Global configuration mode/Interface configuration mode  
**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**

### 3.11 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>	Name of the relevant uplink interface
<i>interface-number</i>	

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

**Command** Interface configuration mode  
**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** The following example configures E0/1 as **proxy-service** E0/2 as **mroute-proxy**.

**Examples**

```
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**

## 3.12 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** The following example configures E0/1 as **proxy-service** and E0/2 as **mroute-proxy**.

**Examples**

```
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**

### 3.13 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** The following example configures the query interval of ordinary member to 120 seconds on the interface Ethernet 0.

**Examples**

```
Ruijie(config-if)# ip igmp query-interval 120
```

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

### 3.14 ip igmp query-max-response-time

Use this command to configure the maximum response interval.

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

**ip igmp query-max-response-time** *seconds*

**no ip igmp query-max-response-time**

**default ip igmp query-max-response-time**

**Parameter Description**

Parameter	Description
<i>seconds</i>	The maximum response interval, in the range from 1 to 25 seconds

**Defaults** The default is 10 seconds.

**Command Mode** Interface configuration mode

**Usage Guide** This command controls the interval for the respondent to respond the query message before the device deletes the group information.

**Configuration Examples** The following example configures the maximum response interval to 20 seconds on the interface Ethernet 0.

```
Ruijie(config-if-Ethernet 0/1)# ip igmp query-max-response-time 20
```

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

### 3.15 ip igmp query-timeout

Use this command to configure the time the device waits before it takes over as the querier.

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

**ip igmp query-timeout** *seconds*

**no ip igmp query-timeout**

**default ip igmp query-timeout**

**Parameter  
Description**

Parameter	Description
<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.

**Defaults**

The default is 255 seconds.

**Command  
Mode**

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  
Description**

N/A

### 3.16 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**

<b>Parameter Description</b>	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><i>number</i></td> <td>The value of robustness variable, in the range from 2 to 7</td> </tr> </tbody> </table>	Parameter	Description	<i>number</i>	The value of robustness variable, in the range from 2 to 7
Parameter	Description				
<i>number</i>	The value of robustness variable, in the range from 2 to 7				
<b>Defaults</b>	The default is 2.				
<b>Command Mode</b>	Interface configuration mode				
<b>Usage Guide</b>	N/A				
<b>Configuration Examples</b>	<p>The following example sets the value of robustness variable to 3.</p> <pre>Ruijie(config)# interface ethernet 0/1 Ruijie(config-if-Ethernet 0/1)# ip igmp robustness-variable 3</pre>				
<b>Related Commands</b>	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>	Command	Description	N/A	N/A
Command	Description				
N/A	N/A				
<b>Platform Description</b>	N/A				

### 3.17 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**

<b>Parameter Description</b>	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>	Parameter	Description	N/A	N/A
Parameter	Description				
N/A	N/A				
<b>Defaults</b>	The Router Alert option is not carried in IGMP packets by default.				
<b>Command Mode</b>	Global configuration mode				
<b>Usage Guide</b>	N.A				
<b>Configuration Examples</b>	<p>The following example sends IGMP report packets with the Router Alert option.</p> <pre>Ruijie# configure terminal</pre>				

```
Ruijie(config)# ip igmp send-router-alert
```

**Platform** N/A

**Description**

### 3.18 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 Mode** Global configuration mode

**Usage Guide** If this command is configured, the dynamically learned group information is added forcibly to the associated source record. This command is usually used together with the **ip igmp ssm-map static** command.

**Configuration Examples** The following example enables the **igmp ssm-map** function in the global configuration mode.

```
Ruijie(config)# ip igmp ssm-map enable
```

```
Ruijie(config)# ip igmp ssm-map static 11 192.168.2.2.
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

### 3.19 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 Mode** Global configuration 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 Examples** The following example maps the source address 192.168.2.2 to all group records permitted by ACL 11.

```
Ruijie(config)# ip igmp ssm-map enable
Ruijie(config)# ip igmp ssm-map static 11 192.168.2.2.
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 3.20 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
	<i>group-address</i>	Multicast group IP address

**Defaults** The switch is not added to a multicast group by default.

**Command** Interface configuration mode

**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** The following example adds a host group member.

**Examples**

```
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**

## 3.21 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** Interface configuration mode

**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**

## 3.22 show ip igmp groups

Use this command to display the groups directly connected to the device and the group information learnt from IGMP.

**show ip igmp groups** [ *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** The following example displays information about all the groups.

**Examples**

```
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**

### 3.23 show ip igmp interface

Use this command to display the information of this interface.

**show ip igmp interface** [ *interface-type interface-number* ]

#### Parameter Description

Parameter	Description
<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 Examples** 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** N/A  
**Description**

### 3.24 show ip igmp ssm-mapping

Use this command to display the **ssm-map** information of the IGMP configuration.

**show ip igmp ssm-mapping** [ *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 Examples** 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** N/A  
**Description**

## 4 MLD Commands

### 4.1 clear ipv6 mld group

Use this command to clear the dynamic group member learned by MLD protocol.

**clear ipv6 mld group** [ *group-address* ] [ *interface-type interface-number* ]

Parameter Description	Parameter	Description
	<i>group-address</i>	IPv6 multicast group address with 128 bits
	<i>interface-type</i>	The associated interface type
	<i>interface-number</i>	The associated interface number

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** MLD maintains a list of the multicast groups to be added to the host in the directly-connected sub-net. Use the **clear ipv6 mld group** command to remove all dynamic group member record from the MLD group member list.

**Configuration Examples** The following example clears all group records.

```
Ruijie# clear ipv6 mld group
```

The following example clears one group record.

```
Ruijie# clear ipv6 mld group ff1e::100
```

The following example s clears the record on a specified interface.

```
Ruijie# clear ipv6 mld group ff1e::100 interfa fa0/1
```

Related Commands	Command	Description
	<b>show ipv6 mld groups</b>	N/A
	<b>show ipv6 mld interface</b>	N/A

**Platform Description** N/A

### 4.2 clear ipv6 mld interface

Use this command to clear all MLD statistical information and the group member records on the interface.

**clear ipv6 mld interface** *interface-type interface-number*

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

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** Use this command to clear all group information and some packet statistical information learned by LDP on the interface. Those packet statistical information include the number of the received report packets, the number of the done packets and the the number of the group members on the interface.

**Configuration Examples** The following example clears all MLD statistical information and the group member records on the interface.

```
Ruijie# clear ipv6 mld interface fa 1/1
```

Related Commands	Command	Description
		N/A

**Platform Description** N/A

### 4.3 ipv6 mld access-group

Use this command to filter the specific requested group on the interface. Only the report packets in accordance with the corresponding ACL are allowed to be processed.

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

**ipv6 mld access-group** *access-list*

**no ipv6 mld access-group**

**default ipv6 mld access-group**


Parameter Description	Parameter	Description
		<i>access-list</i>

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

**Command** Interface configuration mode

**Mode**

**Usage Guide** Use this command to filter some groups on the interface and associate with the corresponding ACLs. The correspondent ACL deny report packets will be discarded. This command supports the extended ACL and the source record information of the MLDv2 packets can be filtered.

 The multicast group access control command is associated with the extended ACL. When the received MLD report message is (S1,S2,S3...Sn,G), use this command to match and check the (0,G) message using the corresponding ACL. To this end, a (0,G) must be configured for the extended ACL to filter the (S1,S2,S3...Sn,G).

**Configuration Examples** The following example enables the group information carried in the report packets to be in accordance with acl for the normal handling on the interface Eth0/1.

```
Ruijie(config)#ipv6 access-list acl
Ruijie(config-ipv6-acl)#permit ipv6 ::/64 ff66::100/64
Ruijie(config-ipv6-acl)#permit ipv6 2222::3333/64 ff66::100/64
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if-Ethernet 0/1-Ethernet 0/1)# ipv6 mld access-group acl
```

**Related Commands**

Command	Description
N/A	N/A

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

### 4.4 ipv6 mld immediate-leave group-list

Use this command to set the immediate-leave mechanism. With this command configured, the group within the range of group-list, will not send the query packet for the specific group and will remove this group from the group member list immediately after receiving the corresponding done packets. This function is used in the condition that there is only one multicast source that receives the host request on an interface. Use the **no** or **default** form of this command to restore the default setting.

**ipv6 mld immediate-leave group-list** *access-list*  
**no ipv6 mld immediate-leave group-list**  
**default ipv6 mld immediate-leave group-list**

**Parameter Description**

Parameter	Description
<i>access-list</i>	The IPv6 ACL name

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

**Command** Interface configuration mode

**Mode**

**Usage Guide** Without this command configured, when the device receives the MLD leave packets, the request packets for the specific groups will be sent. If there is still no host reply within the response time, the device will remove the corresponding group record from the group member list. The timeout interval is determined by the last member query interval and the MLD robustness variable, and the default value is 2 seconds.

With this command configured, when the device receives the MLD leave packets, it will not send the request packets for the specific groups, but remove the group information immediately, which reduces the leave delay greatly in the condition that there is only one host connecting to the interface.

**Configuration** The following example configures the immediate-leave function.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)#ipv6 access-list acl
Ruijie(config-ipv6-acl)#permit ipv6 2222::3333/64 ff66::100/64
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if-Ethernet 0/1-Ethernet 0/1)# ipv6 mld immediate-leave
group-list acl
```

**Related  
Commands**

Command	Description
N/A	N/A

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

## 4.5 ipv6 mld join-group

Use this command to configure the host action for the switch interface and add the related multicast group to the interface.

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

**ipv6 mld join-group** *group-address*

**no ipv6 mld join-group** *group-address*

**default ipv6 mld join-group** *group-address*

**Parameter  
Description**

Parameter	Description
<i>group-address</i>	The IPv6 non-management multicast group address, which cannot start with 0xFF*1, 0xFF*2, and 0xFF3*

**Defaults** The interface is not added to any group by default.

**Command** Interface configuration mode  
**Mode**

**Usage Guide** Use this command to enable the MLD host action on the interface. The interface can not only send the packets initiatively, but also reply to the query packets.  
Use this command if it is necessary to join a group member to the interface.

**Configuration** The following example adds the host group member:

**Examples**

```
=
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if-Ethernet 0/1-Ethernet 0/1)# ipv6 mld join-group ff55::100
```

**Related Commands**

Command	Description
N/A	N/A

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

## 4.6 ipv6 mld last-member-query-count

Use this command to set the last-member-query-count number.

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

**ipv6 mld last-member-query-count** *number*

**no ipv6 mld last-member-query-count**

**default ipv6 mld last-member-query-count**

**Parameter Description**

Parameter	Description
<i>number</i>	The last member query count number. The valid range is 2 to 7.

**Defaults** The default is 2.

**Command Mode** Interface configuration mode

**Usage Guide** With the MLD leave packets received on the interface, if there is no group reply within the timeout interval, this group will be removed from the MLD group member list on the interface. The timeout interval is the query interval for the specific group (multiplied by the value of **mld last-member-query-count**) plus half the reply time.

**Configuration** The following example sets the last-member-query-count number to 3.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0/1
```

```
Ruijie(config-if-Ethernet 0/1)# ipv6 mld last-member-query-count 3
```

Related Commands	Command	Description
	N/A	N/A

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

## 4.7 ipv6 mld last-member-query-interval

Use this command to set the time interval of sending the query packets to the specific group.

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

**ipv6 mld last-member-query-interval** *interval*

**no ipv6 mld ast-member-query-interval**

**default ipv6 mld last-member-query-interval**

Parameter Description	Parameter	Description
	<i>interval</i>	

**Defaults** The default is 10 seconds.

**Command Mode** Interface configuration mode

**Usage Guide** With the MLD leave packets received on the interface, if there is no group reply within the timeout interval, this group will be removed from the MLD group member list on the interface. The timeout interval is the query interval for the specific group(multiplied by the value of **mld last-member-query-count**) plus half the reply time.

**Configuration Examples** The following example sets the mld last-member-query-interval to 2 seconds.

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if-Ethernet 0/1)# ipv6 mld last-member-query-interval 20
```

Related Commands	Command	Description
	N/A	N/A

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

## 4.8 ipv6 mld limit

Use this command to enable to learn the max-number of the group member through the MLD protocol.

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

**ipv6 mld limit** *number* [ **except** *access-list* ]

**no ipv6 mld limit** *number* [ **except** *access-list* ]

**default ipv6 mld limit** *number* [ **except** *access-list* ]

Parameter Description	Parameter	Description
	<i>number</i>	The maximum number of the group member learned by the MLD
	<b>except</b> <i>access-list</i>	(Optional) The ACL beyond the configured mld limit

**Defaults**  
Interface: 1,024  
Global: 65,536

**Command Mode**  
Interface configuration mode/Global configuration mode

**Usage Guide**  
Use this command to set the max-number of the group members learned through the MLD in the global configuration mode. If the group member number has exceeded the limit, the received report packets later will be discarded and fail to form the group record.  
If the except list has also been set at the same time, the group member packets, including the packets in the access-list, will be free from the member number limit.  
This command can also be used in the interface configuration mode. The configurations in two different configuration modes are independent. If the number limit in the global configuration mode is lower than the one in the interface configuration mode, the former configuration takes precedence.

**Configuration Examples** The following example sets the MLD limit to 400, but the configured ACL can still learn.

```
Ruijie(config-if)# ipv6 mld limit 300 except acl
Ruijie# configure terminal
Ruijie(config)# ipv6 mld limit 400 except acl1
Ruijie(config)# interface eth 0/1
Ruijie(config-if-Ethernet 0/1)# ipv6 mld limit 300 except acl1
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description**  
N/A



## 4.9 ipv6 mld mroute-proxy

Use this command to enable the interface to forward the packets to the correspondent connected interface.

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

**ipv6 mld mroute-proxy** *interface-type interface-number*

**no ipv6 mld mroute-proxy**

**default ipv6 mld mroute-proxy**

Parameter Description	Parameter	Description
	<i>interface-type</i>	The correspondent connected interface
	<i>interface-number</i>	

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

**Command Mode** Interface configuration mode

**Usage Guide** Use the **ipv6 mld proxy-service** command to configure the uplink interface as **proxy-service** one. Use the **ipv6 mld mroute-proxy** command to configure the downlink interface as **mroute-proxy** one. After the connected interface has been configured as the proxy-service interface, it can forward the MLD packets sent from other members.

**Configuration Examples** The following example sets the interface as the mroute-proxy interface and enables multicast proxy.

```
Ruijie(config)# interface eth 0/1
Ruijie(config-if-Ethernet 0/1)# ipv6 mld proxy-service
Ruijie(config-if-Ethernet 0/1)# exit
Ruijie(config)# interface eth 0/2
Ruijie(config-if-Ethernet 0/2)# ipv6 mld mroute-proxy eth 0/1
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 4.10 ipv6 mld proxy-service

Use this command to enable the proxy-service function for the interface connected with the mroute-proxy interface in the downward direction. After configuring this command, the interface becomes the one connected with the mroute-proxy in the upward direction, and associates with and

maintains the group information from the interfaces in the downward direction. Use the **no** or **default** form of this command to disable the default setting.

**ipv6 mld proxy-service**

**no ipv6 mld proxy-service**

**default ipv6 mld proxy-service**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Interface configuration mode

**Usage Guide** Use the **ipv6 mld proxy-service** command to configure the uplink interface as **proxy-service** one. Use the **ipv6 mld mroute-proxy** command to configure the downlink interface as **mroute-proxy** one. The configurable max-number limit is 32. The number of the interfaces with MLD Proxy enabled is limited by the number multicast interfaces supported device. After receiving the query packet, the proxy-service interface replies according to the member information, which are collected from the mroute-proxy interface and maintained by the proxy-service interface itself. With proxy-service configured, this interface owns the host action rather than the router action. The **ipv6 mld mroute-proxy interface** command configuration on the associated interface in the downward direction is removed automatically if the switchport operation is performed on the interfaces.

**Configuration Examples** The following example sets the interface proxy-service and enables multicast proxy.

```
Ruijie(config)# interface eth 0/1
Ruijie(config-if-Ethernet 0/1)# ipv6 mld proxy-service
Ruijie(config-if-Ethernet 0/1)# exit
Ruijie(config)# interface eth 0/2
Ruijie(config-if-Ethernet 0/1-Ethernet 0/2)# ipv6 mld mroute-proxy eth 0/1
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 4.11 ipv6 mld querier-timeout

Use this command to set the querier alive period.

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

**ipv6 mld querier-timeout** *seconds*

**no ipv6 mld querier-timeout**

**default ipv6 mld querier-timeout**

Parameter Description	Parameter	Description
	<i>seconds</i>	The querier alive period, in the range from 60 to 300 in the unit of seconds.

**Defaults** The default is 255 seconds.

**Command Mode** Interface configuration mode

**Usage Guide** After the querier sends the query packet, the querier will wait to receive the query packet sent by another querier within the alive period. If no packet is received by the first querier within the alive period, then the first querier takes itself as the only querier on the network segment.

**Configuration Examples** The following example sets the querier alive period to 200 seconds.

```
Ruijie(config-if-Ethernet 0/1)# ipv6 mld querier-timeout 200
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 4.12 ipv6 mld query-interval

Use this command to set the query interval for the general member.

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

**ipv6 mld query-interval** *seconds*

**no ipv6 mld query-interval**

**default ipv6 mld query-interval**

Parameter Description	Parameter	Description
	<i>seconds</i>	The query interval for the general member, in the range from 1 to 18,000 in the unit of seconds.

**Defaults** The default is 125 seconds.

**Command Mode** Interface configuration mode

**Usage Guide** The interval of the timer for sending the general query packets can be changed by configuring the query-interval for the general member.

**Configuration Examples** The following example sets the query-interval for the general member on the interface Ethernet 0/1.

```
Ruijie(config-if-Ethernet 0/1)# ipv6 mld query-interval 120
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 4.13 ipv6 mld query-max-response-time

Use this command to set the maximum response time.

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

**ipv6 mld query-max-response-time** *seconds*

**no ipv6 mld query-max-response-time**

**default ipv6 mld query-max-response-time**

Parameter Description	Parameter	Description
	<i>seconds</i>	The maximum response time, in the range from 1 to 25 in the unit of seconds

**Defaults** The default is 10 seconds.

**Command Mode** Interface configuration mode

**Usage Guide** Use this command to control the maximum response time of the host after the device sends the query packets. If there is no response within the maximum response time, MLD will remove the corresponding group from the group member list.

**Configuration Examples** The following example sets the maximum query response time on the interface Ethernet 0/1.

```
Ruijie(config-if-Ethernet 0/1)# ipv6 mld query-max-response-time 20
```

Related	Command	Description
---------	---------	-------------

Commands	
N/A	N/A

**Platform** N/A

**Description**

## 4.14 ipv6 mld robustness-variable

Use this command to set querier robustness value.

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

**ipv6 mld robustness-variable** *number*

**no ipv6 mld robustness-variable**

**default ipv6 mld robustness-variable**

Parameter Description	Parameter	Description
	<i>number</i>	Sets the querier robustness value, in the range from 2 to 7.

**Defaults** The default is 2.

**Command Mode** Interface configuration mode

**Usage Guide** N/A

**Configuration** The following example sets the querier robustness value to 3.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if-Ethernet 0/1)# ipv6 mld robustness-variable 3
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 4.15 ipv6 mld ssm-map enable

Use this command to enable the mld ssm-map function.

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

**ipv6 mld ssm-map enable**

**no ipv6 mld ssm-map enable**

**default ipv6 mld ssm-map enable**

Parameter Description	Parameter	Description
	N/A	N/A

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

**Command Mode** Global configuration mode

**Usage Guide** With this command configured, the group information dynamically learned will be added to the related source record forcibly. Usually, this command is set with the **ipv6 mld ssm-map static** command.

**Configuration Examples** The following example enables the mld ssm-map function in the global configuration mode.

```
Ruijie(config)# ipv6 mld ssm-map enable
Ruijie(config)# ipv6 mld ssm-map static 11 4444::1234
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 4.16 ipv6 mld ssm-map static

Use this command to set the mld ssm-map static mapping source record in the global configuration mode.

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

**ipv6 mld ssm-map static** *access-list source-address*

**no ipv6 mld ssm-map static** *access-list source-address*

**default ipv6 mld ssm-map static** *access-list source-address*

Parameter Description	Parameter	Description
	<i>access-list</i>	Sets the IPv6 ACL name.
	<i>source-address</i>	Sets the unicast address for the group record mapping.

**Defaults** There is no mapping source address by default.

**Command Mode** Global configuration mode

**Usage Guide** This command is used with the **ipv6 mld ssm-map enable** command. With this command configured, the received mldv1 packets are mapped to the correspondent source record.

**Configuration** The following example maps all group record of the ACL name to the source address 4444::1234.

**Examples**

```
Ruijie(config)# ipv6 mld ssm-map enable
Ruijie(config)# ipv6 mld ssm-map static te 4444::1234
```

**Related Commands**

Command	Description
N/A	N/A

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

## 4.17 ipv6 mld static-group

Use this command to add an interface to a group statically.

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

**ipv6 mld static-group** *group-address*

**no ipv6 mld static-group** *group-address*

**default ipv6 mld static-group** *group-address*

**Parameter Description**

Parameter	Description
<i>group-address</i>	Sets the IPv6 non-management multicast group address.

**Defaults** The interface is not added to any group statically.

**Command Mode** Interface configuration mode

**Usage Guide** Use this command to add a multicast group to the interface directly. The difference from the join-group is that the packet interaction is not necessary. Use this command when it is necessary to add a group member to the interface. It is worth mentioning that only the **no ipv6 mld static-group** command can be used to delete the group, but not the **clear** command.

**Configuration** The following example adds interface Eth0/1 to group ff55::3 statically.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if-Ethernet 0/1)# ipv6 mld static-group ff55::3
```

Related Commands	Command	Description
	N/A	N/A

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

## 4.18 ipv6 mld version

Use this command to set the MLD version number on the interface.

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

**ipv6 mld version { 1 | 2 }**

**no ipv6 mld version**

**default ipv6 mld version**

Parameter Description	Parameter	Description
	{ 1   2 }	

**Defaults** The default is 2.

**Command Mode** Interface configuration mode

**Usage Guide** Use this command to control the MLD version number.

**Configuration Examples** The following example sets the MLD version 1.

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if-Ethernet 0/1)# ipv6 mld version 1
```

Related Commands	Command	Description
	N/A	N/A

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

## 4.19 show ipv6 mld groups

Use this command to display the group connected with the switch and the group information learned from the MLD.

**show ipv6 mld groups [ group-address | interface-type interface-number ] [ detail ]**



Parameter Description	Parameter	Description
	<i>group-address</i>	Sets the IPv6 multicast group address in 128 bits.
	<i>interface-type</i>	Sets the interface type.
	<i>interface-number</i>	Sets the interface number.
	<b>detail</b>	Displays the information in detail.
		Displays all the group information.

**Defaults** N/A

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

**Usage Guide** Use this command without the parameters to display the information including the group address, the interface type and the multicast group information. Use this command with a parameter to display the information on a specific group.

**Configuration** The following example displays all group information.

**Examples**

```
Ruijie# show ipv6 mld groups
MLD Connected Group Membership
Group Address Interface Uptime Expires Last Reporter
ff66::1 VLAN1 00:10:57 00:02:16 fe80::2d0:f8ff:fe22:3378
```

The following example displays the detailed information.

```
Ruijie# show ipv6 mld groups detail
Interface: VLAN 1
Group: ff66::1
Uptime: 00:10:26
Group mode: Exclude (Expires: 00:02:47)
Last reporter: fe80::2d0:f8ff:fe22:3378
Source list is empty
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 4.20 show ipv6 mld interface

Use this command to display the configurations on the interface.

**show ipv6 mld interface** [ interface-type interface-number ]

Parameter Description	Parameter	Description
	<i>interface-type</i>	Sets the interface type.
	<i>interface-number</i>	Sets the interface number.

**Defaults** N/A

**Command Mode** User EXEC mode/Privileged EXEC mode

**Usage Guide** N/A

**Configuration Examples** The following example displays the state information of all interfaces.

```
Ruijie# show ipv6 mld interface
Interface VLAN 2 (Index 4098)
  MLD Enabled, Inactive, Version 2 (default)
  MLD interface limit is 1024
  MLD interface has 0 group-record states
  MLD interface has 1 join-group records
  MLD interface has 0 static-group records
  MLD activity: 0 joins, 0 leaves
  MLD query interval is 125 seconds
  MLD querier timeout is 255 seconds
  MLD max query response time is 10 seconds
  Last member query response interval is 10 (1/10s)
  Last member query count is 2
  Group Membership interval is 260
  Robustness Variable is 2
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 4.21 show ipv6 mld ssm-mapping

Use this command to display the mapping information of the source address for the group record.  
**show ipv6 mld ssm-mapping** [ *group-address* ]

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

<b>Description</b>		
	<i>group-address</i>	Displays the group address.

**Defaults** N/A

**Command Mode** User EXEC mode/Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the state information of all interfaces.

**Examples**

```
Ruijie# show ipv6 mld interface
Interface VLAN 2 (Index 4098)
  MLD Enabled, Inactive, Version 2 (default)
  MLD interface limit is 1024
  MLD interface has 0 group-record states
  MLD interface has 1 join-group records
  MLD interface has 0 static-group records
  MLD activity: 0 joins, 0 leaves
  MLD query interval is 125 seconds
  MLD querier timeout is 255 seconds
  MLD max query response time is 10 seconds
  Last member query response interval is 10 (1/10s)
  Last member query count is 2
  Group Membership interval is 260
  Robustness Variable is 2
```

**Related Commands**

Command	Description
N/A	N/A

## 5 PIM-DM Commands

### 5.1 clear ip pim dense-mode track

Use this command to clear the statistics of PIM-DM packets.

**clear ip pim dense-mode track**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** This command is used to reconfigure the start time of the statistics and clear the PIM packet counter.

**Configuration Examples** The following example clears the statistics of PIM-DM packets.

```
Ruijie# clear ip pim dense-mode track
```

Related Commands	Command	Description
	<b>show ip pim dense-mode track</b>	Displays the statistics of the PIM packets.

**Platform Description** N/A

### 5.2 ip pim dense-mode

Use this command to enable PIM-DM on the interface.

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

**ip pim dense-mode**

**no ip pim dense-mode**

**default ip pim dense-mode**

Parameter Description	Parameter	Description
	N/A	N/A

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

**Command Mode** Interface configuration mode

**Usage Guide**

- i** 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.
- i** Once the PIM-DM is enabled, the IGMP is enabled automatically on the interface without manual configuration.
- i** 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.
- i** 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.
- i** It is not recommended to configure different multicast routing protocols on different interfaces of a device.
- i** 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.
- i** 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

### 5.3 ip pim dense-mode subvlan

Use this command to enable PIM-DM on a super VLAN. Use the **no** form or **default** form of this command to disable PIM-DM on a super VLAN.

**ip pim dense-mode subvlan [all | vid]**

**no ip pim dense-mode subvlan**

**default ip pim dense-mode subvlan**

Parameter Description	Parameter	Description
		<b>all</b>
	<i>vid</i>	Sends packets to a specified sub VLAN.

**Defaults** PIM-DM is disabled on super VLANs by default.

**Command Mode** Interface configuration mode

**Usage Guide** In most scenarios on the PIM network, the PIM DM protocol does not need to be enabled on interfaces of a super VLAN. In general, a super VLAN includes many sub VLANs. If the PIM DM protocol is enabled on the interfaces of the super VLAN, multicast packets will be replicated and sent to all sub VLANs. As a result, traffic generated easily exceeds the device processing capability, causing protocol flapping. In some scenarios that require the PIM DM protocol to be enabled on the interfaces of the super VLAN, the PIM-DM sub VLAN function may be configured, to send packets to a specified sub VLAN or all sub VLANs.

**Configuration Examples** The following example enables PIM-DM on VLAN 100 to send packets to its sub VLAN 200.

```
Ruijie# configure terminal
Ruijie(config)# interface vlan 100
Ruijie(config-if-vlan 100)# ip pim dense-mode subvlan 200
```

Related Commands	Command	Description
		N/A

**Platform Description** N/A

## 5.4 ip pim mib dense-mode

Use this command to switch the device from the PIM MIB sparse mode to the PIM MIB dense mode. Use the **no** form or **default** form of this command to switch back to the PIM MIB sparse mode.

- ip pim mib dense-mode**
- no ip pim mib dense-mode**
- default ip pim mib dense-mode**

Parameter Description	Parameter	Description

N/A	N/A
-----	-----

**Defaults** The device is in the PIM MIB sparse mode by default.

**Command Mode** Global configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example switches the device from the PIM MIB sparse mode to the PIM MIB dense mode.

```
Ruijie# configure terminal
Ruijie(config)# ip pim mib dense-mode
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 5.5 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>	

**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
```

**i** 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.

**i** 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**

## 5.6 ip pim override-interval

Use this command to reconfigure the override-interval of the hello message.

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

**ip pim override-interval** *interval-milliseconds*

**no ip pim override-interval**

**default ip pim override-interval**

**Parameter Description**

Parameter	Description
<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** Configuring the override-interval is to set the pruning veto time for the interface.

**Configuration** The following example sets the override-interval to 3,000 milliseconds.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim override-interval 3000
```



Related Commands	Command	Description
	N/A	N/A

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

## 5.7 ip pim propagation-delay

Use this command to reconfigure the propagation-interval of the hello message.

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

**ip pim propagation-delay** *interval-milliseconds*

**no ip pim propagation-delay**

**default ip pim propagation-delay**

Parameter Description	Parameter	Description
		<i>interval-milliseconds</i>

**Defaults** The default is 500 milliseconds.

**Command Mode** Interface configuration mode

**Usage Guide** Configuring the propagation-delay is to set the transmission delay time for the interface.

**Configuration Examples** The following example sets the propagation-delay to 600 milliseconds.

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim propagation-delay 600
```

Related Commands	Command	Description
	N/A	N/A

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

## 5.8 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 Examples** The following example sets the interval of sending the hello message to 123 seconds.

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim query-interval 123
```

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 5.9 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** Global configuration mode  
**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 Examples** The following example disables the processing of the PIM-DM state refresh message.

```
Ruijie# configure terminal
Ruijie(config)# ip pim state-refresh disable
```

Related Commands	Command	Description
	N/A	N/A

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

### 5.10 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** Interface configuration mode  
**Mode**

**Usage Guide** N/A

**Configuration** The following example sets the interval of sending the PIM-DM state refresh message to 65 seconds.

```

Examples
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** N/A  
**Description**

### 5.11 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>	
<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**

## 5.12 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	Command	Description
---------	---------	-------------

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

**Platform** N/A

**Description**

## 5.13 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* ]

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<i>interface-type</i> <i>interface-number</i>	Interface type and interface ID

**Defaults** N/A

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

**Usage Guide** N/A

**Configuration Examples** The following example displays the information about the PIM-DM neighbors.

```
Ruijie# show ip pim dense-mode neighbor
Neighbor-Address Interface      Uptime/Expires      Ver
10.10.10.1    FastEthernet 0/45  00:19:29/00:01:21  v2
50.50.50.1    VLAN 4          00:22:09/00:01:39  v2
```

Description of fields in the results:

Field	Description
Neighbor-Address	IP address of the neighbor
Interface	Name of the interface connecting the neighbor
Uptime/Expires	Valid time and aging time of the entry
Ver	PIM version

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

**Platform** N/A

**Description**

## 5.14 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** The following example displays the information about the PIM-Dm next hop:

### Examples

```
Ruijie# show ip pim dense-mode nexthop
Destination  Nexthop  Nexthop  Nexthop  Metric Pref
              Num    Addr    Interface
1.1.1.111    1        50.50.50.1  VLAN 4    0    1
```

Field	Description
Destination	Multicast source IP address
Nexthop Num	Number of next hop
Nexthop Addr	IP address of next hop
Nexthop interface	Interface connecting to the of next hop
Metric	Route metric
Pref	Route priority

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 5.15 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	Parameter	Description
-----------	-----------	-------------

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

**Defaults** N/A

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

**Usage Guide** This command is used to display the number of sent and received PIM packets during the period from the beginning of the statistics till now. When the system starts up, it sets the start time of the statistics. The start time of the statistics is reconfigured and the PIM packet counter is cleared on calling the clear ip pim dense-mode track every time.

**Configuration Examples** The following example displays the statistics of the PIM-DM packets.

```
Ruijie# show ip pim dense-mode track
      PIM packet counters
Elapsed time since counters cleared: 00:04:03
      received      sent
Valid PIMDM packets:      1          8
Hello:                    1          8
Join/Prune:               0          0
Graft:                    0          0
Graft-Ack:                0          0
Assert:                   0          0
State-Refresh:            0          0
PIM-SM-Register:         0          0
PIM-SM-Register-Stop:    0          0
PIM-SM-BSM:              0          0
PIM-SM-C-RP-ADV:         0          0
Unknown Type:             0
Errors:
Malformed packets:       0
Bad checksums:           0
Unknown PIM version:     0
Send errors:              0
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>clear ip pim dense-mode track</b>	Clears the statistics of the PIM packets.

**Platform Description** N/A



## 6 PIM-SM Commands

### 6.1 clear ip pim sparse-mode bsr rp-set \*

Use this command to clear all the RP information learnt dynamically.

**clear ip pim sparse-mode bsr rp-set \***

Parameter Description	Parameter	Description
	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 Examples** The following example clears all the RP information learnt dynamically.

```
Ruijie# clear ip pim sparse-mode bsr rp-set *
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 6.2 clear ip pim sparse-mode track

Use this command to reconfigure the start time of the statistics and clear the PIMv6 packet counter.

**clear ip pim sparse-mode track**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command** 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**

### 6.3 ip pim accept-bsr list

Use this command to confine the BSR address range.  
 Use the **no** or **default** form this command to restore the default setting.

```
ip pim accept-bsr list access-list  

no ip pim accept-bsr  

default ip pim accept-bsr
```

**Parameter Description**

Parameter	Description
<b>list</b> access-list	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**

## 6.4 ip pim accept-crp list

Use this command to confine the C-RP address range and the multicast group address range it serves.

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

**ip pim accept-crp list** *access-list*

**no ip pim accept-crp**

**default ip pim accept-crp**

**Parameter Description**

Parameter	Description
<b>list</b> <i>access-list</i>	IP extension number ACL in the range of 1 to 99, 1300 to 1999 and characters

**Defaults**

By default, the elected BSR receives all external advertisements of candidate RPs.

**Command Mode**

Global configuration mode

**Usage Guide**

With this command configured on the candidate BSR, when this BSR becomes the elected BSR, it is able to limit the address range of the legal C-RP and the multicast group range it serves.

**Configuration Examples**

The following example confines the C-RP address range and the multicast group address range it serves.

```
Ruijie (config)# ip pim accept-crp list 100
```

**Related Commands**

Command	Description
N/A	N/A

**Platform Description**

N/A

## 6.5 ip pim accept-crp-with-null-group

Use this command to receive the C-RP-ADV packets whose prefix-count is 0.

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

**ip pim accept-crp-with-null-group**

**no ip pim accept-crp-with-null-group**

**default ip pim accept-crp-with-null-group**

Parameter 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

## 6.6 ip pim accept-register list

Use this command to confine the address range of the (S,G) entry of the register packets.

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

**ip pim accept-register** { **list** *access-list* [**route-map** *map-name* ] | **route-map** *map-name* [**list** *access-list* ] }

**no ip pim accept-register**

**default ip pim accept-register**

Parameter Description	Parameter	Description
	<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.

**Defaults** The (S, G) address range is not confined by default.

**Command Mode** Global configuration mode

**Usage Guide** This command is used to confine the source IP address of register messages on RP.

**Configuration** 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**

## 6.7 ip pim bsr-border

Use this command to configure the BSR border.

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

**ip pim bsr-border**

**no ip pim bsr-border**

**default ip pim bsr-border**

**Parameter Description**

Parameter	Description
N/A	N/A

**Defaults** No BSR border is configured by default.

**Command** Interface configuration mode

**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**

## 6.8 ip pim bsr-candidate

Use this command to configure the C-BSR.

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

**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>

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

## 6.9 ip pim dr-priority

Use this command to set the DR priority.

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

**ip pim dr-priority** *priority-value*

**no ip pim dr-priority**

**default ip pim dr-priority**

Parameter Description	Parameter	Description
		<i>priority-value</i>

**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

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

## 6.10 ip pim ignore-rp-set-priority

Use this command to ignore the RP priority.

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

**ip pim ignore-rp-set-priority**

**no ip pim ignore-rp-set-priority**

**default ip pim ignore-rp-set-priority**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** By default, the C-RP with higher priority is selected.

**Command Mode** Global configuration mode

**Usage Guide** This command is used to ignore the priority of the RP.

**Configuration Examples** The following example ignores the RP priority.

```
Ruijie(config)# ip pim ignore-rp-set-priority
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 6.11 ip pim jp-timer

Use this command to set the interval to send the join/prune message.

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

**ip pim jp-timer** *seconds*

**no ip pim jp-timer**

**default ip pim jp-timer**

Parameter Description	Parameter	Description
	<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**

## 6.12 ip pim neighbor-filter

Use this command to confine the neighbor address range.

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

**ip pim neighbor-filter** *access\_list*

**no ip pim neighbor-filter** *access\_list*

**default ip pim neighbor-filter** *access\_list*

Parameter Description	Parameter	Description
	<i>access_list</i>	

**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>

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

## 6.13 ip pim neighbor-tracking

Use this command to disable join restraint on the interface.

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

**ip pim neighbor-tracking**

**no ip pim neighbor-tracking**

**default ip pim neighbor-tracking**

Parameter Description	Parameter	Description
		N/A

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

**Command Mode** Interface configuration mode

**Usage Guide** Use this command to disable join restraint on the interface. With join constraint enabled, the interface is constrained not to send its Join message to the upstream neighbor when it receives the Join message that its neighbor sends to the upstream neighbor. On the other hand, with join constrain disabled, the interface will send its Join message to the upstream neighbor when it receives the Join message that its neighbor sends to the upstream neighbor. This function allows upstream routers to track how many receivers in downstream in accord with all received Join messages.

**Configuration Examples** The following example disables join restraint on the interface.

```
Ruijie(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>

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

## 6.14 ip pim override-interval

Use this command to set the override-interval on the interface.

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

**ip pim override-interval** *milliseconds*

**no ip pim override-interval**


**default ip pim override-interval**

Parameter Description	Parameter	Description
	<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 Description** N/A

## 6.15 ip pim probe-interval

Use this command to set the register probe interval.

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

**ip pim probe-interval** *seconds*

**no ip pim probe-interval**

**default ip pim probe-interval**


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

<b>Description</b>		
	<i>interval-seconds</i>	In the range from 1 to 65535 seconds

**Defaults** The default is 5 seconds.

**Command Mode** Global configuration mode

**Usage Guide** Use this command to set the registration probe time. The DR can send the null registration message to the RP in a period before the registration suppression time expires. This period is called probe time of null registration packet.

 The probe time must be less than half of registration suppression time. Furthermore, 3\* registration suppression time plus registration probe time should be no more than 65535s or otherwise the system triggers an alarm.

**Configuration** The following example sets the probe time to 6 seconds.

**Examples** Ruijie(config)# ip pim probe-interval 6

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

**Platform Description** N/A

## 6.16 ip pim propagation-delay

Use this command to set the propagation-delay on the interface.

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

**ip pim propagation-delay** *milliseconds*

**no ip pim propagation-delay**


**default ip pim propagation-delay**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<i>imilliseconds</i>	In the range from 1 to 32,765 milliseconds

**Defaults** The default is 500 milliseconds.

**Command Mode** Interface configuration mode

**Usage Guide** Use this command to set the propagation-delay for the interface.

 Change of propagation delay or prune delay will influence the override interval of Join/prune message. As specified in the protocol, the override interval of Join/prune message must be less than its hold time or otherwise this will cause temporary interruption.

**Configuration** 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**

## 6.17 ip pim query-interval

Use this command to set the interval to send the hello packets.

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

- ip pim query-interval** *seconds*
- no ip pim query-interval**
- default ip pim query-interval**

**Parameter Description**

Parameter	Description
<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**

## 6.18 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>	<b>Parameter</b>	<b>Description</b>
	<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. Ruijie Networks introduces this function for the compatibility with devices of other vendors.

**Configuration Examples** The following example calculates the checksum of the whole register packet.

```
Ruijie(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>	<b>Command</b>	<b>Description</b>
	<b>access-list</b>	N/A

**Platform** N/A

**Description**

## 6.19 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.

**Configuration 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

## 6.20 ip pim register-rate-limit

Use this command to limit the rate of register packets.

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

**ip pim register-rate-limit rate**

**no ip pim register-rate-limit**

**default ip pim register-rate-limit**

Parameter Description	Parameter	Description				
	<i>rate</i>	Maximum number of register packets that can be sent per second, in the range from 1 to 65,535				
<b>Defaults</b>	By default, there is no rate limitation on register messages.					
<b>Command Mode</b>	Global configuration mode					
<b>Usage Guide</b>	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.					
<b>Configuration Examples</b>	The following example limits the rate of register packets.					
	<pre>Ruijie(config)# ip pim register-rate-limit 3000</pre>					
<b>Related Commands</b>	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>	Command	Description	N/A	N/A	
Command	Description					
N/A	N/A					
<b>Platform Description</b>	N/A					

## 6.21 ip pim register-rp-reachability

Use this command to check RP reachability before sending register packets.

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

**ip pim register-rp-reachability**

**no ip pim register-rp-reachability**

**default ip pim register-rp-reachability**

Parameter Description	Parameter	Description
	N/A	N/A
<b>Defaults</b>	By default, the RP reachability is not checked before sending register packets.	
<b>Command Mode</b>	Global configuration mode	
<b>Usage Guide</b>	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**

## 6.22 ip pim register-source

Use this command to specify the source IP address of the register packets.

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

**ip pim register-source** { *local\_address* | *interface-type interface-number* }

**no ip pim register-source**

**default ip pim register-source**

**Parameter Description**

Parameter	Description
<i>interface-type</i> <i>interface-number</i>	Interface whose IP address is used as the source IP address of register packets
<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**

## 6.23 ip pim register-suppression

Use this command to set the register suppression time.

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

**ip pim register-suppression** *seconds*

**no ip pim register-suppression**

**default ip pim register-suppression**

Parameter Description	Parameter	Description
	<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** N/A  
**Description**

## 6.24 ip pim rp-address

Use this command to configure the static RP.

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

**ip pim rp-address** *rp-address* [ *access\_list* ]

**no ip pim rp-address** *rp-address* [ *access\_list* ]

**default ip pim rp-address** *rp-address* [ *access\_list* ]

Parameter Description	Parameter	Description
	<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

## 6.25 ip pim rp-candidate

Use this command to configure the C-RP.

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

**ip pim rp-candidate** *interface-type interface-number* [ **priority** *priority-value* ] [ **interval** *seconds* ]  
 [ **group-list** *access\_list* ]  
**no ip pim rp-candidate** [ *interface-type interface-number* ]  
**default ip pim rp-candidate** [ *interface-type interface-number* ]

**Parameter Description**

Parameter	Description
<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 Examples** The following example configures the C-RP.

```
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

## 6.26 ip pim rp-register-kat

Use this command to set the KAT interval on the RP.  
 Use the **no** or **default** form of this command to restore the default setting.  
**ip pim rp-register-kat** *seconds*

**no ip pim rp-register-kat**  
**default ip pim rp-register-kat**

**Parameter  
Description**

Parameter	Description
<i>seconds</i>	KAT timer time in the range from 1 to 65,525 in the unit of seconds

**Defaults** The default is 210 seconds.

**Command  
Mode** Global configuration mode

**Usage Guide** This command is used to configure the KAT interval of RP.

**Configuration Examples** The following example sets the KAT interval on the RP to 250 seconds.

```
Ruijie(config)# ip pim rp-register-kat 250
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description** N/A

## 6.27 ip pim sparse-mode

Use this command to enable PIM-SM on the interface.

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

**ip pim sparse-mode**  
**no ip pim sparse-mode**  
**default ip pim sparse-mode**

**Parameter  
Description**

Parameter	Description
N/A	N/A

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

**Command  
Mode** Interface configuration mode

**Usage Guide** This command is used to enable PIM-SM on the interface.

 You need to enable multicast routing forwarding in the global configuration mode before

enabling PIM-SM. Otherwise, multicast packets cannot be forwarded even though you enable PIM-SM.

- i During the execution of this command, if the prompt "Failed to enable PIM-SM on <Interface Name>, resource temporarily unavailable, please try again" appears, re-execute this command.
- i 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**

## 6.28 ip pim sparse-mode subvlan

Use this command to enable PIM-SM on a super VLAN. Use the **no** form or **default** form of this command to disable PIM-SM on a super VLAN.

- ip pim sparse-mode subvlan [all | vid]**
- no ip pim sparse-mode subvlan**
- default ip pim sparse-mode subvlan**

**Parameter Description**

Parameter	Description
<b>all</b>	Sends packets to all sub VLANs.
<i>vid</i>	Sends packets to a specified sub VLAN.

**Defaults** PIM-SM is disabled on super VLANs by default.

**Command Mode** Interface configuration mode

**Usage Guide** In most scenarios on the PIM network, the PIM SM protocol does not need to be enabled on interfaces of a super VLAN. In general, a super VLAN includes many sub VLANs. If the PIM SM protocol is enabled on the interfaces of the super VLAN, multicast packets will be replicated and sent to all sub VLANs. As a result, traffic generated easily exceeds the device processing capability, causing protocol flapping. In some scenarios that require the PIM SM protocol to be enabled on the

interfaces of the super VLAN, the PIM-SM sub VLAN function may be configured, to send packets to a specified sub VLAN or all sub VLANs.

**Configuration** The following example enables PIM-SM on VLAN 100 to send packets to its sub VLAN 200.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# interface vlan 100
Ruijie(config-if-vlan 100)# ip pim sparse-mode subvlan 200
```

**Related  
Commands**

Command	Description
N/A	N/A

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

## 6.29 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**

## 6.30 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	Parameter	Description
<b>Description</b>	<b>default</b>	Multicast groups of 232/8
	<b>range</b> <i>access_list</i>	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** The following command enables SSM and sets the SSM group range to 232/8:

**Examples** 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**

## 6.31 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

## 6.32 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**

### 6.33 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.

**n Examples**

```
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**

## 6.34 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>	(Optional) Displays the details of an interface.
	<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 Examples** The following example displays the PIM-SM information on the interface.

```
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**

## 6.35 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>	(Optional) Interface name. This command takes effect for all interfaces by default.
	<i>interface-number</i>	

**Defaults** N/A

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

**Usage Guide** This command displays the local IGMP information on the PIM-SM interface.

**Configuration Examples** The following example displays the local IGMP information on the PIM-SM interface.

```
Ruijie (config-if)#sh ip pim sparse-mode local-members
PIM Local membership information
GigabitEthernet 0/3:
(*, 225.1.1.1) : Include
Loopback 1:
GigabitEthernet 0/5:
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 6.36 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** Privileged EXEC mode/Global configuration mode/Interface configuration mode

**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** The following example displays the PIM-SM routing information.

**Examples**

```
Ruijie#show ip pim sparse-mode mroute
```

Related Commands	Command	Description
	N/A	N/A

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

### 6.37 show ip pim sparse-mode neighbor

Use this command to display the neighbor information.

**show ip pim sparse-mode neighbor [ detail ]**

Parameter Description	Parameter	Description
	detail	

**Defaults** N/A

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

**Usage Guide** This command displays the information on neighbors.

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

**Examples**

```
Ruijie# show ip pim sparse-mode neighbor
```

Related Commands	Command	Description
	N/A	N/A

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

## 6.38 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 Description** N/A

## 6.39 show ip pim sparse-mode rp mapping

Use this command to display the information on all RPs and the multicast groups they serve.

**show ip pim sparse-mode rp mapping**

Parameter Description	Parameter	Description
	<i>mapping</i>	All group and RP 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 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**

### 6.40 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>	

**Defaults** N/A

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

**Usage Guide** This command displays the RP information corresponding to the group address.

**Configuration** The following example displays the RP information corresponding to the group address.

```

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

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

**Platform** N/A

**Description**

### 6.41 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**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>

**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

## 7 PIM-SMv6 Commands

### 7.1 clear ipv6 mroute

Use this command to clear multicast routing entries.

```
clear ipv6 mroute { * | ipv6_group_address [ ipv6_source_address ] }
```

Parameter Description	Parameter	Description
	*	Deletes all the multicast routing entries.
	<i>ipv6_group_address</i>	Deletes the multicast routing entries of the specific group.
	<i>ipv6_source_address</i>	Deletes the multicast routing entries of the specific group and source IPv6 address.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration Examples** The following example clears all the multicast routing entries.

```
Ruijie# clear ipv6 mroute *
```

The following example clears the multicast routing entries of the specified group.

```
Ruijie# clear ipv6 mroute ff66::6666
```

The following example clears the multicast routing entries of the specified group and source address.

```
Ruijie# clear ipv6 mroute ff66::6666 3333::3333
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

### 7.2 clear ipv6 mroute statistics

Use this command to delete the statistics of the multicast routing entries.

```
clear ipv6 mroute statistics { * | ipv6_group_address [ ipv6_source_address ] }
```

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

Description	
	*
	Deletes the statistics of all multicast routing entries.
	<i>ipv6_group_address</i>
	Deletes the statistics of the multicast routing entries of the specific group.
	<i>ipv6_source_address</i>
	Deletes the statistics of the multicast routing entries of the specific group and source IPv6 address.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example deletes the statistics of the multicast routing entries.

**Examples**

```
Ruijie# clear ipv6 mroute statistics *
```

The following example clears the statistics of the multicast routing entries of the specified group.

```
Ruijie# clear ipv6 mroute statistics ff66::6666
```

The following example clears the statistics of the multicast routing entries of the specified group and source address.

```
Ruijie# clear ipv6 mroute statistics ff66::6666 3333::3333
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 7.3 clear ipv6 pim sparse-mode bsr rp-set \*

Use this command to clear the RP information learnt dynamically.

```
clear ipv6 pim sparse-mode bsr rp-set *
```

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** Only the RP information learnt dynamically can be cleared manually.

**Configuration** The following example clears the RP information learnt dynamically.

**Examples**

```
Ruijie# clear ipv6 pim sparse-mode bsr rp-set *
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 7.4 clear ipv6 pim sparse-mode track

Use this command to reconfigure the start time of the statistics and clear the PIMv6 packet counter.

**clear ipv6 pim sparse-mode track**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example clears the PIMv6 packet counter.

**Examples**

```
Ruijie# clear ipv6 pim sparse-mode track
```

Related Commands	Command	Description
	<b>show ipv6 pim sparse-mode track</b>	N/A

**Platform** N/A

**Description**

## 7.5 ipv6 pim accept-bsr list

Use this command to confine the BSR address range.

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

**ipv6 pim accept-bsrr list *ipv6\_access-list***

**no ipv6 pim accept-bsr**  
**default ipv6 pim accept-bsr**

**Parameter  
Description**

Parameter	Description
<b>list</b> <i>ipv6_access-list</i>	IPv6 ACL supporting named ACL

**Defaults** By default, the PIM-SMv6 router receives all external BSM packets.

**Command  
Mode** Global configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example confines the BSR address range.

```
Ruijie(config)# ipv6 pim accept-bsr list bsr-list
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description** N/A

## 7.6 ipv6 pim accept-crp list

Use this command to confine the C-RP address range and the multicast group address range it serves.

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

**ipv6 pim accept-crp list** *ipv6\_access-list*

**no ipv6 pim accept-crp**

**default ipv6 pim accept-crp-with-null-group**

**Parameter  
Description**

Parameter	Description
<b>list</b> <i>ipv6_access-list</i>	IPv6 ACL supporting named ACL

**Defaults** No address is filtered by default.

**Command  
Mode** Global configuration mode

**Usage Guide** With this command configured on the candidate BSR, when this BSR becomes the elected BSR, it is

able to limit the address range of the legal C-RP and the multicast group range it serves.

**Configuration Examples** The following example confines the C-RP address range and the multicast group address range it serves.

```
Ruijie (config)# ipv6 pim accept-crp list crp-list
```

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 7.7 ipv6 pim accept-crp-with-null-group

Use this command to receive the C-RP-ADV packets whose prefix-count is 0.

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

**ipv6 pim accept-crp-with-null-group**

**no ipv6 pim accept-crp-with-null-group**

**default ipv6 pim accept-crp**

**Parameter Description**

Parameter	Description
N/A	N/A

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

**Command Mode** Global configuration mode

**Usage Guide** With this command configured on the candidate BSR, when this BSR becomes the elected BSR, it is able to receive the C-RP-ADV packets whose prefix-count is 0, and considers this C-RP supports all groups.

**Configuration Examples** The following example receives the C-RP-ADV packets whose prefix-count is 0.

```
Ruijie (config)# ipv6 pim accept-crp-with-null-group
```

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 7.8 ipv6 pim accept-register

Use this command to accept specific register packets at the RP.

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

```
ipv6 pim accept-register { list ipv6_access-list [ route-map map-name ] | route-map map-name
[list ipv6_access-list ] }
```

```
no ipv6 pim accept-register
```

```
default ipv6 pim accept-register
```

Parameter Description	Parameter	Description
	<b>list</b> <i>ipv6_access-list</i>	IPv6 ACL supporting named ACL
	<b>route-map</b> <i>map-name</i>	Defines the routing map rule

**Defaults** All register packets are received by default.

**Command Mode** Global configuration mode

**Usage Guide** This command is used to confine the source IPv6 address of register messages on RP. If the unauthorized register source is received, the RP will return the Register-Stop message immediately.

**Configuration Examples** The following example denies register packets of the specified source address at the RP.

```
Ruijie(config)# ipv6 pim accept-register list register-access-list
Ruijie(config)# ipv6 access-list register-access-list
Ruijie(config-ipv6-acl)# deny ipv6 fe80::2d0:f8ff:fe22:33ad/128 any
```

**Platform** N/A

**Description**

## 7.9 ipv6 pim bsr-border

Use this command to configure the BSR border.

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

```
ipv6 pim bsr-border
```

```
no ipv6 pim bsr-border
```

```
default ipv6 pim bsr-border
```

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** No BSR border is configured by default.

**Command** Interface configuration mode  
**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 *gi 0/3*.

**Examples**

```
Ruijie(config)# interface gi 0/3
Ruijie(config-if-GigabitEthernet)# ipv6 pim bsr-border
```

**Related Commands**

Command	Description
N/A	N/A

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

## 7.10 ipv6 pim bsr-candidate

Use this command to configure the candidate bootstrap router (C-BSR).

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

**ipv6 pim bsr-candidate** *interface-type interface-number* [ *hash-mask-length* [ *priority-value* ] ]

**no ipv6 pim bsr-candidate**

**default ipv6 pim bsr-candidate**

**Parameter Description**

Parameter	Description
<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 128. The default is 126.
<i>priority-value</i>	(Optional) Priority configured for the C-BSR in the range from 0 to 255. The default is 64.

**Defaults** No C-BSR is configured by default.

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

**Usage Guide** A PIM-SMv6 domain must contain a unique BootStrap Router (BSR). BSR is responsible for collect and issue RP information. A unique recognized BSR is elected among multiple candidate BSRs through the bootstrap packet. Before BSR information is available, C-BSRs consider them to be the



BSR, and regularly send bootstrap packets using the multicast address 224.0.0.13 in the PIM-SM domain. This packet contains the address and priority of the BSR.

This command allows the device to send a bootstrap message to all the PIM neighbors using the assigned BSR address. Each neighbor compares the original BSR address with the address in the received bootstrap message. If the IPv6 address of the received address is equal to or larger than the original address, each neighbor saves this received address as the BSR address. Otherwise, they will discard this message.

The current device considers itself to be BSR until it receives a bootstrap message from another candidate BSR and is notified that it has a higher priority value (or the same priority value, but with a larger IPv6 address).

**Configuration** The following example s configures the C-BSR.

**Examples**

```
Ruijie(config)# ipv6 pim bsr-candidate gi 0/3 30 100
```

**Related Commands**

Command	Description
N/A	N/A

**Platform**

N/A

**Description**

## 7.11 ipv6 pim dr-priority

Use this command to configure the DR priority.

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

**ipv6 pim dr-priority** *priority-value*

**no ipv6 pim dr-priority**

**default ipv6 pim dr-priority**

**Parameter Description**

Parameter	Description
<i>priority-value</i>	The larger the value, the higher the priority is. The range is from 0 to 4,294,967,294. The default is 1.

**Defaults**

The default is 1.

**Command Mode**

Interface configuration mode

**Usage Guide**

To select a DR:

- If the priority parameter of the Hello message is set for the devices in a LAN, the one of the highest priority is elected to be the DR. If several devices 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** The following example configures the DR priority.

**Examples**

```
Ruijie(config)# interface gi 0/3
Ruijie(config-if)# ipv6 pim dr-priority 11234
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 7.12 ipv6 pim ignore-rp-set-priority

Use this command to ignore the RP priority.

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

**ipv6 pim ignore-rp-set-priority**

**no ipv6 pim ignore-rp-set-priority**

**default ipv6 pim ignore-rp-set-priority**

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults** By default, the C-RP with a higher priority is selected.

**Command  
Mode** Global configuration mode

**Usage Guide** N/A

**Configuration** The following example ignores the RP priority.

**Examples**

```
Ruijie(config-if)# ipv6 pim ignore-rp-set-priority
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 7.13 ipv6 pim jp-timer

Use this command to set the interval to send the join/prune message.

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

**ipv6 pim jp-timer** *seconds*

**no ipv6 pim jp-timer**

**default ipv6 pim jp-timer**

Parameter Description	Parameter	Description
	<i>seconds</i>	Interval to send the join/prune message 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** This command is used to set the interval to send the Join/Prune message.

**Configuration Examples** The following example sets the interval to send the Join/Prune message to 100 seconds.

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim jp-timer 100
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 7.14 ipv6 pim neighbor-filter

Use this command to confine the neighbor address range.

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

**ipv6 pim neighbor-filter** *ipv6\_access-list*

**no ipv6 pim neighbor-filter** *ipv6\_access-list*

**default ipv6 pim neighbor-filter** *ipv6\_access-list*

Parameter Description	Parameter	Description
	<i>ipv6_access_list</i>	IPv6 ACL supporting named ACL

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

**Command Mode** Interface configuration mode

**Usage Guide** Neighbor filtering can enhance the security of a PIM-enabled network and provide neighbor restriction. As long as a neighbor is denied by the access list, PIM-SM will not establish the peering relationship with this neighbor or terminate the established peering relationship with this neighbor.

**Configuration Examples** The following example blocks the neighbor address fe80::2d0:f8ff:fe22:33ad.

```
Ruijie(config)# interface gi 0/3
Ruijie(config-if- GigabitEthernet 0/3)# ipv6 pim neighbor-filter acl
Ruijie(config-if- GigabitEthernet 0/3)# exit
Ruijie(config)# ipv6 access-list acl
Ruijie(config-ipv6-acl)# deny ipv6 fe80::2d0:f8ff:fe22:33ad/128 any
```

Related Commands	Command	Description
	ipv6_access-list	N/A

**Platform Description** N/A

## 7.15 ipv6 pim neighbor-tracking

Use this command to disable join restraint on the interface.

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

- ipv6 pim neighbor-tracking**
- no ipv6 pim neighbor-tracking**
- default ipv6 pim neighbor-tracking**

Parameter Description	Parameter	Description
	N/A	N/A

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

**Command Mode** Interface configuration mode

**Usage Guide** Use this command to disable join restraint on the interface. With join constraint enabled, the interface is constrained not to send its Join message to the upstream neighbor when it receives the Join message that its neighbor sends to the upstream neighbor. On the other hand, with join constrain disabled, the interface will send its Join message to the upstream neighbor when it receives the Join

message that its neighbor sends to the upstream neighbor. This function allows upstream routers to track how many receivers in downstream in accord with all received Join messages.

**Configuration** The following example disables join restraint on the interface.

**Examples**

```
Ruijie(config)# interface gi 0/3
Ruijie(config-if-GigabitEthernet)# ipv6 pim neighbor-tracking
```

**Related  
Commands**

Command	Description
<b>ipv6 pim propagation-delay</b>	N/A

**Platform**

N/A

**Description**

## 7.16 ipv6 pim override-interval

Use this command to set the override-interval on the interface.

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

**ipv6 pim override-interval** *milliseconds*

**no ipv6 pim override-interval**

**default ipv6 pim override-interval**

**Parameter  
Description**

Parameter	Description
<i>milliseconds</i>	In the range 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** The following example sets the override-interval to 3,000 milliseconds.

**Examples**

```
Ruijie(config)# interface gi 0/3
Ruijie(config-if-GigabitEthernet)# ipv6 pim override-interval 3000
```

**Related  
Commands**

Command	Description
<b>ipv6 pim propagation-delay</b>	N/A

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

## 7.17 ipv6 pim probe-interval

Use this command to set the register probe interval.

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

**ipv6 pim probe-interval** *seconds*

**no ipv6 pim probe-interval**


**default ipv6 pim probe-interval**

Parameter Description	Parameter	Description
	<i>seconds</i>	In the range from 1 to 65,535 in the unit of seconds

**Defaults** The default is 5 seconds.

**Command Mode** Global configuration mode

**Usage Guide** Use this command to set the registration probe time. The DR can send the null registration message to the RP in a period before the registration suppression time expires. This period is called probe time of null registration packet.

 The probe time must be less than half of registration suppression time. Furthermore, 3\* registration suppression time plus registration probe time should be no more than 65535s or otherwise the system triggers an alarm.

**Configuration Examples** The following example sets the probe time as 6 seconds.

```
Ruijie(config)# ipv6 pim probe-interval 6
```

Related Commands	Command	Description
	<b>ipv6 pim register-suppression</b>	N/A

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

## 7.18 ipv6 pim propagation-delay

Use this command to set the propagation-delay on the interface.

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


**ipv6 pim propagation-delay** *milliseconds*  
**no ipv6 pim propagation-delay**  
**default ipv6 pim propagation-delay**

Parameter Description	Parameter	Description
	<i>milliseconds</i>	In the range from 1 to 32,765 in the unit of milliseconds

**Defaults** The default is 500 milliseconds.

**Command Mode** Interface configuration mode

**Usage Guide** Use this command to set the propagation-delay for the interface.

 Change of propagation delay or prune delay will influence the override interval of Join/prune message. As specified in the protocol, the override interval of Join/prune message must be less than its hold time or otherwise this will cause temporary interruption.

**Configuration Examples** The following example sets the propagation delay to 600 milliseconds.

```
Ruijie(config)# interface gi 0/3
Ruijie(config-if-GigabitEthernet 0/3)# ipv6 pim propagation-delay 600
```

Related Commands	Command	Description
	<b>ipv6 pim override-interval</b>	N/A
	<b>ipv6 pim neighbor-tracking</b>	N/A

**Platform Description** N/A

## 7.19 ipv6 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.

**ipv6 pim query-interval** *seconds*  
**no ipv6 pim query-interval**  
**default ipv6 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.

**Command Mode** Interface configuration mode

**Usage Guide** Upon updating the interval to send the Hello message, the time of holding the Hello message is updated by the following principle: The hold time is updated to be 3.5 times the transmission interval. If the transmission interval\*3.5 is more than 65535, the hold time is updated to 18725.

**Configuration** The following example sets the interval to send the hello packets.

```
Ruijie(config)# interface gi 0/3
Ruijie(config-if-GigabitEthernet 0/3)# ipv6 pim query-interval 60
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 7.20 ipv6 pim register-checksum-wholepkt

Use this command to calculate the checksum of the whole register packet. Use the **no** or **default** form of this command to restore the default setting.

```
ipv6 pim register-checksum-wholepkt [ group-list ipv6_access-list ]
no ipv6 pim register-checksum-wholepkt [ group-list ipv6_access-list ]
default ipv6 pim register-checksum-wholepkt [ group-list ipv6_access-list ]
```

Parameter Description	Parameter	Description
	<b>group-list</b> <i>ipv6_access-list</i>	

**Defaults** By default, the checksum of register messages calculates the head of PIM message and register message rather than the whole PIM message.

**Command Mode** Global configuration mode

**Usage Guide** Some vendors calculate checksum based on the overall registration packets. Ruijie Networks introduces this function for the compatibility with these vendors.

**Configuration** The following example calculates the checksum of the whole register packet.

```
Ruijie(config)#ipv6 pim register-checksum-wholepkt group-list
```



```
checksum-access-list
Ruijie(config)# ipv6 access-list 99 checksum-access-list
Ruijie(config-ipv6-acl)# permit ipv6 any ff66::6666/64
```

Related Commands	Command	Description
		<b>ipv6 access-list</b>

**Platform** N/A

**Description**

## 7.21 ipv6 pim register-rate-limit

Use this command to limit the rate of register packets.

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

**ipv6 pim register-rate-limit** *rate*

**no ipv6 pim register-rate-limit**

**default ipv6 pim register-rate-limit**

Parameter Description	Parameter	Description
		<i>rate</i>

**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)# ipv6 pim register-rate-limit 3000
```

Related Commands	Command	Description
		N/A

**Platform** N/A

**Description**

## 7.22 ipv6 pim register-rp-reachability

Use this command to check RP reachability before sending register packets.

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

**ipv6 pim register-rp-reachability**

**no ipv6 pim register-rp-reachability**

**default ipv6 pim register-rp-reachability**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** By default, the RP reachability is not checked before sending register packets.

**Command Mode** Global configuration mode

**Usage Guide** This command is used to check the RP reachability before transmission. If not, register packets are not transmitted.

**Configuration Examples** The following example checks the RP reachability before sending register packets.

```
Ruijie(config)# ipv6 pim register-rp-reachability
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 7.23 ipv6 pim register-source

Use this command to specify the source IPv6 address in the register packets.

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

**ipv6 pim register-source** { *ipv6\_local\_address* | *interface-type interface-number* }

**no ipv6 pim register-source**

**default ipv6 pim register-source**

Parameter Description	Parameter	Description
	<i>ipv6_local_address</i>	Source IPv6 address of register packets
	<i>interface-type</i> <i>interface-number</i>	Interface whose IPv6 address is used as the source IPv6 address of register packets

**Defaults** By default, the source IPv6 address of register packets is the IPv6 address of the DR interface connecting the multicast source.

**Command Mode** Global configuration mode

**Usage Guide** This command is used to configure the source IPv6 address of register messages. The source IPv6 address must be reachable. When RP receives the register packet, it transmits Register-Stop packet, using its source IPv6 address as the destination IPv6 address of the Register-Stop packet.

 It is not necessary to enable the PIM-SMv6 on the associated interfaces.

**Configuration Examples** The following example configures the source IPv6 address of register messages.

```
Ruijie(config)# ipv6 pim register-source 3333::3333
Ruijie(config)# ipv6 pim register-source gi 0/3
```

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 7.24 ipv6 pim register-suppression

Use this command to set the register suppression time.

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

**ipv6 pim register-suppression** *seconds*

**no ipv6 pim register-suppression**

**default ipv6 pim register-suppression**

**Parameter Description**

Parameter	Description
<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 ipv6 pim rp-register-kat command is not configured, executing this command on RP will modify the

period of RP keepalive.

**Configuration** The following example sets the register packet suppression time.

**Examples**

```
Ruijie(config)# ipv6 pim register-suppression 100
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 7.25 ipv6 pim rp embedded

Use this command to enable the embedded RP function.

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

**ipv6 pim rp embedded [ group-list *ipv6\_acl\_name* ]**

**no ipv6 pim rp embedded**

**default ipv6 pim rp embedded**

Parameter Description	Parameter	Description
		<b>group-list</b> <i>ipv6_acl_name</i>

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

**Command Mode** Global configuration mode

**Usage Guide** This command is used to enable the embedded RP function explicitly and to enable the embedded RP for the IPv6 multicast address of specified embedded RP address.

**Configuration Examples** The following example enables the embedded RP for the IPv6 multicast addresses of all embedded RP addresses.

```
Ruijie(config)# ipv6 pim rp embedded
```

Related Commands	Command	Description
		<b>ipv6 access-list</b>

**Platform** N/A

**Description**

## 7.26 ipv6 pim rp-address

Use this command to configure the static RP.

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

**ipv6 pim rp-address** *ipv6\_rp-address* [ *ipv6\_access\_list* ]

**no ipv6 pim rp-address** *ipv6\_rp-address* [ *ipv6\_access-list* ]

**default ipv6 pim rp-address** *ipv6\_rp-address* [ *ipv6\_access-list* ]

Parameter Description	Parameter	Description
	<i>ipv6_rp-address</i>	IPv6 address of RP
	<i>ipv6_access_list</i>	IPv6 ACL supporting named ACL

**Defaults** No IPv6 address is configured for the static RP by default.

**Command** Global configuration mode

**Mode**

**Usage Guide** This system supports the configuration of multicast static RP, as well as the configuration of static RP and BSR mechanisms at the same time. When you use this command, note that:

- If both the BSR mechanism and the static RP configuration take effect, the dynamic configuration takes precedence.
- You can configure multiple multicast groups (using ACL) or all multicast groups (not using ACL) for the static RP. But a static RP can be configured only once.
- If there are more than one static RP in a multicast group, the one of the highest IPv6 address is used.
- Only the addresses permitted by ACL are valid multicast groups. By default, all the multicast groups 224/4 are permitted.
- After configuration is performed, the static RP's source IPv6 address is inserted to the group range-based static RP group tree structure. Each group range-based static multicast group maintains the chain list structure of a static RP group. This chain list is sorted in descending order of IPv6 address. When you select a RP from a static RP group, the first entry, namely the one with the largest IPv6 address, will be selected first.

Deleting a static IPv6 address also deletes this address from all the existing static RP groups and selects one from in the existing RP group tree structure as the RP address.

**Configuration** The following example configures the RP static address.

**Examples**

```
Ruijie(config)# ipv6 pim rp-address 3333::3333 acl
Ruijie(config)# ipv6 access-list acl
Ruijie(config)# permit ipv6 any ff66::6666/64
```

Related Commands	Command	Description
	<b>ipv6 access-list</b>	N/A

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

## 7.27 ipv6 pim rp-candidate

Use this command to configure the candidate RP (C-RP).

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

**ipv6 pim rp-candidate** *interface-type interface-number* [ **priority** *priority-value* ] [ **interval** *interval-seconds* ] [ **group-list** *ipv6\_access-list* ]

**no ipv6 pim rp-candidate** [ *interface-type interface-number* ]

**default ipv6 pim rp-candidate** [ *interface-type interface-number* ]

**Parameter Description**

Parameter	Description
<i>interface-type</i> <i>interface-number</i>	Interface type and interface number
<i>priority-value</i>	(Optional) Priority in the range from 0 to 255, 192 by default
<i>interval-seconds</i>	(Optional) Interval in the range from 0 to 16383 in the unit of seconds, 60 by default
<i>ipv6_access_list</i>	(Optional) IPv6 ACL supporting named ACL

**Defaults** N/A

**Command Mode** Global configuration mode

**Usage Guide** In the PIM-SMv6 protocol, the shared tree RPT created by the multicast routing uses the Rendezvous Point (RP) as the root node. RP is elected by the candidate RPs. After BSR is elected, all C-RPs sends C-RP messages in the unicast form to BSR regularly, and BSR spreads the messages throughout the PIM domain.

To specify an interface as the candidate RP of a specific group, execute this command with ACL.

Note that the group range is calculated only based on the permit rule, not the deny rule.

**Configuration Examples** The following example configures the RP candidate.

```
Ruijie(config)# ipv6 pim rp-candidate gi 0/3 priority 200 group-list acl
interval 40
Ruijie(config)# ipv6 access-list acl
Ruijie(config-ipv6-acl)# permit ipv6 any ff66::6666/64
```

**Related Commands**

Command	Description
N/A	N/A

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

## 7.28 ipv6 pim rp-register-kat

Use this command to set the Keepalive Timer (KAT) of a (S, G) entry created by the register packet at the RP.

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

**ipv6 pim rp-register-kat** *seconds*

**no ipv6 pim rp-register-kat**

**default ipv6 pim rp-register-kat**

Parameter Description	Parameter	Description
		<i>seconds</i>

**Defaults** The default is equal to the sum of register probe time and three times register suppression time.

**Command Mode** Global configuration mode

**Usage Guide** The KAT value at the RP should be greater than three times the register suppression time at the source DR. Otherwise, the KAT will end and the entry (S,G) will time out before another register packet is sent, so that multicast stream will break down in a short while.

**Configuration Examples** The following example configures the KAT interval of RP.

```
Ruijie(config)# ipv6 pim rp-register-kat 250
```

Related Commands	Command	Description
		N/A

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

## 7.29 ipv6 pim sparse-mode

Use this command to enable PIM-SMv6 on the interface.

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

**ipv6 pim sparse-mode**

**no ipv6 pim sparse-mode**







**default ipv6 pim sparse-mode**

Parameter Description	Parameter	Description
	N/A	N/A

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

**Command Mode** Interface configuration mode

**Usage Guide** This command is used to enable PIM-SMv6 on the interface.

-  You need to enable multicast routing forwarding in the global configuration mode before enabling PIM-SMv6. Otherwise, multicast packets cannot be forwarded even though you enable PIM-SM.
-  During the execution of this command, if the prompt "Failed to enable PIM-SMv6 on <Interface Name>, resource temporarily unavailable, please try again" appears, re-execute this command.
-  During the execution of this command, if the prompt "PIM-SMv6 Configure failed! VIF limit exceeded in NSM!!!" appears; it indicates the allowed configured interface number exceeds the upper limit of the multicast interfaces. In this case, if you still need to enable PIM-SMv6 on the interface, delete the unnecessary PIM-SMv6, or PIM-DMv6 interfaces.
-  If the interface is of tunnel-type, only 6Over4 configuration tunnel, 6Over GRE tunnel, 6Over4 configuration tunnel and 6Over6 GRE tunnel support the IPv6 multicasting at the moment. The multicasting can also be enabled on other tunnel interfaces which do not support the multicasting, but no error message will be displayed and no multicast packets will be received and forwarded.
-  The multicast tunnel can only be built on the Ethernet interface, the nested tunnel and the multicast data Qos/ACL are not supported.
-  IPv6 multicast packets cannot be forwarded through SuperVLAN.

**Configuration Examples** The following example enables PIM-SMv6 on the interface.

```
Ruijie(config)# interface gi 0/3
Ruijie(config-if-GigabitEthernet 0/3)# ipv6 pim sparse-mode
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A



## 7.30 ipv6 pim sparse-mode subvlan

Use this command to enable PIM-SMv6 on a super VLAN. Use the **no** form or **default** form of this command to disable PIM-SMv6 on a super VLAN.

**ipv6 pim sparse-mode subvlan** [**all** | *vid*]

**no ipv6 pim sparse-mode subvlan**

**default ipv6 pim sparse-mode subvlan**

Parameter	Description
<b>all</b>	Sends packets to all sub VLANs.
<i>vid</i>	Sends packets to a specified sub VLAN.

**Defaults** PIM-SMv6 is disabled on super VLANs by default.

**Command** Interface configuration mode

**Mode**

**Usage Guide** In most scenarios on the PIM network, the PIM SMv6 protocol does not need to be enabled on interfaces of a super VLAN. In general, a super VLAN includes many sub VLANs. If the PIM SMv6 protocol is enabled on the interfaces of the super VLAN, multicast packets will be replicated and sent to all sub VLANs. As a result, traffic generated easily exceeds the device processing capability, causing protocol flapping. In some scenarios that require the PIM SMv6 protocol to be enabled on the interfaces of the super VLAN, the PIM-SMv6 sub VLAN function may be configured, to send packets to a specified sub VLAN or all sub VLANs.

**Configuration** The following example enables PIM-SMv6 on VLAN 100 to send packets to its sub VLAN 200.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# interface vlan 100
Ruijie(config-if-vlan 100)# ipv6 pim sparse-mode subvlan 200
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 7.31 ipv6 pim spt-threshold

Use this command to enable SPT switch.

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

**ipv6 pim spt-threshold** [**group-list** *ipv6\_access-list*]

**no ipv6 pim spt-threshold [ group-list *ipv6\_access-list* ]**  
**default ipv6 pim spt-threshold [ group-list *ipv6\_access-list* ]**

**Parameter  
Description**

Parameter	Description
<i>ipv6_access-list</i>	(Optional) IPv6 ACL supporting named ACL

**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 switch.

**Examples**

```
Ruijie(config)# ipv6 pim spt-threshold acl
Ruijie(config)# ipv6 access-list acl
Ruijie(config-ipv6-acl)# permit ipv6 fe80::2d0:f8ff:fe22:33ad /128
ff66::6666/64
```

**Related  
Commands**

Command	Description
<b>ipv6 access-list</b>	N/A

**Platform  
Description** N/A

## 7.32 ipv6 pim ssm

Use this command to enable SSM and set the SSM group address range.

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

**ipv6 pim ssm { default / range *ipv6\_access-list* }**

**no ipv6 pim ssm**

**default ipv6 pim ssm**

**Parameter  
Description**

Parameter	Description
<b>default</b>	Group in the range of FF3x::/32
<b>range <i>ipv6_access-list</i></b>	IPv6 ACL supporting named ACL

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

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

**Usage Guide** This command is used to enable PIM-SSMv6 (or in some specific multicast groups).

**Configuration** The following example sets the source-specific multicast of the multicast group range ACL.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim ssm range aclRuijie(config-ipv6-acl)# permit ipv6
fe80::2d0:f8ff:fe22:33ad /128 ff32::3333/64
```

**Related Commands**

Command	Description
ipv6 access-list	N/A

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

### 7.33 ipv6 pim static-rp-preferred

Use this command to configure a higher priority for static RP over the C-RP.  
 Use the **no** or **default** form of this command to restore the default setting.

- ipv6 pim static-rp-preferred**
- no ipv6 pim static-rp-preferred**
- default ipv6 pim static-rp-preferred**

**Parameter Description**

Parameter	Description
N/A	N/A

**Defaults** By default, the priority of the RP elected through BSR mechanism is high than the one configured statically.

**Command** Interface configuration mode  
**Mode**

**Usage Guide** With this command configured, the priority of the static RP is higher than the one elected through the BSR mechanism.

**Configuration** The following example configures the priority of the static RP is higher than the one elected through the BSR mechanism.

**Examples**

```
Ruijie(config-if)# ipv6 pim static-rp-preferred
```

**Related**

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

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

**Platform** N/A

**Description**

## 7.34 ipv6 pim triggered-hello-delay

Use this command to configure Triggered-Hello-Delay time on the interface.

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

**ipv6 pim triggered-hello-delay** *seconds*

**no ipv6 pim triggered-hello-delay**

**default ipv6 pim triggered-hello-delay**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<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 at the random time.

**Configuration Examples** The following example sets the triggered-hello-delay to 3 seconds.

```
Ruijie(config)# interface gi 0/3
Ruijie(config-if-GigabitEthernet 0/3)# ipv6 pim triggered-hello-delay 3
```

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

**Platform** N/A

**Description**

## 7.35 show debugging

Use this command to display the debugging status.

**show debugging**

<b>Parameter Description</b>	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> </tr> </tbody> </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/Global configuration mode/Interface configuration mode					
<b>Usage Guide</b>	N/A					
<b>Configuration Examples</b>	<p>The following example displays the debugging status.</p> <pre>Ruijie # show debugging PIM-SM Debugging status: PIM packet debugging is on.</pre>					
<b>Related Commands</b>	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>		Command	Description	N/A	N/A
Command	Description					
N/A	N/A					
<b>Platform Description</b>	N/A					

## 7.36 show ipv6 pim sparse-mode bsr-router

Use this command to display the BSR information.

**show ipv6 pim sparse-mode bsr-router**

<b>Parameter Description</b>	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>		Parameter	Description	N/A	N/A
Parameter	Description					
N/A	N/A					
<b>Defaults</b>	Privileged EXEC mode/Global configuration mode /Interface configuration mode					
<b>Command Mode</b>	Privileged EXEC mode/ global configuration mode / interface configuration mode					
<b>Usage Guide</b>	N/A					
<b>Configuration Examples</b>	<p>The following example displays BSR information.</p> <pre>Ruijie# show ipv6 pim sparse-mode bsr-router PIMv2 Bootstrap information This system is the Bootstrap Router (BSR)</pre>					

```

BSR address: 3333::8888
Uptime:00:03:31, BSR Priority: 64, Hash mask length: 126
Next bootstrap message in 00:00:47
Role: Candidate BSR Priority: 64, Hash mask length: 126
State: Elected BSR
Candidate RP: 3333::8888(GigabitEthernet 0/5)
Advertisement interval 60 seconds
Next Cand_RP_advertisement in 00:00:37

```

**Related  
Commands**

Command	Description
N/A	N/A

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

## 7.37 show ipv6 pim sparse-mode interface

Use this command to display PIM-SMv6 interface information.

**show ipv6 pim sparse-mode interface** [ *interface-type interface-number* ] [ **detail** ]

**Parameter  
Description**

Parameter	Description
<i>interface-type</i>	(Optional) Interface name. This command takes effect for all
<i>interface-number</i>	interfaces by default.
<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** N/A

**Configuration Examples** The following example displays the PIM-SMv6 interface information.

**Examples**

```

Ruijie #show ipv6 pim sparse-mode interface detail
GigabitEthernet 0/5 (vif 1):
Address fe80::2d0:f8ff:fe22:33ad, DR fe80::2d0:f8ff:fe22:34b3
Hello period 30 seconds, Next Hello in 6 seconds
Triggered Hello period 5 seconds
Secondary addresses:
    3333::8888
    4444::4444
Neighbors:

```

```
fe80::2d0:f8ff:fe22:34b3
```

Related Commands	Command	Description
	N/A	N/A

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

## 7.38 show ipv6 pim sparse-mode local-members

Use this command to display the local MLD information on the PIM-SMv6 interface.

**show ipv6 pim sparse-mode local-members** [ *interface-type interface-number* ]

Parameter Description	Parameter	Description
	<i>interface-type</i>	
<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 local MLD information on the PIM-SMv6 interface.

**Examples**

```
Ruijie (config-if)#show ipv6 pim sparse-mode local-members
PIM Local membership information
GigabitEthernet 0/5:
  (*, ff66::6666) : Include
```

Related Commands	Command	Description
	N/A	N/A

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

## 7.39 show ipv6 pim sparse-mode mroute

Use this command to display the PIM-SMv6 routing information.

**show ipv6 pim sparse-mode mroute** [ *group-or-source-address* [ *group-or-source-address* ] ]

Parameter Description	Parameter	Description
	<i>group-or-source-address</i>	Group address or source address. Two addresses cannot both be the group addresses or the source addresses.

**Defaults** N/A

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

**Usage Guide** This command is used to display route information. Only one group IPv6 address, one source IPv6 address or one group IPv6 address-source IPv6 address pair can be configured at a time. You can also specify no group IP address or source IPv6 address.

**Configuration Examples** N/A

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 7.40 show ipv6 pim sparse-mode neighbor

Use this command to display the neighbor information.

**show ipv6 pim sparse-mode neighbor [ detail ]**

Parameter Description	Parameter	Description
	<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..

**Examples** Ruijie# show ipv6 pim sparse-mode neighbor detail



```
Nbr fe80::2d0:f8ff:fe22:34b3 (GigabitEthernet 0/5)
Expires in 86 seconds
Secondary addresses:
6666::6666
```

**Related  
Commands**

Command	Description
N/A	N/A

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

## 7.41 show ipv6 pim sparse-mode nexthop

Use this command to display the next hop information, including the interface ID, address and metric.

**show ipv6 pim sparse-mode nexthop**

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults** N/A

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

**Usage Guide** N/A

**Configuration Examples** N/A

**Related  
Commands**

Command	Description
N/A	N/A

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

## 7.42 show ipv6 pim sparse-mode rp mapping

Use this command to display the information on all RPs and the multicast groups they serve.

**show ipv6 pim sparse-mode rp mapping**

<b>Parameter Description</b>	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><b>mapping</b></td> <td>All groups and RP information.</td> </tr> </tbody> </table>	Parameter	Description	<b>mapping</b>	All groups and RP information.
Parameter	Description				
<b>mapping</b>	All groups and RP information.				
<b>Defaults</b>	N/A				
<b>Command Mode</b>	Privileged EXEC mode/Global configuration mode/Interface configuration mode				
<b>Usage Guide</b>	N/A				
<b>Configuration Examples</b>	<p>The following example displays the information on all RPs and the multicast groups they serve.</p> <pre>Ruijie# show ipv6 pim sparse-mode rp mapping PIM Group-to-RP Mappings This system is the Bootstrap Router (v2) Group(s): ff00::/8   RP: 3333::1     Info source: 3333::1, via bootstrap, priority 192     Uptime: 00:12:40, expires: 00:01:50</pre>				
<b>Related Commands</b>	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>	Command	Description	N/A	N/A
Command	Description				
N/A	N/A				
<b>Platform Description</b>	N/A				

### 7.43 show ipv6 pim sparse-mode rp-hash

Use this command to display the RP information corresponding to the group address.

**show ipv6 pim sparse-mode rp-hash** *ipv6-group-address*

<b>Parameter Description</b>	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><i>ipv6_group-address</i></td> <td>IPv6 group address</td> </tr> </tbody> </table>	Parameter	Description	<i>ipv6_group-address</i>	IPv6 group address
Parameter	Description				
<i>ipv6_group-address</i>	IPv6 group address				
<b>Defaults</b>	N/A				
<b>Command Mode</b>	Privileged EXEC mode/Global configuration mode/Interface configuration mode				
<b>Usage Guide</b>	N/A				

**Configuration** The following example displays the RP information corresponding to the group address..

**Examples**

```
Ruijie# show ipv6 pim sparse-mode rp-hash ff66::6666
RP: 3333::8888
Info source: 3333::8888, via bootstrap
PIMv2 Hash Value 126
RP 3333::8888, via bootstrap, priority 192, hash value 1468234650
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform**

N/A

**Description**

## 7.44 show ipv6 pim sparse-mode track

Use this command to display the number of sent and received PIM packets during the period from the beginning of the statistics till now.

**show ipv6 pim sparse-mode track**

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults**

N/A

**Command  
Mode**

Privileged EXEC mode/Global configuration mode/Interface configuration mode

**Usage Guide**

This command is used to display the number of sent and received PIM packets during the period from the beginning of the statistics till now.. When the system starts up, it sets the start time of the statistics. The start time of the statistics is reconfigured and the PIMv6 packet counter is cleared on calling the clear ipv6 pim sparse-mode track every time.

**Configuration  
Examples**

The following example displays the number of sent and received PIM packets during the period from the beginning of the statistics till now.

```
Ruijie# show ipv6 pim sparse-mode track
PIMv6 packet counters track
Elapsed time since counters cleared: 00:04:03
                received      sent
Valid PIMSMv6 packets:      0          8
Hello:                      0          8
Join-Prune:                  0          0
Register:                     0          0
```

```

Register-Stop:          0          0
Assert:                 0          0
BSM:                   0          0
C-RP-ADV:              0          0
PIMDMv6-Graft:         0
PIMDMv6-Graft-Ack:     0
PIMDMv6-State-Refresh: 0
Unknown PIMv6 Type:    0
Errors:
Malformed packets:          0
Bad checksums:              0
Send errors:                0
Packets received with unknown PIMv6 version: 0
    
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 8 IGMP Snooping Commands

### 8.1 clear ip igmp snooping gda-table

Use this command to clear the Group Destination Address (GDA) table.

**clear ip igmp snooping gda-table**

<b>Parameter Description</b>	Parameter	Description
	N/A	N/A
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Privileged EXEC mode	
<b>Usage Guide</b>	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.	
<b>Configuration Examples</b>	The following example clears the Group Destination Address (GDA) table.	
<b>Examples</b>	<pre>Ruijie# clear ip igmp snooping gda-table</pre>	
<b>Platform Description</b>	N/A	

### 8.2 clear ip igmp snooping statistics

Use this command to clear IGMP Snooping statistics.

**clear ip igmp snooping statistics**

<b>Parameter Description</b>	Parameter	Description
	N/A	N/A
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Privileged EXEC mode	
<b>Usage Guide</b>	This command is used to clear the IGMP Snooping statistics, which can be displayed by using the <b>show ip</b>	

**igmp snooping statistics** command.

**Configuration** The following example clears the IGMP Snooping statistics.

**Examples**

```
Ruijie# clear ip igmp snooping statistics
```

**Platform** N/A

**Description**

### 8.3 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**

### 8.4 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 Description	Parameter	Description
-----------------------	-----------	-------------

<i>profile-number</i>	Profile number, in the range from 1 to 1024
-----------------------	---

**Defaults** No profile is created by default.

**Command Mode** Global configuration mode

**Usage Guide** The profile is a filter to permit/deny specified groups in the following steps:

- Use the **ip igmp profile** command to create a profile and enter profile configuration mode.
- Use the **range** command to define a profile range.
- Use the **permit** command to permit this profile in the filtering, or use the **deny** command to deny this profile in the filtering.
- If the **deny** command is used without any profile specified, all profiles in the profile are permitted.
- If the **permit** command is used without any profile specified, all profiles in the profile are denied.

**Configuration Examples** The following example creates and permits profile 1 with addresses from 224.2.2.2 to 224.2.2.244.

```
Ruijie(config)# ip igmp profile 1
Ruijie(config-profile)# range 224.2.2.2 224.2.2.244
Ruijie(config-profile)# permit
```

**Platform** N/A

**Description**

## 8.5 ip igmp snooping

Use this command to enable IGMP snooping and enter the IVGL mode.

**ip igmp snooping ivgl**

Use this command to enable IGMP snooping and enter the SVGL mode.

**ip igmp snooping svgl**

Use this command to enable IGMP snooping and enter the IVGL-SVGL mode.

**ip igmp snooping ivgl-svgl**

Use the **no** or **default** command to restore the default setting.

**no ip igmp snooping**

**default ip igmp snooping**

**Parameter Description**


Parameter	Description
N/A	N/A

**Defaults** IGMP Snooping is disabled by default.

**Command Mode** Global configuration mode

- Usage Guide**
- **IVGL (Independent VLAN Group Learning):** 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 VLAN.
  - **SVGL (Shared VLAN Group Learning):** In this mode, the hosts in different VLANs share the same multicast flow. A host can request multicast flows across VLANs. By designating a Shared VLAN, you can only forward the multicast flows received in this Shared VLAN to other member ports in different VLANs. In the SVGL mode, IGMP Profile must be used to divide the multicast address range, within which the multicast flow can be forwarded across VLANs. By default, all group range is not within the SVGL range and all multicast flows are dropped. As shown in Figure-3:
  - **IVGL-SVGL mode:** also known as promiscuous mode. In this mode, the IVGL mode and the SVGL mode can co-exist. Use IGMP Profile to divide a set of multicast address range to the SVGL, within which the member port of the multicast forwarding entry can be forwarded across VLANs and without which the member ports are forwarded in the same VLAN.

 SVGL mode and IVGL-SVGL mode conflict with the IP multicast function.

 PIM Snooping must depend on either IVGL or IVGL-SVGL mode of IGMP Snooping. Use **no ip igmp snooping** command to disable IGMP Snooping after PIM Snooping is disabled.

**Configuration** The following example enables IGMP Snooping and enters the IVGL mode.

**Examples**

```
Ruijie(config)# ip igmp snooping ivgl
```

The following example enables IGMP Snooping and enters the SVGL mode.

```
Ruijie(config)# ip igmp snooping svgl
Ruijie(config)# ip igmp snooping svgl profile 1
```

The following example enables IGMP Snooping and enters the IVGL-SVGL mode.

```
Ruijie(config)# ip igmp snooping ivgl-svgl
Ruijie(config)# ip igmp snooping svgl profile 1
```

**Platform** N/A

**Description**

## 8.6 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
<b>Defaults</b>	The default is 300 seconds.	
<b>Command Mode</b>	Global configuration mode	
<b>Usage Guide</b>	<p>If a dynamic routing interface does not receive IGMP query packets or PIM hello packets before aged, this interface will be deleted.</p> <p>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.</p>	
<b>Configuration Examples</b>	<p>The following example sets the aging time of the routing interface that the switch learns dynamically to 100 seconds.</p> <pre>Ruijie(config)# ip igmp snooping dyn-mr-aging-time 100</pre>	
<b>Platform Description</b>	N/A	

## 8.7 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
<b>Defaults</b>	This function is disabled by default.	
<b>Command Mode</b>	Global configuration mode	
<b>Usage Guide</b>	<p>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.</p> <p>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.</p>	

**Configuration** The following example enables the fast leave function.

**Examples**

```
Ruijie(config)# ip igmp snooping fast-leave
```

**Platform** N/A

**Description**

## 8.8 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** The following example specifies profile 1 for interface fastEthernet 0/1.

**Examples**

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip igmp snooping filter 1
```

**Platform** N/A

**Description**

## 8.9 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**

<b>Parameter</b>	<b>Parameter</b>	<b>Description</b>
<b>Description</b>	<i>seconds</i>	Aging time. The unit is second. The value ranges from 1 to 65,535.
<b>Defaults</b>	The default is 260 seconds.	
<b>Command Mode</b>	Global configuration mode	
<b>Usage Guide</b>	<p>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.</p> <p>When such an IGMP packet is received, the system resets the aging timer for the port. The duration of this timer is determined by <b>host-aging-time</b>. 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 <b>ip igmp snooping host-aging-time</b> command is executed, the aging time will be determined by <b>host-aging-time</b>. This command takes effect only after the system receives the next IGMP packet. This command does not change the current aging time.</p>	
<b>Configuration Examples</b>	<p>The following example sets the aging time to 30 seconds.</p> <pre>Ruijie(config)# ip igmp snooping host-aging-time 30</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 igmp snooping I2-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 I2-entry-limit** *number*  
**no ip igmp snooping I2-entry-limit**  
**default ip igmp snooping I2-entry-limit**

<b>Parameter</b>	<b>Parameter</b>	<b>Description</b>
<b>Description</b>	<i>number</i>	Number of multicast groups. The value ranges from 0 to 65,536.
<b>Defaults</b>	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

### 8.11 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 address**

**no ip igmp snooping limit-ipmc vlan vid address gaddress server address**

**default ip igmp snooping limit-ipmc vlan vid address gaddress server address**


**Parameter Description**

Parameter	Description
<i>vid</i>	VLAN ID
<i>group-address</i>	Multicast group address
<i>source-address</i>	Multicast source IP address

**Defaults** Only source IP address check is enabled by default.

**Command Mode** Global configuration mode

**Usage Guide** This command is used to filter the multicast packets. With it enabled, all multicast packets from illegal IP addresses will be discarded.

 Source IP address check and multicast routing function cannot be enabled meanwhile.

Configuration steps:

1. Enable source IP address check and specify the source IP address.
2. (Optional) Specify the multicast group address and source IP address for a specific VLAN.

**Configuration** The following example enables source address check to receive multicast packets only from

**Examples** 192.168.1.10 and allows packets into VLAN 2013 and VLAN 104 from (192.168.1.10 , 229.1.1.1).

```
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**

## 8.12 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** N/A

**Description**

## 8.13 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**

## 8.14 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 Description** N/A

## 8.15 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** Global configuration mode

**Mode****Usage Guide** N/A**Configuration** The following example sets the multicast preview interval as 100 seconds on the 100M port of 0/1:

```

Examples Ruijie(config)# ip igmp snooping preview 1
Ruijie(config)# ip igmp snooping preview interval 100

```

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

## 8.16 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**

## 8.17 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
```

<b>Parameter Description</b>	Parameter	Description
	<b>vlan vid</b>	VLAN ID. By default, the specified version is supported on all VLANs.
	<i>a.b.c.d</i>	Source IP address of the IGMP querier
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Global configuration mode	
<b>Usage Guide</b>	<p>After enabling IGMP querier, you must configure a source IP address for the IGMP querier to activate this function..</p> <p>If the IGMP querier source IP has been specified in VLAN, the source IP configured in the relevant VLAN will be used first.</p>	
<b>Configuration Examples</b>	<p>The following example specifies the source IP of the IGMP querier as 1.1.1.1 on the device.</p> <pre>Ruijie(config)# ip igmp snooping querier address 1.1.1.1</pre> <p>The following example specifies the source IP of the IGMP querier as 1.1.1.1 in VLAN 3.</p> <pre>Ruijie(config)# ip igmp snooping vlan 3 querier address 1.1.1.1</pre>	
<b>Platform Description</b>		

## 8.18 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
```

<b>Parameter Description</b>	Parameter	Description
	<i>num</i>	Maximum response time from 1 to 25 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 10 seconds.	
<b>Command</b>	Global configuration mode	

**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**

### 8.19 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.

**Defaults** The default is 60 seconds.

**Command Mode** Global configuration mode

**Usage Guide** If the query interval has been configured in the corresponding VLAN, the value specified in VLAN will be used first.

**Configuration** The following example configures the query interval on the device.

**Examples**

```
Ruijie(config)# ip igmp snooping querier query-interval 100
```

The following example configures the query interval in VLAN 3.

```
Ruijie(config)# ip igmp snooping vlan 3 querier query-interval 100
```

**Platform** N/A

**Description**

## 8.20 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.

**Defaults** The default is 125 seconds.

**Command Mode** Global configuration mode

**Usage Guide** After globally enabling IGMP querier, if the device is elected as a non-querier, execute this command to change the expiration timer for non-querier.  
If expiration timer has been configured in the corresponding VLAN, the value specified in VLAN will be used first.

**Configuration Examples** The following example configures the non-querier expiration timer on the device.

```
Ruijie(config)# ip igmp snooping querier timer expiry 60
```

The following example configures the non-querier expiration timer in VLAN 3.

```
Ruijie(config)# ip igmp snooping vlan 3 querier timer expiry 60
```

**Platform** N/A

**Description**

## 8.21 ip igmp snooping querier version

Use the following commands to specify IGMP Snooping querier version.

**ip igmp snooping [ vlan vid ] querier version 1**

**ip igmp snooping [ vlan vid ] querier version 2**

**ip igmp snooping [ vlan vid ] querier version 3**

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

**no ip igmp snooping [ vlan vid ] querier version**

**default ip igmp snooping [ vlan vid ] querier version**

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

<b>vlan</b> <i>vid</i>	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, IGMPv2 and IGMPv3 are supported.  
If an IGMP querier version has been configured in a VLAN, the version specified in the VLAN will be used first.

**Configuration** The following example configures IGMP querier version on the device.

**Examples**

```
Ruijie(config)# ip igmp snooping querier version 1
```

**Platform** N/A

**Description**

## 8.22 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
	<i>seconds</i>	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**

## 8.23 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 Examples** The following example enables the multicast source IP address check function.

```
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**

## 8.24 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**

<b>Parameter Description</b>	Parameter	Description
	N/A	N/A
<b>Defaults</b>	This function is disabled by default.	
<b>Command Mode</b>	Global configuration mode	
<b>Usage Guide</b>	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.	
<b>Configuration Examples</b>	The following example enables the source port check function of IGMP Snooping.	
	<pre>Ruijie(config)# ip igmp snooping source-check port</pre>	
<b>Platform Description</b>	N/A	

## 8.25 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**

<b>Parameter Description</b>	Parameter	Description
	N/A	N/A
<b>Defaults</b>	This function is disabled by default.	
<b>Command Mode</b>	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** The following example enables IGMP snooping suppression on the device.

**Examples**

```
Ruijie(config)# ip igmp snooping suppression enable
```

**Platform** N/A

**Description**

## 8.26 ip igmp snooping svgl profile

Use this command to specify the multicast group address range applied in the SVGL/IVGL-SVGL mode. Use the **no** or **default** form of this command to restore the default setting.

**ip igmp snooping svgl profile** *profile-number*

**no ip igmp snooping svgl profile**

**default ip igmp snooping svgl profile**

Parameter Description	Parameter	Description
	<i>profile-number</i>	Profile number, in the range of 1-1,024

**Defaults** No profile is associated.

**Command Mode** Global configuration mode

**Usage Guide** When the IGMP Snooping works in the SVGL and IVGL-SVGL mode, a profile shall be associated to specify the multicast group address range applied in the SVGL or IVGL-SVGL mode. That is to say, the member ports of the multicast forwarding entry can be forwarded across the VLANs while the member ports of the multicast forwarding entry in the other multicast address range must belong to the same VLAN.

**Configuration** The following example specifies the profile 2 applied in SVGL mode.

**Examples**

```
Ruijie(config)# ip igmp snooping svgl profile 2
```

**Platform** N/A

**Description**

## 8.27 ip igmp snooping svgl subvlan

Use this command to specify the subvlan of multicast VLAN.

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

**ip igmp snooping svgl subvlan** [*vid-range*]

**no ip igmp snooping svgl subvlan** [*vid-range*]

**default ip igmp snooping svgl subvlan** [*vid-range*]

Parameter Description	Parameter	Description
	<i>vid-range</i>	VLAN ID or range of VLAN ID

**Defaults** By default, all VLANs except shared VLANs serve as its sub VLANs.

**Command Mode** Global configuration mode

**Usage Guide** This command only takes effect in SVGL and IVGL-SVGL mode.

**Configuration Examples** The following example specifies VLAN 3 as the shared VLAN and VLAN 2, VLAN 5 to 7 as the sub VLANs.

```
Ruijie(config)# ip igmp snooping svgl vlan 3
Ruijie(config)# ip igmp snooping svgl subvlan 2,5-7
```

**Platform Description** N/A

## 8.28 ip igmp snooping svgl vlan

Use this command to specify the shared VLAN in SVGL mode.

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

**ip igmp snooping svgl vlan** *vid*

**no ip igmp snooping svgl vlan**

**default ip igmp snooping svgl vlan**

Parameter Description	Parameter	Description
	<i>vid</i>	VLAN ID

**Defaults** By default , the shared VLAN is VLAN 1.

**Command Mode** Global configuration mode

**Usage Guide** This command only works in the SVGL and IVGL-SVGL mode.

**Configuration** The following example specifies the vlan2 as the shared vlan



**Examples** The following example specifies VLAN 3 as the shared VLAN and VLAN 2, VLAN 5 to 7 as the sub VLANs.

```
Ruijie(config)# ip igmp snooping svgl vlan 3
Ruijie(config)# ip igmp snooping svgl subvlan 2,5-7
```

**Platform** N/A

**Description**

## 8.29 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**

## 8.30 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**

## 8.31 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> <i>interface-number</i>	Interface ID

**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**

## 8.32 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.

<b>Command Mode</b>	Global configuration mode
<b>Usage Guide</b>	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.
<b>Configuration Examples</b>	The following example configures a static member interface for the multicast group 224.1.1.1. <pre>Ruijie(config)# ip igmp snooping vlan 1 static 224.1.1.1 interface GigabitEthernet 0/1</pre>
<b>Platform Description</b>	N/A

## 8.33 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

**Defaults** The forwarding of the multicast streams in the range specified by the profile is denied.

**Command Mode** Profile configuration mode

**Usage Guide** A profile is used to filter a group of multicast packets, so as to assist other features.

Configuration steps:

1. Use the **ip igmp profile** command to create a profile and enter profile configuration mode.
2. Use the **range** command to define a range for the profile.
3. Use the **permit** command to permit the multicast forwarding for the profile.

**Configuration Examples** The following example permits the forwarding of the multicast streams from 224.2.2.2 to 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
Ruijie(config-profile)# permit
```

**Platform Description** N/A

## 8.34 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

**Defaults** No range is defined for a profile by default.

**Command Mode** Profile configuration mode

**Usage Guide** A profile is used to filter a group of multicast packets, so as to assist other features.

Configuration steps:

1. Use the **ip igmp profile** command to create a profile and enter profile configuration mode.
2. Use the **range** command to define a range for the profile.
3. Use the **permit** command to permit the multicast forwarding for the profile.

**Configuration Examples** The following is an example of allowingpermits the forwarding of the multicast streams from 224.2.2.2 to 224.2.2.244: of profile 1.

```
Ruijie(config)# ip igmp profile 1
Ruijie(config-profile)# range 224.2.2.2 224.2.2.244224.2.2.2
Ruijie(config-profile)# permit
```

**Platform** N/A

**Description**

## 8.35 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

<b>Command Mode</b>	Privileged EXEC mode
<b>Usage Guide</b>	Use this command to display the profile information.
<b>Configuration Examples</b>	The following example displays the profile information.
<b>Examples</b>	<pre>Ruijie(config-if)# show ip igmp profile Profile 1 Permit range 224.0.1.0, 239.255.255.255</pre>

## 8.36 show ip igmp snooping

Use this command to display related information of IGMP Snooping.

**show ip igmp snooping** [**gda-table** | **interfaces** *interface-type interface-number* | **mdevice** | **statistics** [**vlan** *vlan-id*] | **querier** [ **detail** | **vlan** *vid* ]

Parameter Description	Parameter	Description
	<b>vlan</b> <i>vid</i>	VLAN ID. By default, IGMP Snooping information of all VLANs are displayed.
	<i>interface-type</i> <i>interface-number</i>	Interface type and number

<b>Defaults</b>	N/A
<b>Command Mode</b>	Privileged EXEC mode
<b>Usage Guide</b>	N/A
<b>Configuration Examples</b>	The following example displays global IGMP Snooping information.
<b>Examples</b>	<pre>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</pre>

```
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>	

## 9 MLD Snooping Commands

### 9.1 clear ipv6 mld snooping gda-table

Use this command to clear the forwarding table information learned dynamically.

**clear ipv6 mld snooping gda-table**

<b>Parameter Description</b>	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** Use this command to clear the forwarding table information learned dynamically.

**Configuration Examples** The following example clears the forwarding table information learned dynamically:

```
Ruijie# clear ipv6 mld snooping gda-table
```

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

**Platform Description** N/A

### 9.2 clear ipv6 mld snooping statistics

Use this command to clear the MLD Snooping statistics, including the entry number, the entry volume, the number of various received packets, the group information and the interface information of the corresponding group.

**clear ipv6 mld snooping statistics**

<b>Parameter Description</b>	Parameter	Description
	N/A	N/A

**Defaults** N/A



**Command Mode** Privileged EXEC mode

**Usage Guide** Use the **show ipv6 mld snooping statistics** command to verify the configuration.

**Configuration Examples** The following example clears the MLD Snooping statistics.

```
Ruijie# clear ipv6 mld snooping statistics
```

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

### 9.3 deny

Use this command to prevent the multicast flow profile within the specified range from being forwarded in the profile configuration mode.

**deny**

**Parameter Description**

Parameter	Description
N/A	N/A

**Defaults** The default profile action is **deny**.

**Command Mode** Profile configuration mode

**Usage Guide** Profile is a kind of group “filter” that can be referred to by other functions.

Configuration Steps:

1. Use the **ipv6mld profile** command to create a profile and enter the profile mode.
2. Use the **range** command to define a group.
3. Use the **permit** command to allow this group to pass the filtering; Use the **deny** command to filter the packets of this group. The default command is **deny**.

**Configuration Examples** The following example prevents the multicast flow profile within the range from FF15::1 to FF15::100 from being forwarded.

```
Ruijie(config)# ipv6 mld profile 1
Ruijie(config-profile)# range FF15::1 FF15::100
Ruijie(config-profile)# deny
```

Related Commands	Command	Description
	<b>ipv6 mld profile</b>	Creates one profile.
	<b>range</b>	Sets the multicast address range.
	<b>permit</b>	Sets the profile action permit.

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

## 9.4 ipv6 mld profile

Use the following command to create a profile.

Use the **no** or **default** form of this command to delete a profile.

**ipv6 mld profile** *profile-number*

**no ipv6 mld profile** *profile-number*

**default ipv6 mld profile** *profile-number*

Parameter Description	Parameter	Description
	<i>profile-number</i>	

**Defaults** N/A

**Command Mode** Global configuration mode

**Usage Guide** Profile is a kind of group “filter” that can be referred to by other functions.  
 Configuration Steps:

1. Use the **ipv6mld profile** command to create a profile and enter the profile mode.
2. Use the **range** command to define a group.
3. Use the **permit** command to allow this group to pass the filtering; Use the **deny** command to filter the packets of this group. The default command is **deny**.

**Configuration Examples** The following example creates profile 1 and allows the packets sent by devices with MAC address ranging from FF15::1 to FF15::100 to pass the filtering.

```
Ruijie(config)#ipv6 mld profile 1
Ruijie(config-profile)#range FF15::1 FF15::100
Ruijie(config-profile)#permit
```

Related Commands	Command	Description
	N/A	

**Platform** N/A

**Description**

## 9.5 ipv6 mld snooping

Use this command to enable MLD Snooping and specify IVGL/SVGL/IVGL-SVGL mode.

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

**ipv6 mld snooping { ivgl | svgl | ivgl-svgl }**

**no ipv6 mld snooping [ ivgl | svgl | ivgl-svgl ]**

**default ipv6 mld snooping [ ivgl | svgl | ivgl-svgl ]**

Parameter Description	Parameter	Description
	<b>ivgl</b>	MLD Snooping is running IVGL mode.
	<b>svgl</b>	MLD Snooping is running SVGL mode.
	<b>ivgl-svgl</b>	MLD Snooping is running IVGL-SVGL mode.

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

**Command Mode** Global configuration mode

- Usage Guide**
- In IVGL mode, multicast flow in each VLAN is independent. The host only requests multicast flow from the routing interface within the same VLAN. The device forwards the multicast flow from any VLAN to the member port within the same VLAN.
  - In SVGL mode, multicast flow is shared among VLANs. The host can request multicast flow across VLANs. Shared VLAN (VLAN 1 by default) should be specified. Only multicast flow from Shared VLAN can be forwarded to all member ports within the group address range, which may belong to different VLANs. Profile is used to specify a group range for SVGL. Only multicast flow within this range can be forwarded across VLANs. The other multicast flow is discarded.
  - In IVGL-SVGL mode, Profile is used to specify a group range for SVGL. Multicast flow within this range is in SVGL mode and the other multicast flow is in IVGL mode.
  - IPv6 multicast packets cannot be forwarded through SuperVLAN.

**Configuration Examples** The following example enables MLD Snooping IVGL mode.

```
Ruijie(config)# ipv6 igmp snooping ivgl
```

The following example enables MLD Snooping SVGL mode and specifies the shared VLAN and SVGL group range as VLAN1 and profile1 respectively.

```
Ruijie(config)# ipv6 igmp snooping svgl
```

```
Ruijie(config)# ipv6 igmp snooping svgl profile 1
```

Related Commands	Command	Description
------------------	---------	-------------

N/A	N/A
-----	-----

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

## 9.6 ipv6 mld snooping dyn-mr-aging-time

Use this command to set the aging time of the dynamic multicast route port.

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

**ipv6 mld snooping dyn-mr-aging-time** *second*

**no ipv6 mld snooping dyn-mr-aging-time**

**default ipv6 mld snooping dyn-mr-aging-time**


Parameter Description	Parameter	Description
	<i>second</i>	Sets the aging time of the dynamic multicast route port, in the range from 1 to 3,600 in the unit of seconds.

**Defaults** The default is 300 seconds.

**Command Mode** Global configuration mode.

**Usage Guide** The switch will remove the dynamic multicast router interface from the router interface list if it fails to receive the MLD general group query packets or the ipv6 PIM Hello packets within the aging timeout on this interface.

Use this command to change the aging time of the routing ports learned dynamically. If the aging time is too short, routing ports will be added and deleted frequently.

 By default, the dynamic learning of routing ports is enabled. If learning fails, use the **show run** command to check whether this function is enabled.

**Configuration Examples** The following example sets the aging time of the dynamic multicast routing port to 100 seconds.

```
Ruijie(config)# ipv6 mld snooping dyn-mr-aging-time 100
```

Related Commands	Command	Description
	N/A	N/A

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

## 9.7 ipv6 mld snooping fast-leave enable

Use this command to enable the MLD Snooping fast-leave function.

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

**ipv6 mld snooping fast-leave enable**

**no ipv6 mld snooping fast-leave enable**


**default ipv6 mld snooping fast-leave enable**

Parameter Description	Parameter	Description
	N/A	N/A

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

**Command Mode** Global configuration mode.

**Usage Guide** The interface fast leave is that when IPv6 MLD Leave packets sent from the host are received on an interface, the interface is removed from the outgoing interface list of the corresponding forwarding entry. Then, the switch will not forward the received IPv6 MLD specific group query packets to the interface.

 If there is only one receiver connected with the interface, enable the interface fast leave function to save the bandwidth and resources.

**Configuration Examples** The following example enables mld snooping fast-leave.

```
Ruijie(config)# ipv6 mld snooping fast-leave
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 9.8 ipv6 mld snooping filter

Use this command to filter the specific multicast flows.

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

**ipv6 mld snooping filter *profile-number***

**no ipv6 mld snooping filter**

**default ipv6 mld snooping filter**

Parameter Description	Parameter	Description
	<i>profile-number</i>	Sets the profile number in the range from 1 to 1024.

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

**Command Mode** Interface configuration mode

**Usage Guide** You can configure an MLD Profile on an interface. If the MLD Report packets are received on the interface, the layer-2 device will determine whether the multicast address to be joined the interface is within the allowed range of the MLD Profile. The specified profile must be created before using this command.

**Configuration Examples** The following example associates profile1 with the interface GigabitEthernet 0/1.

```
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# ipv6 mld snooping filter 1
```

Related Commands	Command	Description
	<b>ipv6 mld profile</b>	Creates a profile.

**Platform Description** N/A

## 9.9 ipv6 mld snooping host-aging-time

Use this command to set the aging time of the dynamic member port.

Use the **no** form of this command to cancel this configuration.

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

**ipv6 mld snooping host-aging-time** *seconds*

**no ipv6 mld snooping host-aging-time**

**default ipv6 mld snooping host-aging-time**

Parameter Description	Parameter	Description
	<i>seconds</i>	Sets the aging time of the dynamic member port, in seconds, ranging from 1-65,536 in the unit of seconds.

**Defaults** The default aging time of the dynamic member port is 260 seconds.

**Command Mode** Global configuration mode

**Usage Guide** The switch will remove the dynamic multicast router interface from the router interface list if it fails to receive the MLD general group query packets or the IPv6 PIM Hello packets within the aging timeout on this interface.

When the MLD Snooping is enabled, the port that receives the MLD Report packet will learn to be a dynamic member port. The default aging time of such dynamic member port is 260 seconds. You can use this command to adjust the aging time. This configuration takes effect after the port receives the the next Report packet. The aging time of the dynamic member port should be longer than the query interval.

**Configuration** The following example sets the aging time of the dynamic member port to 30 seconds:

**Examples** Ruijie(config)# ipv6 mld snooping host-aging-time 30

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 9.10 ipv6 mld snooping max-groups

Use this command to set the maximum group allowed to join the interface dynamically.

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

**ipv6 mld snooping max-groups** *number*

**no ipv6 mld snooping max-groups**

**default ipv6 mld snooping max-groups**

Parameter Description	Parameter	Description
	<i>number</i>	

**Defaults** The default is 65,536.

**Command Mode** Interface configuration mode

**Usage Guide** With this command configured, when the group number exceeds the specified range on the interface, the switch will not receive and deal with the MLD Report packets.

The multicast groups are counted based on VLANs of an interface. If the interface has 3 VLANs, the counting result is 3 instead of 1 when an FF15::100 multicast request is received by all the VLAN.

**Configuration** The following example sets the maximum 100 multicast group on the interface GigabitEthernet 0/1.

**Examples**

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# ipv6 mld snooping max-groups 100
```

**Related  
Commands**

Command	Description
<b>ipv6 mld snooping filter</b>	Filters the multicast group on the interface.

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

## 9.11 Ipv6 mld snooping mrouter learn

Use this command to enable the switch to dynamically learn MLD query or PIM packets to identify the mrouter interface automatically.

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

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

**ipv6 mld snooping [ vlan *vid* ] mrouter learn**

**no ipv6 mld snooping [ vlan *vid* ] mrouter learn**

**default ipv6 mld snooping [ vlan *vid* ] mrouter learn**


**Parameter  
Description**

Parameter	Description
<b>vlan <i>vid</i></b>	VLAN ID, in the range from 1 to 4094

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

**Command  
Mode** Global configuration mode

**Usage Guide** The routing interface is the interface of the multicast device connected with the peer device. By default, the dynamically learned routing interface is enabled on the layer-2 multicast device. Use the **no** option to disable this function and clear all dynamically-learned routing interfaces.

 With the source port check enabled, only the multicast flow through the mroute interface are valid and forwarded to the registered interface on the layer-2 multicast device. Those multicast flow through the non-mroute interface are invalid and will be discarded.

**Configuration** The following example enables the dynamic multicast routing port learning function for VLAN1.

**Examples**

```
Ruijie(config)# no ipv6 mld snooping mrouter learn
Ruijie(config)# ipv6 mld snooping vlan 1 mrouter learn
```

**Related  
Commands** N/A



## 9.12 ipv6 mld snooping query-max-response-time

Use this command to set the maximum response time of the MLD general query packet.

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

**ipv6 mld snooping query-max-response-time** *seconds*

**no ipv6 mld snooping query-max-response-time**

**default ipv6 mld snooping query-max-response-time**

Parameter Description	Parameter	Description
	<i>seconds</i>	Sets the maximum response time of the MLD general query packet in the range from 1 to 65,535 in the unit of seconds.

**Defaults** The default is 10 seconds.

**Command Mode** Interface configuration mode

**Usage Guide** Upon receiving the MLD general query packets, the Layer-2 multicast device updates the aging timer of all member ports. The time of the timer is the longest response value. When the timer value decreases to 0, it indicates that there is no member receiving the multicast flow on the interface, and the Layer-2 device removes this interface from the MLD Snooping forwarding list.

Upon receiving the MLD specific group query packets, the Layer-2 multicast device enables the aging timer of all member ports in this specific group. The time of the timer is the longest response value. When the timer value decreases to 0, it indicates that there is no member receiving the multicast flow on the interface, and the Layer-2 device removes this interface from the MLD Snooping forwarding list.

For the source query packets of the MLD specific group, the timer is not updated.

The configured maximum response time is effective after another query packet is received.

**Configuration Examples** The following example sets the maximum response time of the MLD general query packet to 100 seconds.

```
Ruijie(config)# ipv6 mld snooping query-max-response-time 100
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 9.13 ipv6 mld snooping source-check port

Use this command to enable the MLD source-check port.

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

**ipv6 mld snooping source-check port**

**no ipv6 mld snooping source-check port**

**default ipv6 mld snooping source-check port**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** The source-check port is disabled by default.

**Command Mode** Global configuration mode

**Usage Guide** The MLD Snooping source port check function is to limit the MLD multicast flow through the interace strictly. With the source port check disabled, all video flow are illegal and forwarded to the registered member port according to the MLD Snooping forwarding list. With the MLD Snooping source port check enabled, only the mulitcast flow through the mroute interface is legal and forwarded to the registered interface by the layer-2 multicast device; and the multicast flow through the non-mroute interface are illegal and discarded. This command is used to enabled the source port check globally. Once this function is enabld, all multicast flow must come from the mroute interface, or they'll be discarded.

**Configuration** The following example enables MLD Snooping source-check port.

**Examples**

```
Ruijie(config)# ipv6 mld snooping source-check port
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 9.14 ipv6 mld snooping suppression enable

Use this command to enable the MLD Snooping suppression.

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

**ipv6 mld snooping suppression enable**

**no ipv6 mld snooping suppression enable**

**default ipv6 mld snooping suppression enable**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** The MLD Snooping suppression function is disabled by default.

**Command Mode** Global configuration mode.

**Usage Guide** With the IPv6 MLD Snooping suppression function enabled, within the query interval, the layer-2 device will only forward the first received MLD Report packet in an IPv6 multicast group to the layer-3 device, but not the other MLD Report packets in the same IPv6 multicast group, reducing the packet number in the network.  
This command is used to enable the IPv6 MLD Snooping suppression, and only the MLDv1 Report packets are suppressed rather than the MLDv2 Report packets.

**Configuration Examples** The following example enables MLD Snooping suppression.

```
Ruijie(config)# ipv6 mld snooping suppression enable
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 9.15 ipv6 mld snooping svgl profile

Use this command to specify the group address range to be in the SVGL mode.

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

**ipv6 mld snooping svgl profile** *profile-number*

**no ipv6 mld snooping svgl profile**

**default ipv6 mld snooping svgl profile**

Parameter Description	Parameter	Description
	<i>profile-number</i>	Sets the profile number, in the range from 1 to 1024.

**Defaults** No profiles are associated with SVGL by default.

**Command Mode** Global configuration mode

**Usage Guide** With the SVGL mode or IVGL-SVGL mode configured for the MLD Snooping working mode, a profile shall be associated with the IVGL for the purpose of specifying the group address range in the SVGL mode. That is to say, the member port of the multicast forwarding entry can be forwarded across the VLANs, while the member ports of the corresponding multicast forwarding entries within other multicast address range must belong to the same VLAN. By default, no profile is associated, which means that apply no multicast group in the SVGL mode.

**Configuration Examples** The following example specifies the SVGL mode application range as the profile 2 group address range.

```
Ruijie(config)# ipv6 mld snooping svgl profile 2
```

**Related Commands**

Command	Description
<code>ipv6 mld snooping ivgl</code>	Enables the MLD Snooping and set the ivgl mode.
<code>ipv6 mld snooping ivgl-svgl</code>	Enables the MLD Snooping and set the ivgl-svgl mode.

**Platform** N/A

**Description**

## 9.16 ipv6 mld snooping svgl vlan

Use this command to specify the shared VLAN in MLD Snooping SVGL mode.

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

**ipv6 mld snooping svgl vlan** *vid*

**no ipv6 mld snooping svgl vlan**

**default ipv6 mld snooping svgl vlan**

**Parameter Description**

Parameter	Description
<i>vid</i>	The VLAN ID, in the range from 1 to 4094.

**Defaults** The default is 1.

**Command Mode** Global configuration mode

**Usage Guide** This command is used to specify the SVGL shared VLAN if MLD Snooping is running in SVGL or IVGL-SVGL mode.

**Configuration** The following example sets the shared VLAN in MLD Snooping SVGL mode to 5.

**Examples** `Ruijie(config)# ipv6 mld snooping svgl vlan 5`

Related Commands	Command	Description
	N/A	N/A

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

## 9.17 ipv6 mld snooping vlan

Use this command to enable the MLD Snooping function for the specified VLAN.

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

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

**ipv6 mld snooping vlan** *vid*

**no ipv6 mld snooping vlan** *vid*

**default ipv6 mld snooping vlan** *vid*

Parameter Description	Parameter	Description
	<i>vid</i>	

**Defaults** The MLD Snooping function is enabled by default.

**Command Mode** Global configuration mode

**Usage Guide** By default, the MLD Snooping is enabled in all VLANs. You can disable the MLD Snooping for the specified VLAN.

**Configuration Examples** The following example disables the MLD Snooping function in VLAN 2 in IVGL mode.

```
Ruijie(config)# ipv6 mld snooping ivgl
Ruijie(config)# no ipv6 mld snooping vlan 2
```

Related Commands	Command	Description
	N/A	N/A

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

## 9.18 ipv6 mld snooping vlan mrouter interface

Use this command to set the static mrouter interface.

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

**ipv6 mld snooping vlan** *vid* **mrouter interface** *interface-type interface-number*

**no ipv6 mld snooping vlan** *vid* **mrouter interface** *interface-type interface-number*

**default ipv6 mld snooping vlan** *vid* **mrouter interface** *interface-type interface-number*

Parameter Description	Parameter	Description
	<i>vid</i>	VLAN ID, in the range from 1 to 4094.
	<i>interface-type</i> <i>interface-number</i>	The interface number

**Defaults** No static mrouter interface is configured by default.

**Command Mode** Global configuration mode

**Usage Guide** Use this command to set the static mrouter interface for the purpose that all IPv6 multicast data received on the switch can be forwarded. With the source port check function enabled, only the multicast flow through the mroute interface can be forwarded.

**Configuration** The following example sets a multicast routing port.

**Examples**

```
Ruijie(config)# ipv6 mld snooping vlan 1 mrouter interface gigabitEthernet 0/1
```

Related Commands	Command	Description
	<b>ipv6 mld snooping source-check port</b>	Sets the multicast source port check.

**Platform** N/A

**Description**

## 9.19 ipv6 mld snooping vlan static interface

Use this command to set a static member port to receive the multicast flow for the purpose of preventing the port from being influenced by the MLD Report packets with the MLD Snooping enabled.

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

**ipv6 mld snooping vlan** *vid* **static** *group-address* **interface** *interface-type interface-number*

**no ipv6 mld snooping vlan** *vid* **static** *group-address* **interface** *interface-type interface-number*

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

Description	
<i>vid</i>	VLAN ID, in the range from 1 to 4094. The default is 1.
<i>group-address</i>	The multicast address
<i>interface-type</i> <i>interface-number</i>	The interface number

**Defaults** No static member port is configured by default.

**Command** Global configuration mode

**Mode**

**Usage Guide** Use this command to set the interface as the member port of multiple static multicast addresses.

**Configuration Examples** The following example sets the interface gigabitEthernet 0/1 as the static member port of the FF88::1 group.

```
Ruijie(config)# ipv6 mld snooping vlan 1 static FF88::1 interface
gigabitEthernet 0/1
```

Related Commands	Command	Description
	<b>ipv6 mld snooping vlan mrouter interface</b>	Sets the mrouter interface.

**Platform** N/A

**Description**

## 9.20 permit

Use this command to allow the multicast flow profile within the specified range in the profile configuration mode.

**permit**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** The default profile action is **deny**.

**Command** Profile configuration mode

**Mode**

**Usage Guide** Before configuring this command, use the **range** command to set the multicast range first.

**Configuration** The following example allows the multicast flow profile within the range from FF15::1 to FF15::100 to

**Examples** be forwarded only.

```
Ruijie(config)# ipv6 mld snooping profile 1
Ruijie(config-profile)# range FF15::1 FF15::100
Ruijie(config-profile)# permit
```

**Related  
Commands**

Command	Description
<b>ipv6 mld profile</b>	Creates one profile.
<b>range</b>	Sets the multicast address range.
<b>deny</b>	Sets the profile action deny.

**Platform** N/A

**Description**

## 9.21 range

Use this command to specify the profile multicast flow range, which can be one single multicast address, or can be the multicast address within the specified range when configuring a profile in the profile configuration mode.

**range** *low-ipv6-address* [ *high-ip-address* ]

**Parameter  
Description**

Parameter	Description
<i>low-ip-address</i>	The low address within the specified range
<i>high-ip-address</i>	The high address within the specified range

**Defaults** No range is defined by default.

**Command  
Mode** Profile configuration mode

**Usage Guide** The value of low-ipv6-address shall be smaller than the one of high-ipv6-address. With the address range configured, an action shall be specified, and the default profile action is deny.

**Configuration** The following example creates the multicast flow profile within the range from FF15::1 to FF15::100.

**Examples**

```
Ruijie(config)# ipv6 mld snooping profile 1
Ruijie(config-profile)# range FF15::1 FF15::100
Ruijie(config-profile)# permit
```

**Related  
Commands**

Command	Description
<b>ipv6 mld profile</b>	Creates one profile.
<b>deny</b>	Sets the profile action deny.



<b>permit</b>	Sets the profile action permit.
---------------	---------------------------------

**Platform** N/A

**Description**

## 9.22 show ipv6 mld profile

Use this command to display the related MLD profile configuration.

**show ipv6 mld profile** *profile-number*

Parameter	Parameter	Description
Description	<i>profile-number</i>	Profile number in the range from 1 to 1024

**Defaults** N/A

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

**Usage Guide** Use this command to display the related MLD profile configuration.

**Configuration** The following example displays the MLD profile configuration.

**Examples**

```
Ruijie# show ipv6 mld profile
ipv6 mld profile    1
  permit
  range FF15::1 FF15::100

ipv6 mld profile    2
  deny
  range FF88::1 FF88::100
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 9.23 show ipv6 mld snooping

Use this command to display the related MLD Snooping information.

**show ipv6 mld snooping** [**gda-table** | **interfaces** *interface-type interface-number* | **mrouter** | **statistics** [**vlan** *vid*] | **vlan** *vid*]

Parameter Description	Parameter	Description
	<b>gda-table</b>	Displays the multicast forwarding rule table.
	<b>Interfaces</b> <i>interface-type</i> <i>interface-number</i>	Displays the MLD Snooping filtering configuration.
	<b>mrouter</b>	Displays the information about mrouter interface.
	<b>statistics</b>	Displays the MLD Snooping statistics.
	<b>vlan</b> <i>vlan-id</i>	Displays the MLD Snooping information of the specified vlan.

**Defaults** N/A

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

**Usage Guide** Use this command to display the related MLD Snooping information.

**Configuration** The following example displays the MLD Snooping configurations.

**Examples**

```
In IVGL mode:
Ruijie#show ipv6 mld snooping
MLD-snooping mode: IVGL
Source port check: Disable
MLD Fast-Leave: Disable
MLD Report suppress: Disable
Query Max Response Time: 10 (Seconds)
Dynamic Mroute Aging Time: 300(Seconds)
Dynamic Host Aging Time: 260(Seconds)

vlan 1
-----
MLD Snooping state: Enabled
Multicast router learning mode: Enable
MLD Fast-Leave: Enabled
MLD VLAN Mode: STATIC

In SVGL mode:
Ruijie#show ipv6 mld snooping
MLD-snooping mode: SVGL
SVGL vlan: 1
SVGL profile number: 1
Source port check: Disable
MLD Fast-Leave: Disable
MLD Report suppress: Disable
Query Max Response Time: 10 (Seconds)
```

```

Dynamic Mroute Aging Time: 300(Seconds)
Dynamic Host Aging Time: 260(Seconds)

In IVGL-SVGL mode:
Ruijie#show ipv6 mld snooping
MLD-snooping mode: IVGL-SVGL
SVGL vlan: 1
SVGL profile number: 1
Source port check: Disable
MLD Fast-Leave: Disable
MLD Report suppress: Disable
Query Max Response Time: 10 (Seconds)
Dynamic Mroute Aging Time: 300(Seconds)
Dynamic Host Aging Time: 260(Seconds)

vlan 1
-----
MLD Snooping state: Enabled
Multicast router learning mode: Enable
MLD Fast-Leave: Enabled
MLD VLAN Mode: STATIC
    
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A



## MPLS Configuration Commands

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1. MPLS Basic Commands
2. L2VPN Commands
3. BGP/MPLS L3 VPN Commands
4. MPLS GR Commands

# 1 MPLS Basic Commands

## 1.1 advertise-labels

Use this command to configure the policy for distributing a label to an IP route Forwarding Equivalence Class (FEC).

**advertise-labels** [ **for host-routes** | **for bgp-routes** [ **acl** *acl\_name* ] | **for default-route** | **for acl** *prefix-access-list* ] [ **to** *peer-access-list* ]

**no advertise-labels** [ **for host-routes** | **for bgp-routes** [ **acl** *acl\_name* ] | **for default-route** | **for acl** *prefix-access-list* ] [ **to** *peer-access-list* ]

Parameter Description	Parameter	Description
	<b>for host-routes</b>	(Optional) Distributes labels to host routes (the subnet mask is 32-bit long) only.
	<b>for bgp-routes</b> [ <b>acl</b> <i>acl_name</i> ]	(Optional) Distributes labels to BGP routes only. You can distribute labels to only the BGP routes meeting conditions by using ACL keywords.
	<b>for default-route</b>	(Optional) Distributes non-3 labels to default routes.
	<b>for acl</b> <i>prefix-access-list</i>	(Optional) Specifies the prefix of a route to which labels are distributed.
	<b>to</b> <i>peer-access-list</i>	(Optional) Specifies the neighbors to which label binding information is sent.

### Defaults

Labels are distributed to all LDP neighbors.

Labels are distributed to all IGP routes instead of BGP routes, for which FTN is not added either.

Implicit null label 3 is distributed to default routes.

### Command


**config-mpls-router** mode


### Mode


### Usage Guide

This command is effective for only the IP route FEC, other than other FECs such as PW FEC. Use the **advertise-labels for acl** *fec\_acl* **to** *peer\_acl* command to specify the FECs and LDP peers to which labels are distributed. For specified *fec\_acl*, only one rule can be configured; for *peer\_acl*, multiple rules can be configured. If this command is configured but no filtering rule is configured in the corresponding ACL, it is equivalent that this command is not configured, that is, FEC label mapping messages are sent normally. A label request received by an LDP session working in DOD mode cannot be replied with a label mapping message if the request cannot meet the label distribution policy as a result of the configured rule. Even if the rule is cancelled afterwards, the request that has been filtered cannot be distributed with a label mapping message. In this case, you can use the **clear mpls ldp neighbor** command to reset the LDP session to normal. You can use this command to configure a maximum of 64 rules.

Use the **advertise-labels for bgp-routes** command to distribute labels to BGP routes. You can use this command with the **acl** option to distribute labels to BGP routes meeting conditions or use this command without the **acl** option to distribute labels to all BGP routes. Use the **no advertise-labels for bgp-routes** command to disable label distribution to BGP routes. Note that label distribution to BGP routes is still controlled by the label distribution policy of LDP. Use the **advertise-labels for host-routes** command to distribute labels only to route prefixes with 32-bit masks (namely host routes). Use the **advertise-labels for default-route** command to distribute non-3 labels to default routes, thereby establishing an LSP for default routes.

 Labels are distributed to all FECs by default. The **no advertise-labels** command must be run to disable label distribution to all FECs if you want to distribute labels to only the FECs meeting specified ACL rules. In this manner, labels are not distributed to those failing to meet ACL rules.

 After the **no advertise-labels** command is configured, labels are distributed to only the FECs meeting **advertise-labels for acl** *prefix-access-list* [*to peer-access-list*] and instead of other FECs. If the preceding rule is not met, labels are not distributed to BGP routes and host routes even if the **advertise-labels for bgp-routes** command or **advertise-labels for host-routes** command is configured.

 When the **advertise-labels for host-routes** command is configured, LDP distributes labels to add FTN for only host routes.

**Configuration** The following example sets the LDP instance to distribute labels to the host route FEC only.

**Examples**

```
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# advertise-labels for host-routes
```

The following example sets the LDP instance not to distribute any label to the LDP peer of the IP route FEC:

```
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# no advertise-labels
```

The following example sets the LDP instance to distribute labels to all LDP peers of the FEC with 192.168.0.0/16 as the route prefix.

```
Ruijie(config)# ip access-list standard fec_acl
Ruijie(config-std-nacl)# permit 192.168.0.0 0.0.255.255
Ruijie(config-std-nacl)# exit
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# no advertise-labels
Ruijie(config-mpls-router)# advertise-labels for acl fec_acl
```

The following example sets the LDP instance to distribute labels to LDP peer 6.6.6.6 and LDP peer 7.7.7.7 of the FEC with 192.168.0.0/24 as the route prefix but to all LDP peers of other FECs.

```
Ruijie(config)# ip access-list standard fec_acl
Ruijie(config-std-nacl)# permit 192.168.0.0 0.0.0.255
```

```
Ruijie (config)#ip access-list standard peer_acl
Ruijie (config-std-nacl)#permit host 6.6.6.6
Ruijie (config-std-nacl)#permit host 7.7.7.7
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# advertise-labels for acl fec_acl to peer_acl
```

**Platform** N/A

**Description**

## 1.2 backoff

Use this command to configure the LDP exponential backoff time. Use the **no** form of this command to restore the default value.

**backoff** *initial-backoff maximum-backoff*

**no backoff**

Parameter Description	Parameter	Description
	<i>initial-backoff</i>	Indicate the initial time of exponential backoff in seconds, ranging from 5 to 2147483, with the default value 15.
	<i>maximum-backoff</i>	Indicate the maximum time of backoff in seconds, ranging from 5 to 2147483, with the default value 120.

**Defaults** By default, the initial time of exponential backoff is 15s and the maximum time is 120s.

**Command** **config-mpls-router** mode

**Mode**

**Usage Guide** When the LSR acts as the active side, the LDP session fails be established if the negotiation parameters are found inconsistent during the establishment of the LDP session. In this case, the LSR keeps attempting to re-establish an LDP session, which wastes system resources. The exponential backoff mechanism is just to prevent the active side from attempting to re-establish an LDP session constantly. The active side attempts to re-establish an LDP session only when the backoff time times out or the CSN of the Help message from the peer changes (which means changes in the configuration of the peer).

**Configuration Examples** The following example sets the initial time of exponential backoff to 20 seconds and the maximum time to 300 seconds.

```
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# backoff 20 300
```

**Related Commands**

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

<b>show mpls ldp parameters</b>	Displays the configuration parameters of the LDP instance.
---------------------------------	--

**Platform** N/A

**Description**

### 1.3 clear mpls ldp neighbor

Use this command to forcibly disconnect an LDP session and re-establish an LDP session.

**clear mpls ldp neighbor** [ **all** | **vrf** *vrf-name* ] { \* | *ip-address* }

Parameter Description	Parameter	Description
	<b>all</b>	Forcibly disconnects LDP sessions under all virtual routing and forwarding instances (VRFs, including default global VRF) and re-establish sessions.
	<b>vrf</b> <i>vrf-name</i>	Forcibly disconnects LDP sessions under specified VRFs and re-establish sessions.
	*	Forcibly disconnects LDP sessions under specified VRFs or all VRFs and re-establish sessions.
	<i>ip-address</i>	Forcibly disconnects LDP sessions established between specified VRFs or all VRFs and specified LDP peers, and re-establish sessions.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** If no VRF is specified in this command, LDP sessions under the default global VRF are forcibly reset.

**Configuration Examples** The following command forcibly resets all established LDP sessions under the default global VRF.

```
Ruijie# clear mpls ldp neighbor *
```

The following command forcibly resets the LDP sessions established between the default global VRF and the peer 10.10.10.10.

```
Ruijie# clear mpls ldp neighbor 10.10.10.10
```

The following command forcibly resets the LDP sessions established under all VRFs (including default global VRF).

```
Ruijie# clear mpls ldp neighbor all *
```



## 1.4 discovery targeted-hello

Use this command to set the holdtime or transmission interval for the extended peer Hello packet.

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

**discovery targeted-Hello** { **holdtime** | **interval** } *seconds*

**no discovery targeted-Hello** { **holdtime** | **interval** }

### Parameter Description

Parameter	Description
<b>holdtime</b>	Holdtime of the Hello packet for the extended mechanism.
<b>interval</b>	Transmission interval of the Hello packet for the extended mechanism.
<i>seconds</i>	Range within 1-65535.

### Defaults

The holdtime of the Hello packet for the extended mechanism is 45 seconds, and the transmission interval of the Hello packet is 5 seconds, which is 1/9 of the holdtime.

### Command

**config-mpls-router** mode

### Mode

### Usage Guide

For the actual configuration, it is necessary to ensure that the holdtime of the target Hello is greater than the transmission interval value. Otherwise, LDP fails to function as required. Note that this command is valid for the targeted Hello used by the extended discovery mechanism only.

### Configuration

```
Ruijie(config)# mpls route ldp
```

### Examples

```
Ruijie(config-mpls-router)# discovery target-Hello holdtime 90
```

### Related Commands

Command	Description
<b>show mpls ldp parameters</b>	Displays the LDP global configuration attribute.

### Platform

N/A

### Description

## 1.5 discovery targeted-hello accept

Use this command to enable the device to receive all target hello packets or the target hello packets from the neighbor permitted by the ACL. All other targeted hello packets are discarded except for those from the extended LDP neighbors. Use the **no** or **default** form of this command to restore the default setting.

**discovery targeted-hello accept** [ **from** *acl-name* ]

**no discovery targeted-hello accept**

**default discovery targeted-hello accept**

Parameter Description	Parameter	Description
	<b>from</b> <i>acl-name</i>	Only receives target hello packets from the neighbor permitted by the ACL.

**Defaults** This function is disabled by default.  
By default, the device receives the target hello packets only from the remote peer device.

**Command** **config-mpls-router mode**  
**Mode**

**Usage Guide** When you configure two devices as remote peers, configure one end as neighbor and enable this function on the other. When you delete remote peers, you only need to delete the neighbor configuration.

**Configuration** The following example enables the device to receive target hello packets from all devices.

**Examples**

```
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# discovery targeted-hello accept
```

The following example enables the device to receive target hello packets from neighbor 1.1.1.1.

```
Ruijie(config)# ip access-list standard target_acl
Ruijie(config-std-nacl)# permit host 1.1.1.1
Ruijie(config-std-nacl)# exit
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# discovery targeted-hello accept from
target_acl
```

Related Commands	Command	Description
	N/A	N/A

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

## 1.6 explicit-null

Use this command to configure the distribution of explicit null labels to direct routes or direct route prefixes meeting specified ACL rules, or the distribution of explicit null labels to only the neighbors meeting rules and of implicit null labels to other neighbors. Use the **no** form of this command to restore the default setting.

```
explicit-null [ for prefix-acl ] [ to peer-acl ]
no explicit-null
```

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


<b>for</b> <i>prefix-ac</i>	(Optional) Specify the prefixes of direct routes whose implicit null labels are replaced with explicit null labels.
<b>to</b> <i>peer-acl</i>	(Optional) Specify the LDP peers whose implicit null labels are replaced by explicit null labels.

**Defaults** Implicit null labels are distributed to direct routes for all peers by default.

**Command** **config-mpls-router mode**

**Mode**

**Usage Guide**

-  1. If a command to distribute explicit null labels is configured but no filtering rule is configured in the corresponding ACL, it is equivalent that the command is not configured, that is, implicit null labels are distributed to direct routes for all neighbors.
- 2. This command can be configured only for global LDP instances, and VRFs do not support this command.

**Configuration** The following example distributes explicit null labels to all directly connected routes through LDP.

**Examples**

```
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# explicit-null
```

The following example configures LDP to distribute explicit null labels to LDP peer 1.1.1.1 for direct routes with 192.168.0.0/16 as the prefix. Otherwise, the LDP distributes implicit null labels.

```
Ruijie(config)# ip access-list standard fec_acl
Ruijie(config-std-nacl)# permit 192.168.0.0 0.0.255.255
Ruijie(config-std-nacl)# exit
Ruijie(config)# ip access-list standard peer_acl
Ruijie(config-std-nacl)# permit host 1.1.1.1
Ruijie(config-std-nacl)# exit
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# explicit-null for fec_acl to peer_acl
```

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 1.7 inter-area-lsp

Use this command to configure inter-area LSP function for LDP. Use the **no** form of this command to restore the default setting.

**inter-area-lsp** [ **for** **acl** *acl\_name* ]

**no inter-area-lsp****Parameter  
Description**

Parameter	Description
<b>for acl</b> <i>acl_name</i>	(Optional) Configures ACL rules and sets up inter-area LSP only for converged host routings (the mask length is 32 bits) that comply with specified ACL rules.

**Defaults**

By default, inter-area LSP is disabled.

**Command  
Mode**

**config-mpls-router** mode

**Usage Guide**

Use this command to enable the inter-area LSP function of LDP. The command usage is described as follows:

- The inter-area LSP function of LDP takes effect only on converged host routings.
- When an autonomous system (AS) is planned into multiple IGP areas and the convergence of host routings is enabled on an area border router (ABR), you can enable the inter-area LSP function of LDP if label switched paths across multiple IGP areas need to be set up for converged routings.
- It is recommended to enable the inter-area LSP function of LDP on all devices running LDP.
- After the inter-area LSP function of LDP is enabled, when LDP receives a label mapping message sent from a downstream device, if there is a longest matched routing in the routing platform corresponding to the message and the LDP neighbor sending the label mapping message is the next-hop of this longest matched routing, a forwarding entry is added and the message is distributed to all LDP neighbors.
- If you require setting up inter-area LSP of LDP only on specific host routings, you can specify ACL parameters to control the routings. (A better way is to use the **advertise-labels** command on ABRs to filter the routings that do not need to set up inter-area LSP of LDP).

- i** Only the latest configuration command is saved. That is, the subsequent configuration will override the preceding one.
- i** Since the inter-area LSP function of LDP takes effect only on converged host routings, if you perform the longest match extension on converged non-host routings by using an ACL rule, this ACL rule is invalid.
- i** The inter-area LSP function of LDP takes effect in scenarios where the liberal label retention mode is configured instead of scenarios where the conservative label retention mode is configured.
- i** The inter-area LSP function of LDP does not apply to the DOD label distribution mode.

**Configuration**

The following example enables the inter-area LSP function of LDP.

**Examples**

```
Ruijie(config)# mpls router ldp
```

```
Ruijie(config-mpls-router)# inter-area-lsp
```

The following example enables the inter-area LSP function of LDP under the VRF instance vpna.

```
Ruijie(config)# mpls router ldp vpna
Ruijie(config-mpls-router)# inter-area-lsp
```

The following example configures that the inter-area LSP function of LDP takes effect only on the converged host routing 192.166.1.1/32.

```
Ruijie(config)# ip access-list standard acl_1
Ruijie(config-std-nacl)# permit host 192.166.1.1
Ruijie(config-std-nacl)# exit
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# inter-area-lsp for acl acl_1
```

#### Related Commands

Command	Description
<b>show mpls ldp parameters</b>	Displays configuration parameters of an LDP instance and view whether the inter-area LSP function of LDP is enabled.

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

## 1.8 label-merge

Use this command to enable global label merging. Use the **no** form of this command to disable this function.

**label-merge**  
**no label-merge**

#### Parameter Description

Parameter	Description
N/A	N/A

**Defaults** Label merging is enabled by default.

**Command Mode** **config-mpls-router mode**

**Usage Guide** Enable global label merging. The command usage is as follows:  
The command is valid only in the Downstream On Demand (DoD) label advertisement mode.  
For LDP sessions in the Downstream Unsolicited (DU) label advertisement mode, label merging is always enabled.

When label merging is enabled or disabled, all LDP sessions are reset.

**Configuration** The following example enables global label merging.

**Examples**

```
Ruijie(config)# mpls route ldp
Ruijie(config-mpls-router)# label-merge
```

**Related  
Commands**

Command	Description
<b>show mpls ldp parameters</b>	Show Displays the LDP global configuration parameter.

**Platform** N/A

**Description**

## 1.9 label-retention-mode

Use this command to set the label retention mode. Use the **no** form of this command to restore the default setting.

**label-retention-mode { liberal | conservative }**

**no label-retention-mode**

**Parameter  
Description**

Parameter	Description
<b>liberal</b>	Uses the liberal label retention mode.
<b>conservative</b>	Uses the conservative label retention mode.

**Defaults** The default mode is liberal label retention mode.

**Command  
Mode** **config-mpls-router mode**

**Usage Guide** Use this command to process newly received label mapping messages. This command is invalid for former FEC label mapping messages from neighbors.

**Configuration** The following example sets the label retention mode to liberal.

**Examples**

```
Ruijie(config)# mpls route ldp
Ruijie(config-mpls-router)# label-retention-mode liberal
```

**Related  
Commands**

Command	Description
<b>show mpls ldp parameters</b>	Displays the LDP global configuration parameters.

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

## 1.10 label-switching

Use this command to enable an interface to forward MPLS label packets. Use the **no** or default form of this command to restore the default setting.

**label-switching**  
**no label-switching**  
**default label-switching**

Parameter Description	Parameter	Description
	N/A	N/A

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

**Command Mode** Interface configuration mode.

**Usage Guide** This command must be configured on the interface to enable MPLS packet forwarding on it.

**Configuration** The following example enables MPLS packet forwarding on the interface.

**Examples**

```
Ruijie(config)# interface Gi4/1
Ruijie(config-if)# label-switching
```

Related Commands	Command	Description
	<b>show mpls summary</b>	Displays interfaces with the label forwarding capability enabled.

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

## 1.11 ldp router-id

Use this command to set the router ID of the LDP. Use the **no** form of this command to restore the default setting, which does not take effect immediately.

**ldp router-id** { *ip-address* | **interface** *interface-name* [ **force** ] }  
**no ldp router-id**

Parameter Description	Parameter	Description
	<i>ip-address</i>	Specifies a static IP address as the router ID of LDP. It takes effect immediately after being configured.
	<i>interface-name</i> [ <b>force</b> ]	Configures the primary address of a specified interface as the router ID of LDP. If the <b>force</b> keyword is specified, the new router ID is forced to take effect immediately. Otherwise, the new router ID will not take effect immediately.

**Defaults** The default LDP router ID is the system router ID.

**Command Mode** **config-mpls-router mode**

**Usage Guide** If a static IP address is specified as the router ID of LDP and the address takes effect immediately after being configured, the established session is disconnected and that a new router ID is used to re-establish a session.

If the IP address of a specified interface is specified as the router ID of LDP and the **force** keyword is not carried, the primary address of the currently configured interface is used as the new router ID only when the currently used router ID is unavailable. To use the address of an interface as the router ID, the following conditions must be met:

The VRF to which the interface belongs must be the same as that to which LDP belongs.

The interface must be in the Up state.

Otherwise, the router ID cannot take effect even if the **force** keyword is specified. The router ID takes effect only when the preceding conditions are met (in the case that the **force** keyword is specified).

If a configured static IP address replaces a configured interface address to act as the router ID of LDP or vice versa, the router ID takes effect immediately. In this case, the LDP sessions established under the LDP instance are disconnected automatically and then re-established.

It is recommended to use an interface address as the router ID of LDP. The purpose of using a static address is mainly to be compatible with commands of earlier versions.

**Configuration** Ruijie(config)# mpls router ldp

**Examples** Ruijie(config-mpls-router)# ldp router-id interface vlan 10 force

Related Commands	Command	Description
	<b>show mpls ldp parameter</b>	Displays LDP configuration parameters under all or specified VRFs.

**Platform Description** N/A



## 1.12 loop-detection

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

**loop-detection**

**no loop-detection**

Parameter Description	Parameter	Description
	N/A	N/A

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

**Command** **config-mpls-router mode**

**Mode**

**Usage Guide** This command affects newly created LDP sessions, but not existing LDP sessions under an LDP instance.

**Configuration** The following example enables loop detection.

**Examples**

```
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# loop-detection
```

Related Commands	Command	Description
	<b>show mpls ldp parameters</b>	Displays the LDP configuration parameters in all or specified VRFs.

**Platform** N/A

**Description**

## 1.13 lsp-control-mode

Use this command to set the LDP control mode globally. Use the **no** form of this command to restore the default setting.

**lsp-control-mode [ independent | ordered ]**

**no lsp-control-mode**

Parameter Description	Parameter	Description
	<b>independent</b>	Uses the independent control mode.

<b>ordered</b>	Uses the ordered control mode.
----------------	--------------------------------

**Defaults** Independent control mode

**Command Mode** **config-mpls-router mode**

**Usage Guide** This command affects the transmission of new label mapping messages, but does not affect label mapping messages that have been distributed for existing LDP sessions.

**Configuration Examples** The following example sets the LDP control mode to ordered.

```
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# lsp-control-mode ordered
```

**Related Commands**

Command	Description
<b>show mpls ldp parameters</b>	Displays the LDP configuration parameters in all or specified VRFs.

**Platform Description** N/A

## 1.14 mpls ip fragment

Use this command to set the processing if the MPLS MTU is exceeded after an IP packet is encapsulated with the MPLS label

**mpls ip fragment**

**no mpls ip fragment**

**Parameter Description**

Parameter	Description
N/A	N/A

**Defaults** After the entered IP packet is encapsulated with the MPLS label, if its size exceeds the defined size of the MPLS MTU, it will carry out the fragment to the original IP packet before the MPLS label is encapsulated to send.

**Command Mode** Global configuration mode

**Usage Guide** This command is valid only for process forwarding. Use the **no mpls ip fragment** command to disable the fragment function for process forwarding. Namely, it will be discarded directly if its size exceeds the defined size of the MPLS MTU after the entered IP packet is encapsulated with the MPLS label.

**Configuration** The following example disables MPLS packet fragmentation.

**Examples**

```
Ruijie(config)# no mpls ip fragment
```

Related Commands	Command	Description
		<code>mpls ip</code>

**Platform** N/A

**Description**

## 1.15 mpls ip icmp-error pop

Use this command to set the processing mode for Internet Control Message Protocol (ICMP) error packets generated during the forwarding of MPLS packets. Use the **no** form of this command to restore the default setting.

**mpls ip icmp-error pop** *labels*

**no mpls ip icmp-error pop**

Parameter Description	Parameter	Description
		<i>labels</i>

**Defaults** The generated ICMP error packet continues to be forwarded along the original LSP after being labeled with the original tag.

**Command Mode** Global configuration mode

**Usage Guide** By default, the generated ICMP error packet continues to be forwarded along the original LSP until to the LSP egress. At the egress, the packet is rerouted and forwarded according to the inner IP address after its label stack is removed. You can use this command to change this default action by configuring packets with different numbers of labels to be processed differently. When the number of labels of a forwarded packet is less than or equal to the configured value, the ICMP error packet directly uses the IP route forwarding table of the FEC to which the top label corresponds.

**Configuration Examples**

```
Ruijie(config)# mpls ip icmp-error pop 2
```

Related Commands	Command	Description
		<code>mpls ip</code>

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

## 1.16 mpls ip ttl propagate

Use this command to enable or disable the IP TTL copy function of MPLS. Use the **no** form of this function to restore the default setting.

**mpls ip ttl propagate { public | vpn }**

**no mpls ip ttl propagate { public | vpn }**


Parameter Description	Parameter	Description
	<b>public</b>	Specifies whether to enable TTL propagate function for the sending messages.
	<b>vpn</b>	Specifies whether to enable TTL propagate function for the forwarded messages.


**Defaults** The TTL copy function is enabled for both the sending and forwarded messages.

**Command Mode** Global configuration mode

**Usage Guide** The following are two modes of MPLS TTL:

- TTL copy mode: it is the default working mode. In this mode, the pushed label TTL is copied from the TTL of the existed header of the IP packet or the MPLS packet when Pushing the label. The TTL of the inner IP packet or the MPLS packet is copied from the TTL of the outer label when Popping the label.
- TTL non-copy mode: in this mode, set the value of pushed label TTL to 255 when Pushing the label and keep the value of the TTL of the inner IP packet or the MPLS packet when Popping the label.

 After the TTL copy is enabled, the TTL of the inner header is not copied but retained if it is smaller than the TTL of the outer header.

 For the switch products, the TTL of the inner header is directly copied from the outer header during the PHP Pop operation, if TTL copy is enabled. The TTL of the packets forwarded, however, does not decrease by one. If TTL non-copy is enabled, the TTL of the inner header does not copy that from the outer header. Instead, the TTL of the inner header is retained. The TTL of packets forwarded also does not decrease by one.

**Configuration** The following example disables the TTL copy function of for sending messages:

**Examples**

```
Ruijie(config)# mpls ip ttl propagate public
```

Related Commands	Command	Description
		<b>mpls ip</b>

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

## 1.17 mpls ip (Interface Configuration Mode)

Use this command to enable LDP functions for an interface. Use the **no** form of this command to restore the default setting.

**mpls ip**

**no mpls ip**

Parameter Description	Parameter	Description
		N/A

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

**Command Mode** Interface configuration mode

**Usage Guide** It only allows enabling the MPLS function on the L3 interface.  
 Note that you must run the **label-switching** command to enable interface MPLS forwarding after interface LDP is enabled.  
 For tunnel interfaces, LDP can be enabled only in GRE tunnels.

**Configuration** The following example enables the LDP function for an interface.

**Examples**

```
Ruijie(config)# interface Gi4/1
Ruijie(config-if)# mpls ip
```

Related Commands	Command	Description
	<b>mpls ldp hello-interval</b>	Configures the transmission interval of Hello packets.
	<b>label-switching</b>	Enables the MPLS forwarding function of an interface.
	<b>mpls ldp Hello-holdtime</b>	Configures the Hello packet holdtime.

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

## 1.18 mpls ip (Global Configuration Mode)

Use this command to enable MPLS forwarding in the global configuration mode. Use the **no** form of this command to restore the default setting.

**mpls ip**

**no mpls ip**

### Parameter Description

Parameter	Description
N/A	N/A

### Defaults

This function is disabled by default.

### Command Mode

Global configuration mode

### Usage Guide

To implement MPLS forwarding, MPLS must be enabled globally at first.

After MPLS forwarding is enabled, label forwarding rather than IP forwarding is performed for packets. When label forwarding fails, IP forwarding is attempted.

For some devices, enabling the LDP related commands when global MPLS forwarding is disabled may cause failure of IP packets forwarding. It is recommended to disable MPLS commands when MPLS forwarding is not required.

### Configuration Examples

The following example enables MPLS forwarding globally.

```
Ruijie(config)# mpls ip
```

### Related Commands

Command	Description
N/A	N/A

### Platform

N/A

### Description

## 1.19 mpls ldp distribution-mode

Use this command to configure the label distribution mode used by LDP on each interface. Use the **no** form of this command to restore the default setting.

**mpls ldp distribution-mode { dod | du }**

**no mpls ldp distribution-mode**

### Parameter Description

Parameter	Description
<b>dod</b>	Uses the downstream on-demand distribution mode

<b>du</b>	Uses the Downstream Unsolicited (DU) distribution mode
-----------	--

**Defaults** The default label distribution mode is DU.

**Command Mode** Interface configuration mode

**Usage Guide** If the interconnected LDP sessions use different distribution modes, the **du** mode will be used forcibly for both of them.  
The command configuration does not affect existing LDP sessions of the interface.

**Configuration** The following example configures LDP working in DOD mode on this interface.

**Examples**

```
Ruijie(config)# interface vlan 10
Ruijie(config-if)# mpls ldp distribution-mode dod
```

**Description**

## 1.20 mpls ldp hello-holdtime

Use this command to configure the holdtime in seconds for LDP Hello packets on each interface. Use the **no** form of this command to restore the default setting.

**mpls ldp hello-holdtime** *seconds*

**no mpls ldp hello-holdtime**

Parameter Description	Parameter	Description
	<i>seconds</i>	Holdtime of Hello packets, ranging from 1 to 65535 in the unit of seconds. Holdtime 65535 indicates that the Hello packet will never time out.

**Defaults** The default is 15.

**Command Mode** Interface configuration mode

**Usage Guide** This command is valid only for the LDP Link Hello packets for the basic discovery mechanism and may change the transmission interval of Hello messages, with the same rule of configuring the transmission interval of Hello packets on an interface.  
Use the **discovery targeted-Hello** command to set the Hello interval for the extended discovery mechanism.

**Configuration** The following command configures the Link Hello holdtime of LDP on an interface as 30 seconds:

**Examples**

```
Ruijie(config)# interface vlan 10
```

```
Ruijie(config-if)# mpls ldp Hello-holdtime 30
```

## Description

### 1.21 mpls ldp hello-interval

Use this command to configure the holdtime in seconds for LDP Hello packets on each interface. Use the **no** form of this command to restore the default setting.

**mpls ldp Hello-interval** *seconds*

**no mpls ldp Hello-interval**

## Parameter Description

Parameter	Description
<i>seconds</i>	Transmission interval of Hello packets, ranging from 1s to 65535 in the unit of seconds.

## Defaults

The default is 5.

## Command Mode

Interface configuration mode

## Usage Guide

The interval for sending Link Hello packets on an interface may be inconsistent with that configured by this command.

The specific algorithm is as follows:

By default, if the minimum holdtime among all holdtime intervals negotiated with neighbors on an interface is less than 15s, the actually used interval for sending Hello packets is 1/3 of the minimum holdtime and 1s minimum.

By default, if the minimum holdtime among all holdtime intervals negotiated with neighbors of an interface is greater than or equal to 15s, the actually used interval for sending Hello packets is 5s.

If the configured interval is greater than 1/3 of the minimum value among all holdtime intervals negotiated with neighbors of an interface, the actually used interval for sending Hello packets is 1/3 of the minimum holdtime and 1s minimum.

If the configured interval is less than 1/3 of the minimum value among all holdtime intervals negotiated with neighbors of an interface, the configured interval for sending Hello packets is used.

In the actual configuration, this value must be less than the value of Hello-holdtime. This command is valid only for the LDP Link Hello packets for the basic discovery mechanism. Use the **discovery targeted-Hello** command to set the Hello holdtime for the extended discovery mechanism.

## Configuration

The following example configures the transmission interval of Hello packets as 10 seconds:

## Examples

```
Ruijie(config)# interface vlan 10
Ruijie(config-if)# mpls ldp Hello-interval 10
```



## Description

## 1.22 mpls ldp keepalive-holdtime

Use this command to configure the holdtime for keepalive packets on each interface. Use the **no** form of this command to restore the default setting.

**mpls ldp keepalive-holdtime** *seconds*

**no mpls ldp keepalive-holdtime**

**Parameter  
Description**

Parameter	Description
<i>seconds</i>	Holdtime of keepalive packets, ranging from 15 to 65535 in the unit of seconds.

**Defaults**

The default is 45.

**Command**

Interface configuration mode

**Mode**

**Usage Guide**

This command is valid for the LDP sessions to be created instead of former created LDP sessions. This command has no influence on the LDP session set up by the extended discovery mechanism. Use the **targeted-session holdtime** command to modify the Keepalive Holdtime of the LDP session set up by the extended discovery mechanism.

**Configuration**

The following command configures the holdtime of the Keepalive packet of LDP on an interface as 90 seconds:

**Examples**

```
Ruijie(config)# interface vlan 10
Ruijie(config-if)# mpls ldp keepalive-holdtime 90
```

**Platform**

N/A

**Description**

## 1.23 mpls ldp max-hop-count

Use this command to configure the maximum hop count allowed for loop detection on each interface. Use the **no** form of this command to restore the default setting.

**mpls ldp max-hop-count** *number*

**no mpls ldp max-hop-count**

**Parameter  
Description**

Parameter	Description
<i>number</i>	Maximum hop count allowed for loop detection, ranging from 1 to

	255.
--	------

**Defaults** The default is 254.

**Command Mode** Interface configuration mode

**Usage Guide** The value configured by this command is valid only after loop detection is configured. If the hop count value in the label mapping message or the label request message of LDP is greater than the configured value, it is deemed that a loop occurs. This command is invalid for the previously received label mapping message and label request message, but valid for those received later.

**Configuration Examples** The following example configures the LDP hop count of the interface as 30:

```
Ruijie(config)# interface vlan 10
Ruijie(config-if)# mpls ldp max-hop-count 30
```

**Description**

## 1.24 mpls ldp max-label-requests

Use this command to configure the maximum label requests allowed on each interface. Use the **no** form of this command to restore the default setting.

**mpls ldp max-label-requests** *times*

**no mpls ldp max-label-requests**

Parameter Description	Parameter	Description
	<i>times</i>	Maximum request times, ranging from 0 to 255.

**Defaults** There is no limit by default, indicating that label requests are retransmitted until a label mapping message is received.

**Command Mode** Interface configuration mode.

**Usage Guide** This command is invalid for the label request times in the created LDP session on the interface, and valid for newly-created LDP sessions. The value 0 means that the label request will not be retransmitted.

**Configuration Examples** The following command configures the maximum number of label requests of LDP allowed on an interface as 5.

```
Ruijie(config)# interface vlan 10
Ruijie(config-if)# mpls ldp max-label-requests 5
```

**Description**

## 1.25 mpls ldp max-path-vector

Use this command to configure the maximum path vector value allowed for loop detection on each interface. Use the **no** form of this command to restore the default setting.

**mpls ldp max-path-vector** *number*

**no mpls ldp max-path-vector**

**Parameter Description**

Parameter	Description
<i>number</i>	Maximum path vector value, ranging from 0 to 255.

**Defaults** 254

**Command Mode** Interface configuration mode

**Usage Guide** The configured path vector value takes effect only after the LDP instance enables loop detection. If the number of LDR IDs contained in the path vector list of the label mapping message or the label request message of LDP is greater than the configured maximum path sector value, it is deemed that a loop occurs. This command is invalid for the created LDP sessions, but influences the LDP sessions to be created.

**Configuration Examples** The following command configures the maximum path vector value of LDP on an interface as 10:

```
Ruijie(config)# interface vlan 10
Ruijie(config-if)# mpls ldp max-path-vector 10
```

**Description**

## 1.26 mpls ldp max-pdu

Use this command to configure the maximum PDU value. Use the **no** form of this command to restore the default setting.

**mpls ldp max-pdu** *max-pdu*

**no mpls ldp max-pdu**

**Parameter Description**

Parameter	Description
<i>max-pdu</i>	The maximum PDU value in exchanging the LDP messages, ranging

	from 256 to 4096 in the unit of bytes.
--	--

**Defaults** The default is 4096.

**Command Mode** Interface configuration mode

**Usage Guide** This command does not influence former created LDP sessions on the interface, but influence newly created LDP sessions.

**Configuration Examples** The following command configures the maximum length of LDP messages as 256.

```
Ruijie(config)# interface vlan 10
Ruijie(config-if)# mpls ldp max-pdu 256
```

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 1.27 mpls ldp transport-address

Use this command to set the transport address used by basic LDP sessions. Use the **no** form of this command to restore the default setting.

**mpls ldp transport-address { interface | ip-address }**  
**no mpls ldp transport-address**

**Parameter Description**

Parameter	Description
<b>interface</b>	The LDP session uses the main address of an interface.
<i>ip-address</i>	The LDP session uses an IP address specified by this parameter.

**Defaults** The default transport address is the LSR ID of LDP.

**Command Mode** Interface configuration mode

**Usage Guide** This command is invalid to LDP sessions created by the extended discovery mechanism, but effective only for LDP sessions created by the basic discovery mechanism. When this interface transport address is configured, this command is invalid for the LDP sessions that have been created by basic discovery mechanism, and effective to newly created sessions.

**Configuration** The following example configures basic LDP sessions to use the main address of an interface as the

**Examples**

transport address.

```
Ruijie(config)# interface vlan 10
Ruijie(config-if)#mpls ldp transport-address interface
```

**Description**

## 1.28 mpls mtu

Use this command to configure the MTU value when the MPLS messages are forwarded.

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

**mpls mtu** *mtu*

**no mpls mtu**

**Parameter Description**

Parameter	Description
<i>mtu</i>	Length of label packets supported by the interface, ranging from 64 to Current interface mtu in the unit of bytes.

**Defaults**

The MPLS MTU value is equal to the interface MTU.

**Command Mode**

Interface configuration mode

**Usage Guide**

Use this command to configure the MTU value. By default, the MTU of the transmittable MPLS label packet on an interface is equal to default the interface mtu. The MPLS mtu determines whether to fragment the MPLS packet during the message sending. The length of the MPLS MTU includes the total length of the MPLS encapsulating and encapsulated (IP) layers. The MPLS MTU on the interface must not exceed the actual transmission capability of the interface.

This command is valid only for process forwarding and router fast forwarding instead of switches adopting ASIC forwarding. The switch forwards the packets according to the actually configured MTU on the interface and discards the packets that exceed the configured MTU. Use the **mtu** command in interface configuration mode to adjust the MTU on the interface.

In actual forwarding, you should try to prevent forwarding performance from degrading due to fragmenting by adjusting the MTU value.

**Configuration Examples**

The following example configures MPLS MTU in the range from 64 to 1500 when the interface MTU is 1500.

```
Ruijie(config)# interface GigabitEthernet 4/1
Ruijie(config-if)# mpls mtu 1496
```

The following example configures MPLS MTU in the range from 64 to 1516 when the interface MTU is 1516.

```
Ruijie(config)# interface Gi4/1
Ruijie(config-if)# mpls mtu 1510
```

Related Commands	Command	Description
	<code>mpls ip</code>	Enables MPLS globally.

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

## 1.29 mpls router ldp

Use this command to enable LDP, and use the **no** form of this command to restore the default setting.

**mpls router ldp** [ *vrf-name* ]

**no mpls router ldp** [ *vrf-name* ]

Parameter Description	Parameter	Description
	<i>vrf-name</i>	Enables or disables LDP for specified VRF instance.

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

**Command Mode** Global configuration mode

**Usage Guide** The number of LDP instances is limited by the number of VRFs on a device. Each VRF can start one LDP instance. If no VRF is specified, LDP of the global VRF is enabled or disabled by default.

**Configuration Examples** The following example enables LDP of the global VRF and enters the LDP configuration mode.

```
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# ldp router-id interface vlan 0 force
```

The following example enables LDP of VPNA and enters the LDP configuration mode.

```
Ruijie(config)# mpls router ldp vpna
Ruijie(config-mpls-router)# ldp router-id interface vlan 1 force
```

Related Commands	Command	Description
	N/A	N/A

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

## 1.30 mpls static ftn

Use this command to add one FTN entry to the global FTN table. Use the **no** form of this command to restore the default setting.

**mpls static ftn** *ip-address/mask* **out-label** *label* **nexthop** *interface-name* *nexthop-ip*

**no mpls static ftn** *ip-address//mask*

Parameter Description	Parameter	Description
	<i>ip-address/mask</i>	Corresponding FEC, namely the destination address.
	<b>out-label</b> <i>label</i>	Corresponding outgoing label of this FEC.
	<b>nexthop</b> <i>interface-name</i> <i>nexthop-ip</i>	Next hop of an FEC, including the egress interface and the IP address of the next hop.

**Defaults** N/A

**Command** Global configuration mode

**Mode**

**Usage Guide** Use this command to add an FTN entry to the global FTN table. After the router with MPLS enabled receives an IP packet, it looks up for the next hop in the FTN table according to the destination address of the IP packet by maximum match. If the next hop is found, it performs label forwarding to the IP packet. For the FTN whose destination address and mask are both 0, it is valid only when this default route exists in the IP route forwarding table.

**Configuration Examples** The following example adds FTN of FEC 192.168.0.0/16 to the global FTN table. The outgoing label of the entry is 100, the outgoing interface GigabitEthernet 4/1 and the next hop 10.10.10.1.

```
Ruijie(config)# mpls static ftn 192.168.0.0/16 out-label 100 nexthop gi4/1
10.10.10.1
```

Related Commands	Command	Description
	<b>show mpls forwarding-table</b>	Displays the overview information of the global FTN table.

**Platform** N/A

**Description**

## 1.31 mpls static ilm in-label

Use this command to add one ILM entry to the ILM table. Use the **no** form of this command to restore the default setting.

**mpls static ilm in-label** *in-label* **forward-action** **swap-label** *label* **nexthop** *interface-name*

*nexthop-ip fec ip-address/mask*

**mpls static ilm in-label in-label forward-action pop-l3vpn-nexthop vrf-name nexthop**

*interface-name nexthop-ip fec ip-address/mask*

**mpls static ilm in-label in-label forward-action pop-l2vc-destport vc-id vc-peer-addr**

**no mpls static ilm in-label in-label**

**Parameter  
Description**

Parameter	Description
<i>in-label</i>	Ingress label value of this ILM entry.
<b>forward-action</b>	Specifies the forward behavior of this ILM entry. <b>swap-label:</b> applies to the ILM entry of the public network, to indicate the label switching and forwarding. <b>pop-l3vpn-nexthop:</b> applies to the ILM entry of the L3 VPN, to indicate the pop-up label, and forward it to the next hop of the specified VRF. <b>pop-l2vc-destport:</b> applies to the ILM entry of the L2 VPN, to indicate the pop-up label, and forward the message from the specified interface.
<i>label</i>	For the <b>swap-label</b> forward behavior, it will specify the egress label value of the switched label value.
<i>vrf-name</i>	For the <b>pop-l3vpn-nexthop</b> forward behavior, it will specify the VPN of the specified ILM, namely VRF.
<i>Interface-name</i>	For the <b>pop-l2vc-destport</b> forward behavior, it will specify the forwarded egress interface.
<b>nexthop</b> <i>interface-name</i> <i>nexthop-ip</i>	Specifies the next hop, including the egress interface and the IP address of the next hop.
<b>fec</b>	Indicates the FEC for which an ILM is created.
<i>ip-address/mask</i>	Corresponds to the fec format of the global or <b>I3 vpn</b> application, and indicate one destination network.
<i>vc-id</i>	Corresponds to the fec format of the <b>I2vpn</b> application, and indicates the VC instance.
<i>vc-peer-addr</i>	Address of the VC peer.

**Defaults** N/A

**Command Mode** Global configuration mode

**Usage Guide** Use this command to add an ILM entry to the ILM table. After the router with MPLS enabled receives an IP packet with label, it looks up for the next hop in the ILM table according to the label of the IP packet according to maximum match. If the next hop is found, it swaps, pops up the label of the IP packet or performs VPN forwarding after pop-up.



**Configuration****Examples**

```
Ruijie (config)# mpls static ilm in-label 20 forward-action swap-label 30
nexthop gi4/2 10.10.10.1 fec 172.16.0.0/26
```

**Related  
Commands**

Command	Description
<b>show mpls forwarding-table</b>	Displays the information of the MPLS forwarding table.

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

## 1.32 neighbor

Use this command to create an LDP extended peer. 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>	Router ID of the peer LSR.

**Defaults** There is no LDP extended peer by default.**Command** **config-mpls-router** mode**Mode****Usage Guide** To set up an extended LDP session, you must configure LSRs at both ends of the session. It fails to set up the extended LDP session if the extended peer is configured at only one end.**Configuration** The following command configures 10.10.10.1 as an extended peer of the LSR:**Examples**

```
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# neighbor 10.10.10.1
```

**Related  
Commands**

Command	Description
<b>show mpls ldp discovery</b>	Displays the information of neighbors discovered by the LDP.

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

## 1.33 neighbor labels accept

Use this command to configure the LSR to filter label mapping messages for the LDP peer according to a specified ACL rule. Use the **no** form of this command to restore the default setting.

**neighbor** *ip-address* **labels accept** *acl-name*

**no neighbor** *ip-address* **labels accept**

Parameter Description	Parameter	Description
	<i>ip-address</i>	Router ID of the peer LSR.
	<i>acl-name</i>	Name of the specified ACL rule.

**Defaults** No filtering rule is configured by default.

**Command** **config-mpls-router** mode  
**Mode**

**Usage Guide** This command is effective to only the IP route FEC instead of other FECs such as PW FEC. If this command is used to configure a filtering rule for incoming label mapping messages, label mapping messages of the FEC from a specified neighbor meeting the ACL rule can be received and those of other FECs from this neighbor are discarded. However, label mapping messages sent by other neighbors are not affected and are still received. If this command is configured for a neighbor but no filtering rule is configured for the corresponding ACL, label mapping messages of all FECs sent by this neighbor are discarded. When the rule is cancelled by using the **no** form of this command, label mapping messages that have been filtered are not affected (that is, messages that have been discarded cannot be recovered) and only label mapping messages received thereafter are affected. In this case, the **clear mpls ldp neighbor** command needs to be used to reset the LDP session. Only one rule can be configured for one neighbor. Each LDP instance can be used to configure filtering rules for a maximum of 64 neighbors.

**Configuration Examples** In the following example, only label mapping messages of the FEC with 192.168.0.0/16 as the route prefix and sent from the neighbor 10.10.10.1 are received, and those of other FECs sent from this neighbor are denied.

```
Ruijie(config) #ip access-list standard fec_acl
Ruijie(config-std-nacl)#permit 192.168.0.0 0.0.255.255
Ruijie(config-std-nacl)# exit
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# neighbor 10.10.10.1 labels accept fec_acl
```

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

## 1.34 neighbor password

Use this command to enable MD5 authentication of LDP. Use the **no** form of this command to restore the default setting.

**neighbor** *ip-address* **password** [ 0 | 7 ] *pwd-string*

**no neighbor** *ip-address* **password**

Parameter Description	Parameter	Description
	<i>ip-address</i>	Transport address of the peer LSR.
	[ 0   7 ]	(Optional) 0 means typing a key in plain text and 7 means typing a key in encrypted text. A key is typed in plain text by default.
	<i>pwd-string</i>	Password string, which is case-sensitive. If the password string is entered in plain text mode, it contains 1 to 25 characters. If the password string is entered in encrypted text mode, it contains 1 to 52 characters.

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

**Command** **config-mpls-router** mode.

**Mode**

**Usage Guide** A key can be typed in either plain text or encrypted text. In the former case, if the **service password-encryption** command is used to enable the encryption service in global configuration mode, the key is saved in encrypted text when the current configuration is saved or viewed. To enable LDP authentication function, the keys configured on both ends of the LDP peer need to be the same. The change to the key will cause disconnection of established LDP sessions and re-attempt to establish them.

1. If a router is configured with a key initiatively but the LDP peer on the other end is not configured with a key, the following will be prompted when the two ends attempt to establish a session:  
%TCP-6-BADAUTH\_MD5\_UNEXPECTED: Found unexpected MD5 option from (%d.%d.%d.%d, %d) to (%d.%d.%d.%d, %d).
2. If a router functions as an active party and is configured with a key but the LDP peer on the other end is not configured with a key, the following will be prompted when the two ends attempt to establish a session:  
%TCP-6-BADAUTH\_MD5\_NOT\_FOUND: Unable to find expected MD5 option from (%d.%d.%d.%d, %d) to (%d.%d.%d.%d, %d).
3. If the keys configured on both ends are inconsistent, the following will be prompted when the two ends attempt to establish a session:  
%TCP-6-BADAUTH\_MD5\_INVALID: Failed to detect MD5 option rom (%d.%d.%d.%d, %d) to (%d.%d.%d.%d, %d).

**Configuration** The following example configures MD5 authentication to be adopted for sessions with 10.10.10.1,

**Examples**

with the plain text key being 123456:

```
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# neighbor 10.10.10.1 password 123456
```

**Platform**

N/A

**Description**

## 1.35 ping mpls ipv4

Use this command to detect the connectivity of an MPLS LSP.

```
ping mpls ipv4 ip-address/mask [ repeat repeat ] [ ttl time-to-live ] [ timeout timeout ] [ size size ]
[ interval mseconds ] [ source ip-address ] [ destination ip-address ] [ force-explicit-null ] [ pad
pattern ] [ reply mode { ipv4 | router-alert } ] [ dsmap ] [ flags fec ] [ verbose ]
```

**Parameter  
Description**

Parameter	Description
<i>ip-address/mask</i>	IPv4 address and subnet mask length of the destination FEC to be tested
<b>repeat</b> <i>repeat</i>	(Optional) Number of times to resend an Echo Request packet, ranging from 1 to 2147483647, 5 by default
<b>ttl</b> <i>time-to-live</i>	(Optional) Specifies the initial MPLS TTL value for sending packets, ranging from 1 to 255, 255 by default.
<b>timeout</b> <i>timeout</i>	(Optional) Specifies the timeout time for packets, ranging from 0 to 3600, 2 by default.
<b>size</b> <i>size</i>	(Optional) Specifies the size of packets, ranging from 84 to 18024, 84 by default.
<b>interval</b> <i>mseconds</i>	(Optional) Specifies the minimum interval time (in milliseconds) between two consecutive Echo Request packets sent, ranging from 0 to 3600000, 0 by default
<b>source</b> <i>ip-address</i>	(Optional) Source address. It is the destination address when the peer sends an Echo Reply packet.
<b>destination</b> <i>ip-address</i>	(Optional) Specifies 127/8 segment address. It is used to fill the IP header, 127.0.0.1 by default.
<b>force-explicit-null</b>	(Optional) Whether to forcibly add an explicit null label to the MPLS label. By default, it is not added.
<b>pad</b> <i>pattern</i>	(Optional) Pad pattern of packets, 0xABCD by default
<b>reply mode</b> { <b>ipv4</b>   <b>router-alert</b> }	(Optional) Specifies the reply mode of the Echo Request packet: <b>ipv4</b> : replies with an IPv4 UDP packet (default) <b>router-alert</b> : replies with an IPv4 UDP packet with the Router Alert option
<b>dsmap</b>	(Optional) Requires returning downstream information.

<b>flags fec</b>	(Optional) Sets forcible FEC stack check.
<b>verbose</b>	(Optional) Displays details about Echo Reply packets. By default, the information is not displayed.

**Defaults** See the parameter description.

**Command Mode** Privileged EXEC mode

**Usage Guide** Use this command to detect the connectivity of an MPLS LSP. You can change some default parameter values by specifying optional parameters. In addition to the directly typed command, interactive typing mode is provided. You can enter the interactive typing mode by pressing **Enter** after typing the **ping mpls** command

**Configuration** The following example detects the connectivity from the local device to the LSP of 10.10.10.10/32.

**Examples**

```
Ruijie# ping mpls ipv4 10.10.10.10/32 verbose
Sending 5, 84-byte MPLS Echoes to 10.10.10.10/32,
  timeout is 2 seconds, send interval is 0 msec:
  < press Ctrl+C to break >
Codes: '!' - success, 'Q' - request not sent, '.' - timeout,
'L'-labeled output interface, 'B'-unlabeled output interface,
'D'-DS Map mismatch, 'F'-no FEC mapping, 'f'-FEC mismatch,
'M'-malformed request, 'm'-unsupported tlvs, 'N'-no label entry,
'P'-no rx intf label prot, 'p'-premature termination of LSP,
'R'-transit router, 'I'-unknown upstream index,
'X'-unknown return code, 'x'-return code 0
Type escape sequence to abort.
!   size 84, reply addr 192.168.201.208, return code 3
!   size 84, reply addr 192.168.201.208, return code 3
!   size 84, reply addr 192.168.201.208, return code 3
!   size 84, reply addr 192.168.201.208, return code 3
!   size 84, reply addr 192.168.201.208, return code 3
Success rate is 100 percent (5/5), round-trip min/avg/max=20/36/60 ms
```

The following example uses the *dsmap* parameter and the *ttl* parameter together to return downstream information (because if the egress LSR is reached, downstream information is not returned).

```
Ruijie# ping mpls ipv4 10.40.10.10/32 dsmap ttl 1
Sending 5, 84-byte MPLS Echoes to 10.4(2)0.10.10/32,
  timeout is 2 seconds, send interval is 0 msec:
  < press Ctrl+C to break >
Codes: '!' - success, 'Q' - request not sent, '.' - timeout,
'L'-labeled output interface, 'B'-unlabeled output interface,
'D'-DS Map mismatch, 'F'-no FEC mapping, 'f'-FEC mismatch,
```

```
'M'-malformed request,'m'-unsupported tlvs,'N'-no label entry,
'P'-no rx intf label prot,'p'-premature termination of LSP,
'R'-transit router,'I'-unknown upstream index,
'X'-unknown return code,'x'-return code 0
Type escape sequence to abort.
L
Echo Reply received from 192.168.201.208
  DSMAP 0,DS Router Addr 192.168.198.2,DS Intf Addr 192.168.198.2
    Depth Limit 0, MRU 1508 [Labels: implicit-null Exp: 0]
L
Echo Reply received from 192.168.201.208
  DSMAP 0,DS Router Addr 192.168.198.2,DS Intf Addr 192.168.198.2
    Depth Limit 0, MRU 1508 [Labels: implicit-null Exp: 0]
L
Echo Reply received from 192.168.201.208
  DSMAP 0,DS Router Addr 192.168.198.2,DS Intf Addr 192.168.198.2
    Depth Limit 0, MRU 1508 [Labels: implicit-null Exp: 0]
L
Echo Reply received from 192.168.201.208
  DSMAP 0,DS Router Addr 192.168.198.2,DS Intf Addr 192.168.198.2
    Depth Limit 0, MRU 1508 [Labels: implicit-null Exp: 0]
L
Echo Reply received from 192.168.201.208
  DSMAP 0,DS Router Addr 192.168.198.2,DS Intf Addr 192.168.198.2
    Depth Limit 0, MRU 1508 [Labels: implicit-null Exp: 0]
Success rate is 0 percent (0/5)
```

Field	Description
!	A correct Reply packet is received, indicating that the LSP is connected.
Q	The Request packet is not sent, indicating that there is no LSP corresponding to the destination FEC on the local device.
.	Receiving a Reply packet times out, indicating that no Reply packet is received within a specified period.
L	There is an outgoing label corresponding to the FEC on the router that returns a Reply packet, indicating that the router that returns a Reply packet is an intermediate router of the LSP.
B	There is no outgoing label corresponding to the FEC on the router that returns a Reply packet, indicating that the LSP is interrupted.
D	Validation information carried in Downstream Mapping TLV does not match the information on the router that returns a Reply packet.
F	There is no FEC mapping carried in the corresponding TargetFec on the router that returns a Reply packet.
f	The label of the current label stack in the router that returns a Reply packet is inconsistent with the label of FEC mapping carried in TargetFec.

M	The format of the Request packet received by the router that returns a Reply packet is incorrect.
m	The Request packet received by the router that returns a Reply packet has TLVs that are not supported.
N	The router that returns a Reply packet does not have an instance corresponding to the incoming label, indicating that the labels are not synchronous.
P	The protocol for transmitting packets in the router that returns a Reply packet is inconsistent with that recorded in TargetFec stack.
p	Premature termination of packet transmission
R	Return the reserved value.
I	Upstream interface index unknown
X	Unknown return value
x	The return value is 0.

**Platform** N/A

**Description**

## 1.36 propagate-release

Use this command to enable label release. Use the **no** form of this command to restore the default setting, and then no label release messages are transmitted.

**propagate-release**

**no propagate-release**

Parameter Description	Parameter	Description
	N/A	N/A

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

**Command** **config-mpls-router mode.**

**Mode**

**Usage Guide** The command execution does not influence the label release messages previously received from the LDP instance, only the ones received later.

**Configuration** The following command enables label release of the LDP instance:

**Examples**

```
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# propagate-release
```

**Related Commands**

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

<b>show mpls ldp parameters</b>	Dsplays the LDP configuration parameters under all or specified VRFs.
---------------------------------	---

**Platform** N/A

**Description**

## 1.37 route wait label-mapping

Use this command to set the label mapping delay for route update. Use the **no** or **default** form of this command to restore the default setting.

**route wait label-mapping** *seconds*

**no route wait label-mapping**

**default route wait label-mapping**

Parameter Description	Parameter	Description
	<i>seconds</i>	Label mapping delay for route update, in the range from 0 to 65535 seconds.

**Defaults** The default is 120 seconds.

**Command Mode** Global configuration mode

**Usage Guide** When IP routes update, LDP will delete the LSP corresponding to the next hop even though the LSP may not be created. The traffic is interrupted and will not recover until the new LSP is created. With this command configured, if the new LSP corresponding to the next hop is not created, LDP will delete the old LSP after a delay. If the new LSP is created during this time, traffic is switched to this LSP. Otherwise, the old LSP is deleted.

**Configuration Examples** The following example sets the label mapping delay for route update to 100 seconds.

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)#route wait label-mapping 100
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**



## 1.38 session protection

Use this command to configure session protection for LDP. Use the **no** form of this command to restore the default setting.

**session protection** [ **for acl** *acl\_name* ] [ **duration** { **infinite** | *seconds* } ]

**no session protection** [ **for acl** ] [ **duration** ]

Parameter Description	Parameter	Description
	-	Enable or disable session protection for an LDP instance if no parameter is carried.
	<b>for acl</b> <i>acl_name</i>	(Optional) Configure ACL rules. Only the LDP sessions whose neighbors' LSR IDs comply with the specified ACL rules are protected.
	<b>duration</b>	(Optional) Configure the session protection period. When link failure cause that there is no Hello adjacency of the associated interface, the session protection is performed. The LDP extended Hello adjacency maintains the LDP session within the protection period.
	<b>infinite</b>	During the session protection period, the LDP extended Hello adjacency maintains the LDP session all the time.
	<i>seconds</i>	Configure the session protection period, which ranges from 30 to 2147483 in seconds.

### Defaults

Session protection of an LDP instance is disabled.

No ACL rule is specified and all LDP sessions under the LDP instance are protected.

The default session protection period is 86400s (24 hours).

### Command

**config-mpls-router** mode

### Mode

### Usage Guide

Use this command to enable or disable session protection of an LDP instance or modify the parameters of session protection. The command usage is as follows:

Use the **session protection** command to enable session protection for an LDP instance and use the **no session protection** command to disable this function.

Add the ACL parameter if you need to protect only specified LDP sessions whose neighbors' LSR IDs comply with the ACL rule are protected.

The session protection processes only standard ACL rules, that is only the ACL rules created by the **ip access-list standard** command are processed.

If no ACL rule is specified, all LDP sessions under the LDP instance will be protected.

If ACL rules are specified, only the LDP sessions with permitted neighbors' LSR IDs are protected.

The ACL rule name is specified when session protection is configured. However, if you have not created the ACL rule, that is the ACL rule does not exist, the system will deny all LDP sessions. That is the system will protect no LDP session under this LDP instance.

- Configure the ACL rule by using the key word **for acl** or modify the default period of session protection by using the key word **duration**. The parameters take effect immediately after modification. Use the **no** form of the command to restore specified parameters to the default values. Only the latest configuration is saved.
- When link failure caused that no Hello adjacency exists for the associated interface, the session protection is performed. The LDP extended Hello adjacency maintains the LDP session within the protection period. However, if the holdtime of the extended Hello adjacency or the keepalive of the session is timeout during the period, the session restoration will fail.
- Enable this feature on LSRs at both ends, so that the LDP session protection function works normally. You can enable this feature on a supported LSR and configure another LSR to receive and respond to the extended Hello packet if an LSR does not support this feature (configure the **neighbor ip-address** command to specify extended peers or configure the **discovery targeted-hello accept** command to receive and respond to the extended Hello packet).

**i** The command used to enable or disable session protection of an LDP instance is mutually independent with the command used to configure session protection parameters. For example, after session protection of an LDP instance is enabled by the **session protection** command, you can protect sessions that comply with the rule `acl_1` by configuring the **session protection for acl acl\_1** command.

Type the **no session protection for acl** command to remove the session protection related to ACL rule configurations without affecting session protection of an LDP instance. Similarly, you can enter the **no session protection** command to disable session protection of an LDP instance without affecting the configuration of ACL rules of session protection (the configuration of ACL rules is saved but does not take effect because session protection of an LDP instance is disabled).

The configuration of the time parameter of session protection is similar.

**i** The configurations of different parameters of session protection will combine while the configurations of the same parameter will override. That is, only the latest configuration of the same parameter is saved, without affecting the configurations of other parameters. Configure the **session protection for acl acl\_1** command to only protect sessions that comply with the rule `acl_1`.

At this time, you can enter the **session protection duration 100** command to configure the session protection period as 100s. Because the configuration of different parameters will combine instead of overriding the previous specified ACL filtering rules, the **session protection duration 100** command is equal to entering the **session protection for acl acl\_1 duration 100** command.

Enter the **session protection for acl acl\_2** command to only protect sessions that comply with the rule `acl_2`. The previous ACL rules are overridden without affecting the time configuration of session protection. The configuration is equal to entering the **session protection for acl acl\_2 duration 100** command.

**i** Use the **no** form of the commands to restore corresponding parameters to the default values. Similarly, restoring a parameter to the default value does not affect the configuration of other parameters.

- After entering the session protection status because a link between sessions fails, use the **clear mpls ldp neighbor** command to disconnect the current LDP session if it is unnecessary to continue to protect this session.

The modification of session protection time can take effect immediately. If a session is being protected, the protection timer is adjusted in the following ways:

From time1 to time2 (note that time1 and time2 are non-infinite and similarly hereinafter), the current protection timer is ended and a new protection timer is started. The time is time2 minus the current protected time. If the current protected time is greater than time2, enable a one-second timer.

From time1 to infinite, and the protection timer is ended.

From **infinite** to time2, and the protection timer is enabled and the time is time2.

**Configuration** The following example enables session protection of an LDP instance.

**Examples**

```
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# session protection
```

The following example enables session protection of an LDP instance under the VRF instance vpna.

```
Ruijie(config)# mpls router ldp vpna
Ruijie(config-mpls-router)# session protection
```

The following example configures to protect only the LDP sessions whose LSR IDs are 10.10.10.10.

```
Ruijie(config)# ip access-list standard acl_1
Ruijie(config-std-nacl)# permit host 10.10.10.10
Ruijie(config-std-nacl)# exit
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# session protection for acl acl_1
```

The following example configures the ACL rule acl\_1 for LDP session protection.

```
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# no session protection for acl acl_1
```

The following example disables session protection of the LDP instance.

```
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# no session protection
```

**Related  
Commands**

Command	Description
<b>clear mpls ldp neighbor</b>	Disconnects the specified LDP session forcibly and rebuild a new LDP session.
<b>show mpls ldp neighbor</b>	Displays information about LDP sessions under all or specified VRFs, and check whether an LDP session has the extended LDP adjacency.
<b>show mpls ldp neighbor detail</b>	Displays information about LDP sessions under all or specified VRFs, and check whether an LDP session has session protection.
<b>show mpls ldp parametes</b>	Displays configuration parameters of an LDP instance and whether the LDP session

	protection function is enabled.
--	---------------------------------

**Platform****Description**

## 1.39 show mpls forwarding-table

Use this command to display the MPLS forwarding table.

```
show mpls forwarding-table [ summary | [ [ ip-address/mask | label label | interface
interface-name | next-hop ip-address ] | [ ftn [ ip | vc ] | ilm [ ip | vc ] ] | { vrf vrf-name | global } [ ftn |
ilm ] ] [ detail ] ]
```

**Parameter  
Description**

Parameter	Description
-	Displays the whole MPLS forwarding table.
<b>summary</b>	Displays the statistics information of MPLS process forwarding.
<i>ip-address/mask</i>	Displays ILM and FTN entries of a specified FEC.
<b>label</b> <i>label</i>	Displays the ILM entry of a specified label.
<b>interface</b> <i>interface-name</i>	Displays the MPLS forwarding entry (ILM and FTN) of a specified egress.
<b>next-hop</b> <i>ip-address</i>	Displays the MPLS forwarding entry (ILM and FTN) of a specified next-hop address.
<b>ftn</b>	Displays an FEC mapping entry.
<b>ilm</b>	Displays a label forwarding entry.
<b>ip</b>	Displays the MPLS forwarding entry of an IP application (including unicast route and L3 VPN).
<b>vrf</b> <i>vrf-name</i>	Displays the MPLS forwarding entry related to a VRF.
<b>detail</b>	Displays the details about the MPLS forwarding entry.
<b>global</b>	Displays global non-VRF MPLS forwarding entries, excluding FTN and ILM entries of VC.

**Defaults**

No parameter is carried, indicating that all MPLS forwarding entries are displayed.

**Command  
Mode**

Privileged EXEC mode

**Usage Guide**

Use the **show mpls forwarding-table** command to show information about all MPLS forwarding entries (including ILM and FTN entries).

Use the **show mpls forwarding-table** *ip-address/mask* command to show information about specified MPLS forwarding entries (including ILM and FTN entries).

Use the **show mpls forwarding-table** **label** *label* command to show the ILM forwarding entries of a specified label.

Use the **show mpls forwarding-table** **interface** *interface-name* command to show the MPLS

forwarding entries of a specified egress (including FTN and ILM entries).

Use the **show mpls forwarding-table next-hop** *ip-address* command to show the MPLS forwarding entries of a specified next hop (including FTN and ILM entries).

Use the **show mpls forwarding-table detail** command to show details about all MPLS forwarding entries (including ILM and FTN entries).

Use the **show mpls forwarding-table vrf** command to show all MPLS forwarding entries (including ILM and FTN entries) which belong to a VRF.

Use the **show mpls forwarding-table vrf** *vrf-name* **ftn** command to show information about all FTN entries which belong to a VRF.

Use the **show mpls forwarding-table vrf** *vrf-name* **ilm** command to show information about all ILM entries which belong to a VRF.

Use the **show mpls forwarding-table ftn ip** command to show FTN entries of unicast routes and L3 VPN application.

Use the **show mpls forwarding-table ilm ip** command to show ILM entries of unicast routes and L3 VPN application.

Use the **show mpls forwarding-table ftn** command to show all FTN entries.

Use the **show mpls forwarding-table ilm** command to show all ILM entries.

Use the **show mpls forwarding-table ftn vc** command to show all FTN entries of L2 VPN.

Use the **show mpls forwarding-table ilm vc** command to show all ILM entries of L2 VPN.

Use the **show mpls forwarding-table ftn detail** command to show details about all FTN entries.

Use the **show mpls forwarding-table ilm detail** command to show details about all ILM entries.

**Configuration** The following example displays all MPLS forwarding entries.

**Examples**

```
Ruijie#showmpls forwarding-table
Label Operation Code:
PH--PUSH label
PP--POP label
SW--SWAP label
SP--SWAP topmost label and push new label
DP--DROP packet
PC--POP label and continue lookup by IP or Label
PI--POP label and do ip lookup forward
PN--POP label and forward to nexthop
PM--POP label and do MAC lookup forward
PV--POP label and output to VC attach interface
IP--IP lookup forward
s--stale
  Local   Outgoing OP FEC                Outgoing   Nexthop
labellabel                interface
s --      1024    PH 1.1.1.1/32                Gi0/2      50.1.1.1
  --      imp-null PH 1.1.2.2/32                Gi0/2      50.1.1.1
```

**Local label:** It is the label distributed by this forwarding equivalence class device to other devices, namely the incoming label of an ILM entry. If there is no incoming label for an FTN entry, "--" is displayed.

**Outgoing label:** It is the outgoing label of an ILM or FTN label. "--" indicates that an ILM or FTN label has no outgoing label. If *impl-null* is shown, it indicates an implicit null label 3 and that this label is not carried in the forwarding of packets.

**OP:** indicates an operation behavior that a packet hits the incoming label and outgoing label of a forwarding entry (ILM or FTN), and the behavior includes the following:

Field	Description
PH	An IP packet needs to be added with labels (perhaps one to three labels) and then forwarded to the next hop after hitting the entry. Use the <b>show mpls forwarding-table detail</b> command to view the labels and the number of labels added. If <i>imp-null</i> is displayed for an outgoing label, the <i>imp-null</i> label is not added in the actual forwarding process.
PP	An MPLS packet needs to remove the label and be forwarded to the next hop directly after hitting the entry, that is, perform forwarding of the last but one hop.
SW	An MPLS packet needs to exchange labels and be forwarded to the next hop directly after hitting the entry.
SP	An MPLS packet needs to exchange top labels, added with a label, and be forwarded to the next hop after hitting the entry. Exchanged labels are displayed for the outgoing label field. Use the <b>show mpls forwarding-table detail</b> command to the labels added and the number of labels. One or two layers of labels may be added.
PN	An MPLS packet needs to remove the label and be forwarded to the next hop directly after hitting the entry.
PI	An MPLS packet needs to remove all labels and be forwarded according to the destination IP address after hitting the entry.
PC	An MPLS packet removes the top label and is forwarded according to the query result in the label forwarding table after hitting the entry. An IP packet is forwarded according to the destination IP address.
PM	An MPLS packet needs to remove the label and is forwarded according to the destination MAC address of the inner packet (VPLS application) after hitting the entry.
PV	An MPLS packet needs to remove the label and is forwarded from a specified egress (VPWS application) after hitting the entry.
IP	An MPLS packet needs to be forwarded across VRFs after hitting the entry. This type of entry is the forwarding entry across VRFs of one VPN.
DP	A packet is discarded after hitting the entry.

**FEC:** Two situations are involved:

For an FTN entry ("--" is displayed if it has no incoming label), the IP address and mask are displayed for the FEC field if the FTN is for IP route. If (V) is carried behind, the FTN belongs to a VRF. For a VC FTN, VC ID and VC peer IP are displayed for the FEC field.

For an ILM entry (it has an incoming label), if the label is for IP route, the IP address and mask are displayed for the FEC field. If (V) is carried behind, the ILM belongs to a VRF. If the label is for a VRF of a L3 VPN (that is, each VRF of a VPN is allocated with a label), the VRF name is displayed for the

FEC field, such as VRF (vpna) in the preceding example. If the label is for VC, VC ID and VC peer IP are displayed for the FEC field, such as VC (20,1.1.1.1) in the preceding example.

**Outgoing interface:** indicates the outgoing interface for packet forwarding and uses the abbreviated name of the interface.

**Nexthop:** indicates the next hop for packet forwarding. "--" is displayed for a forwarding entry with an ineffective next hop address.

The following example displays statistics information of the process forwarding module.

```
Ruijie# show mpls forwarding-table summary
MPLS forwarding is ON
Enable count:1
ILM entrys:14
ILM changes:14
ILM failed changes :0
IP FTN entrys:0
IP FTN changes:4
IP FTN failed changes:0
L2 FTN entrys:0
L2 FTN changes:0
L2 FTN failed changes:0
In label packets:0
Out label packets:0
Send label packets:0
In ip packets:0
Out ip packets:0
Out ip stack packets:0
Forwarding packets:0
Fragment packets:0
Fragment error packets:0
Label error packets:0
Label failed packets:0
Ttl over packets:0
Buffer failed packets:0
Ip don't fragment packets:0
Other failed packets:0
```

The following example displays FRR information of the process forwarding module.

```
Ruijie#show mpls forwarding-table frr
Label Operation Code:
PH--PUSH label
PP--POP label
SW--SWAP label
SP--SWAP topmost label and push new label
DP--DROP packet
```

```

PC--POP label and continue lookup by IP or Label
PI--POP label and do ip lookup forward
PN--POP label and forward to nexthop
PM--POP label and do MAC lookup forward
PV--POP label and output to VC attach interface
IP--IP lookup forward
Status codes: m - main entry, b - backup entry, * - active.
Local      Outgoing  OP   FEC                Outgoing  Nexthop
Label      label
m*  --     1026    PH   120.1.1.0/24      Gi3/18    10.0.2.1
b   --     1027    PH   120.1.1.0/24      Gi3/19    10.0.3.1
m* 1028   1029    SW   120.1.2.0/24      Gi3/18    10.0.2.1
b   1028   1030    SW   120.1.2.0/24      Gi3/29

```

**Related  
Commands**

Command	Description
N/A	N/A

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

## 1.40 show mpls label-pool

Use this command to show the usage of the label pool in various label spaces. You can show the data of all the label spaces, or that of a specific label space by specifying a label space number.

**show mpls label-pool** [ *label\_space* ]

**Parameter  
Description**

Parameter	Description
<i>label_space</i>	Specifies the label space whose label pool is to be shown.

**Defaults** N/A

**Command  
Mode** Privileged EXEC mode

**Usage Guide** Use this command to show the usage of the label pools of all label spaces or a specific label space, including label pool size, maximum/minimum label value, and allocation of each label pool. At present, only the global label space is supported.

**Configuration  
Examples**

```

Ruijie# show mpls label-pool
label space: 0
label pool bucket size 512
min label 16, max label 1048575

```



```
label block used 2, free 2046
status codes: (s) - stale
CLI: 0 , 1 (Include label [16,1023], reserved)
LDP: 3 , 4 (s)
```

**Platform** N/A

**Description**

## 1.41 show mpls ldp bindings

Use this command to show the LDP label binding information, which can be filtered according to VRF, FEC prefix, label value, remote binding, or local binding.

**show mpls ldp bindings** [ **all** | **vrf** *vrf-name* ] [ *ip-address* | *mask* | **label** *label* ] [ **remote** | **local** ]

**Parameter Description**

Parameter	Shows
<b>all</b>	Label binding information under all VRFs.
<b>vrf</b> <i>vrf-name</i>	Label binding information under specified VRFs.
<i>ip-address</i>   <i>mask</i>	Label binding information of specified FECs.
<b>label</b> <i>label</i>	Label binding information of specified label values, ranging from 0 to 1048575.
<b>remote</b>	Remote label binding information received from the LDP peer.
<b>local</b>	Label binding information sent locally.

**Defaults** No parameter is carried, indicating that all label binding information under the global VRF is shown.

**Command Mode** Privileged EXEC mode

**Usage Guide** Display the FEC and label binding information.

Use this command to display:

- Working status of the LDP;
- Whether the LDP has normally bound a label to an FEC
- Specific label value of bound to an FEC
- Whether the binding is local binding or remote binding.

If no VRF is specified, label binding information under the global VRF is displayed.

**Configuration** The following example displays label database information under the global VRF:

**Examples**

```
Ruijie# show mpls ldp bindings
Default VRF:
  lib entry: 2.2.2.2/32
  local binding: to lsr:10.20.10.10:0,label: imp-null
  remote binding: from lsr:10.20.10.10:0,label: 16 (not in FIB)
```

```
lib entry: 3.3.3.3/32, (IA)
  local binding: to lsr: 10.20.10.10:0,label: 1028
  remote binding: from lsr: 10.20.10.10:0,label: 1026
```

Field	Description
IA	Identifies the LDP entry added by the longest matched routing.
<b>local binding</b>	Label binding information distributed by an LSR for an FEC. <i>not in FIB</i> indicates that the information is not added to the FIB.
<b>remote binding</b>	Remote label binding information received from the LDP peer. <i>not in FIB</i> indicates that the information is not added to the FIB.

**Platform** N/A

**Description**

## 1.42 show mpls ldp discovery

Use this command to show information of the neighbor discovered by LDP under all or specified VRFs.

**show mpls ldp discovery** [ **all** | **vrf** *vrf-name* ] [ **detail** ]

**Parameter Description**

Parameter	Shows
<b>all</b>	Information of the neighbor discovered by LDP under all VRFs.
<b>vrf</b> <i>vrf-name</i>	Information of the neighbor discovered by LDP under specified VRFs.
<b>detail</b>	Details of the neighbor discovered by LDP.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** Use this command to show the interfaces on which LDP neighbors are discovered, the LDP neighbors discovered, the Hello packet source address of the LDP neighbor, and Hello packet keepalive time. If no VRF is specified, the command shows information of all neighbors discovered by LDP under the global VRF.

**Configuration Examples** The following example displays information of the neighbor discovered by LDP under the global VRF.

**Examples**

```
Ruijie# show mpls ldp discovery
Default VRF:
  Local LDP Identifier:
    8.8.8.8:0
  Discovery Sources:
  Interfaces:
```

```
GigabitEthernet 2/1 (ldp): xmit/recv
    LDP Ident: 10.30.10.10:0
GigabitEthernet 2/2 (ldp): xmit
Targeted Hellos:
    8.8.8.8 -> 10.5.0.1 (ldp): active, xmit
    8.8.8.8 -> 10.30.10.10 (ldp): active/passive, xmit
    2.2.2.2 -> 10.30.10.10 (ldp): passive, xmit/recv
    LDP Ident: 10.30.10.10:0
```

Field	Description
Local LDP Identifier	LDP identifier for the local router.
Interfaces	Interface information lists discovered by the active LDP.
xmit	<b>Hello packets were sent on an interface.</b>
recv	<b>Hello packets are received on an interface.</b>
Targeted Hellos	The sending path list of all targeted Hello packets.
active	The local LSR actively sends targeted Hello packets.
passive	The neighbor LSR actively sends targeted Hello packets. The local LSR is configured to respond to the targeted Hello packet sent by the neighbor LSR.

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

### 1.43 show mpls ldp interface

Use this command to display information about interfaces enabled with LDP under all or specific VRFs.

**show mpls ldp interface** [ all | vrf *vrf-name* | *interface-name* ]

Parameter Description	Parameter	Description
	<b>all</b>	Displays information about interfaces enabled with LDP under all VRFs.
	<b>vrf</b> <i>vrf-name</i>	Displays information about interfaces enabled with LDP under specified VRFs.
	<i>interface-name</i>	Displays information about specified interfaces.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide**

Use this command to show the device's interfaces enabled with LDP and the Up/Down state. If no VRF is specified, information of all interfaces under the global VRF is displayed.

**Configuration**

The following example displays information about the interfaces enabled with LDP under the global VRF.

**Examples**

```
Ruijie# show mpls ldp interface
Default VRF:
Interface                Operational   Status
GigabitEthernet 2/1     Yes          UP
GigabitEthernet 2/2     No           DOWN
GigabitEthernet 2/3     Yes          UP
```

Field	Description
Operational	Whether an interface is enabled with LDP.
Status	Interface status.

**Related Commands**

Command	Description
N/A	N/A

**Platform**

N/A

**Description**

## 1.44 show mpls ldp neighbor

Use this command to display LDP session information under all or specified VRFs.

**show mpls ldp neighbor** [ **all** | **vrf** *vrf-name* ] [ *ip-address* ] [ **detail** ]

**Parameter Description**

Parameter	Description
<b>all</b>	Displays LDP session information under all VRFs.
<b>vrf</b> <i>vrf-name</i>	Displays LDP session information under specified VRFs.
<i>ip-address</i>	Displays LDP session information of specified LDP peers under specified or all VRFs.
<b>detail</b>	Displays detailed LDP session information.

**Defaults**

N/A

**Command Mode**

Privileged EXEC mode

**Usage Guide**

Use this command to display all LDP neighbors, such as the TCP connection port between the local LDP and peer LDP, LDP status, and received/sent message counts.

**Configuration** The following example displays LDP neighbor information under the global VRF.

**Examples**

```
Ruijie# show mpls ldp neighbor
Default VRF:
  Peer LDP Ident: 10.20.10.10:0; Local LDP Ident: 8.8.8.8:0
    TCP connection: 10.20.10.10.62488 - 8.8.8.8.646
    State: OPERATIONAL; Msgs sent/recv: 42/45; UNSOLICITED
    Up time: 00:33:49
    Graceful Restart enabled; Peer reconnect time (msecs): 300000
  Down Neighbor Information:
    Status: recovering (115 seconds left)
    LDP discovery sources:
  Link Peer on GigabitEthernet 2/1,Src IP addr:192.168.201.220
    Targeted Hello 8.8.8.8 -> 10.20.10.10
    Addresses bound to peer LDP Ident:
      10.20.10.10  192.168.201.220 192.168.198.1  10.5.0.1
```

The following example displays details about the LDP session under the global VRF.

```
Ruijie# show mpls ldp neighbor detail
Default VRF:
  Peer LDP Ident: 10.20.10.10:0; Local LDP Ident: 8.8.8.8:0
    TCP connection: 10.20.10.10.62488 - 8.8.8.8.646
  State: OPERATIONAL; Msgs sent/recv: 6/7; UNSOLICITED
    Up time: 00:35:15
    Graceful Restart enabled; Peer reconnect time (msecs): 300000
  Down Neighbor Information:
    Status: recovering (115 seconds left)
    LDP discovery sources:
    Targeted Hello 8.8.8.8 -> 10.20.10.10, active, passive;
    Hold time: 45 sec, hello interval: 5 sec
    Addresses bound to peer LDP Ident:
      1.1.10.2      1.1.20.2      20.20.20.20
    Our is PASSIVE
    KA hold time: 45 sec; Proposed local/peer: 45/45 sec
    Peer distribute label mode: UNSOLICITED
    Peer loop detection: Disabled
    Peer Path Vector Limit: 0; Max PDU Length: 4096
    LDP Session Protection enabled, state: Protecting
    acl: acl_1, duration: 300 seconds
    holdup time remaining: 60 seconds
```

Field	Description
Peer LDP Ident	Peer LDP identifier of an LDP session
Local LDP Identifier	LDP identifier of the local router
TCP connection	TCP connection that supports the LDP session

State	LDP session state
Msgs sent/rcv	Count of LDP messages which are sent to and received from the session peer.
UNSOLICITED&ONDEMAND	Label distribution mode
Up time	Time when an LDP session is established
Graceful Restart enabled	Indicates that Graceful Restart is enabled.
Peer reconnect time (msecs)	Reconnect time of the peer LDP session
Down Neighbor Information	Neighbor Down information
Status	Indicates that the neighbor is recovering (with 115 seconds to go).
LDP Session Protection enabled	Enable LDP session protection. The LDP sessions that are enabled with session protection have three states: <b>Incomplete, Ready and Protecting</b> . <b>Incomplete</b> indicates that the extended Hello adjacency of session protection is not set up. <b>Ready</b> indicates that the session protection is ready. <b>Protecting</b> indicates that the link is disconnected and the session is being protected.
Acl	ACL rule specified by the session protection.
duration	Configured session protection time.
Holdup time remaining	Remaining time of the session protection timer.

## Description

### 1.45 show mpls ldp parameters

Use this command to display the LDP configuration parameters under all or specified VRFs.

**show mpls ldp parameter [ all | vrf *vrf-name* ]**

Parameter Description	Parameter	Description
	<b>all</b>	Displays LDP configuration parameters under all VRFs.
	<b>vrf <i>vrf-name</i></b>	Displays LDP configuration parameters under specified VRFs.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** Use this command to show various attribute information of LDP, including the LSR ID, transport address, loop detection mechanism, label distribution and control mode, label retention mode, interval and holdtime of the Hello packet for the extended mechanism, as well as the interval and holdtime of

the Keepalive packet. If no VRF is specified, LDP configuration parameters under the global VRF are displayed.

**Configuration** The following example displays the configuration parameters of LDP under the global VRF.

**Examples**

```
Ruijie# show mpls ldp parameters
Default VRF:
  Protocol version: 1
  Ldp Router ID: 1.1.1.1
  Control Mode: INDEPENDENT
  Propagate Release: FALSE
  Label Merge: TRUE
  Label Retention Mode: LIBERAL
  Loop Detection Mode: off
Inter Area Lsp: TRUE
Session Protection: TRUE
Targeted Session Keepalive HoldTime/Interval: 180/60 sec
  Targeted Hello HoldTime/Interval: 45/5 sec
  LDP initial/maximum backoff: 15/120 sec
```

**Platform** N/A

**Description**

## 1.46 show mpls ref

Use this command to display information about IPv4 FTN of MPLS REF.

**show mpls ref ftn-ipv4 [ global | vrf vrf\_name ] [ ip\_address / mask [ detail ] ]**

Use this command to display information about IPv6 FTN of MPLS REF.

**show mpls ref ftn-ipv6 [ global | vrf vrf\_name ] [ ipv6\_address / mask [ detail ] ]**

Use this command to display information about ILM of MPLS REF.

**show mpls ref ilm [ in-label label [ detail ] | summary ]**

Use this command to display information about the next hop of MPLS REF.

**show mpls ref nhife [ [ nhife\_id [ detail ] ] | summary ]**

Use this command to display the global information about MPLS REF.

**show mpls ref summary**

**Parameter  
Description**

Parameter	Description
<b>global</b>	Displays MPLS REF information in the global VRF.
<b>vrf vrf-name</b>	Displays MPLS REF information in the specified VRF.
<i>ip-address / mask</i>	Displays information about the specified IPv4 FEC.
<i>ipv6-address / mask</i>	Displays information about the specified IPv6 FEC.
<b>in-label label</b>	Performs filtering according to the in-label, in the range from 16 to 1048575.

<i>nhlfe_id</i>	ID of next hop label forwarding entry (NHLFE), in the range from 1 to 4294967295.
<b>detail</b>	Displays MPLS REF table details
<b>summary</b>	Displays global information

**Defaults** N/A

**Command** Privileged EXEC mode

**Mode**

**Usage Guide** This command is used to display information about the MPLS REF table, including IPv4 FTN, IPv6 FTN, ILM, next hop and global information.

**Configuration** The following example displays information about IPv4 FTN of MPLS REF.

**Examples**

```
Ruijie# show mpls ref ftn-ipv4
```

VRF	FEC	NHLFE ID	NHLFE Type
0	2.2.2.2/32	32767	single path

Field	Description
VRF	VRF that the FTN belongs to.
FEC	Forwarding equivalence class
NHLFE ID	ID of the next hop label forwarding entry
NHLFE TYPE	Type of the next hop label forwarding entry, either uni-path or multi-path.

The following example displays information about ILM of MPLS REF.

```
Ruijie# show mpls ref ilm
```

In Intf	In Label	Type	Pathnum	Opcode	VRF	VC ID	Out Intf	Nexthop
0	112	single	1	pop	0	0	3	10.1.1.1

Field	Description
In intf	Incoming interface value, The label is globe-based label space, so the incoming interface value is 0 constantly.
In label	Incoming label.
Pathnum	The number of paths.
Opcode	Label operation type.
VRF	VRF value.
VC_ID	VC ID, used for L2 VPN forwarding.
Out Intf	Outgoing interface ID.
Nexthop	Next hop IP address.

The following example displays NHLFE information.

```
Ruijie# show mpls ref nhlfe
```

ID	Type	Pathnum	Opcode	Intf	ADJ ID	Nexthop
32767	single	1	push	1	20	172.18.1.2

Field	Description
ID	ID of the next hop label forwarding entry.



TYPE	Type of the next hop label forwarding entry, either uni-path or multi-path.
Pathnum	The number of paths.
Opcode	Label operation type.
Intf	Outgoing interface.
ADJ_ID	Adjacent list ID.
Nexthop	Next hop IP address.

The following example displays global information about MPLS REF.

```
Ruijie# show mpls ref summary
MPLSREF Summary:
ctrl pid: 4294963185
ctrl sn: 0
global enable: false
vpn ttl propagate: true
public ttl propagate: true
# of labels popped before icmp reply: 0
fragment enable: true
loadbalance scheme: per-flow
```

Field	Description
ctrl pid	ID of MPLS process.
ctrl sn	Serial number of MPLS process.
global enable	Whether to enable MPLS forwarding globally.
vpn ttl propagate	Whether to enable the TTL propagate function on VPN packets.
public ttl propagate	Whether to enable the TTL propagate function globally.
of labels popped before icmp reply	The number of labels popping up before ICMP replies.
loadbalance scheme	Load balance scheme.

#### Related Commands

Command	Description
N/A	N/A

#### Platform

N/A

#### Description

## 1.47 show mpls rib

Use this command to display MPLS RIB information.

**show mpls rib** [ all | vrf *vrf-name* ]

#### Parameter Description

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

<b>all</b>	Displays MPLS routing information under all VRFs.
<b>vrf vrf-name</b>	Displays MPLS routing information under specified VRFs.

**Defaults** N/A

**Command** Privileged EXEC mode

**Mode**

**Usage Guide** Use this command to display MPLS routing information as follows:  
If no parameter is specified in this command, MPLS routing information under the global VRF is displayed.

**Configuration** The following example displays MPLS routing information under the global VRF.

**Examples**

```
Ruijie#show mpls rib
Status codes: m - main entry, b - backup entry, * - active, s - stale.
Default VRF:
LSP Information      Total
STATIC LSP          0
LDP LSP              3
RSVP LSP             0
BGP LSP              0
L3VPN LSP            0
LDP LSP:
-----
FEC                In/Out Label      In/Out IF         Nexthop
119.1.1.0/24      -/1025            -/Gi3/19          10.0.10.1
m* 120.1.1.0/24   -/1026            -/Gi3/18          10.0.2.1
b 120.1.1.0/24   -/1031            -/Gi3/19          10.0.10.1
m* 120.1.2.0/24   1027/1032         Gi3/10/Gi3/18    10.0.2.1
b 120.1.2.0/24   1027/1033         Gi3/10/Gi3/19    10.0.10.1
-----
```

Field	Description
LSP Information	<ul style="list-style-type: none"> <li>● STATIC LSP: This type of LSP is configured manually.</li> <li>● LDP LSP: This type of LSP is established through LDP.</li> <li>● RSVP LSP: This type of LSP is an MPLS TE tunnel established through RSVP-TE.</li> <li>● BGP LSP: This type of LSP is established through BGP for IPv4 private network BGP routes or IPv4 public network BGP routes.</li> <li>● L3VPN LSP: This type of LSP is established for received VPNv4 routes through BGP.</li> </ul>
Total	Displays the total amount of LSP information related to a VRF.

FEC	Its value is usually the destination address of an LSP.
In/Out Label	Value of the incoming/outgoing label
In/Out IF	Name of the incoming/outgoing interface
Nexthop	Next hop

**Related Commands**

Command	Description
N/A	N/A

**Platform**

N/A

**Description**

## 1.48 show mpls summary

Use this command to display MPLS global configuration information.

**show mpls summary**

**Parameter Description**

Parameter	Description
N/A	N/A

**Defaults**

N/A

**Command Mode**

Privileged EXEC mode

**Usage Guide**

Use this command to view the basic information about MPLS, including maximum/minimum available labels, information about each label space, label space used by each interface, and total number of interfaces with MPLS enabled.

**Configuration Examples**

The following example displays MPLS global configuration information.

```
Ruijie# show mpls summary
Per label-space information://Show information about each label space, with
only label space 0 supported at present.
Label-space 0 is using minimum label:16 and maximum label:1048575//Label scope
allowed by this label space
Label-switching Interface://Display the interface enabled with label switching
Interface                Label space
GigabitEthernet 4/1      0
GigabitEthernet 4/2      0
Total number of mpls interface is 2
```

**Platform** N/A

**Description**

## 1.49 snmp-server enable traps mpls

Use this command to enable Trap transmission of MPLS. Use the **no** form of this command to restore the default setting.

**snmp-server enable traps mpls { xc | ldp | vpn }**

**snmp-server enable traps mpls xc [ xc-up ] [ xc-down ]**

**snmp-server enable traps mpls ldp [ pv-limit ] [ session-down ] [ session-up ]**

**snmp-server enable traps mpls l3vpn [ max-threshold ] [ mid-threshold ] [ max-thresh-cleared ] [ vrf-up ] [ vrf-down ]**

**no snmp-server enable traps mpls xc [ xc-up ] [ xc-down ]**

**no snmp-server enable traps mpls ldp [ pv-limit ] [ session-down ] [ session-up ]**

**no snmp-server enable traps mpls l3vpn [ max-threshold ] [ mid-threshold ]**

**[ max-thresh-cleared ] [ vrf-up ] [ vrf-down ]**

Parameter Description	Parameter	Description
	<b>xc</b>	Trap transmission switch for MPLS route change
	<b>ldp</b>	Trap transmission switch for LDP
	<b>l3vpn</b>	Trap transmission switch for L3 VPN
	<b>xc-up</b>	Trap transmission switch for MPLS route change XC Up
	<b>xc-down</b>	Trap transmission switch for MPLS route change XC Down
	<b>pv-limit</b>	Trap transmission switch for mismatch of path vectors
	<b>session-down</b>	Trap transmission switch for LDP sessions disconnected
	<b>session-up</b>	Trap transmission switch for LDP sessions created
	<b>max-threshold</b>	Trap transmission switch for VRF maximum route threshold
	<b>mid-threshold</b>	Trap transmission switch for VRF middle route threshold
	<b>max-thresh-cleared</b>	Trap transmission switch for cleared VRF maximum route threshold
	<b>vrf-up</b>	Trap transmission switch for VRF Up
	<b>vrf-down</b>	Trap transmission switch for VRF Down

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

**Command** Global configuration mode

**Mode**

**Usage Guide** There are two types of XC traps:

XC Up trap, indicating that an effective ILM or FTN entry is generated.

XC Down trap, indicating that an ILM or FTN entry is deleted.

The user can enable the preceding two types of traps at the same time by using the **snmp-server enables mpls xc** command or enable either type by using the **snmp server enables mpls xc**

[ **xc-up** ] [ **xc-down** ] command.

There are three types of LDP traps:

LDP session Up trap, which is sent when an LDP session is established.

LDP session Down trap, which is sent when an LDP session is disconnected.

When initialization messages (INIT) are exchanged after an LDP session is established, a trap is sent if the value of the path vector list length used in loop detection does not match that advertised by the neighbor.

The user can enable the preceding three types of traps at the same time by using the **snmp-server enables mpls ldp** command or enable any of them by using the **snmp server enables mpls ldp [ pv-limit ] [ session-up ] [ session-down ]** command.

There are the following types of L3 VPN traps:

Trap identifying VRF Up or Down: When a VRF instance has an associated interface Up, the VRF instance is considered to be in the Up state. In this case, a VRF Up trap needs to be sent. When a VRF instance has all its associated interfaces Down or has no associated interface, a VRF Down trap needs to be sent.

Trap of VRF route pre-alert: When the number of VRF routes exceeds the middle route capacity threshold, a VRF MidThreshExceed trap is sent. When the number of VRF routes exceeds the maximum route capacity threshold, a VRF MaxThreshExceed trap is sent. In this case, a VRF MaxThreshCleared trap needs to be sent after the number of VRF routes becomes below the maximum route capacity threshold, indicating that the number of VRF routes returns to normal.

The user can enable all trap switches for L3 VPN at the same time by using the **snmp-server enables mpls l3vpn** command or any of them by using the **snmp server enables mpls l3vpn [ max-threshold ] [ mid-threshold ] [ max-thresh-cleared ] [ vrf-up ] [ vrf-down ]** command.

After MPLS Trap Transmission is enabled, to capture a trap on a host, you must use the **snmp-server host** command to specify the host to receive the trap.

**Configuration** The following example enables LDP Trap Transmission.

**Examples**

```
Ruijie(config)#snmp-server host 192.168.10.1 traps version 2c ruijie
Ruijie(config)#snmp-server enable traps mpls ldp
```

**Platform** N/A

**Description**

## 1.50 targeted-session holdtime

Use this command to set the keepalive holdtime for the extended mechanism. Use the **no** form of this command to restore the default setting.

**target-session holdtime** *seconds*

**no targeted-session holdtime**

**Parameter  
Description**

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

<i>seconds</i>	Sets the holdtime, in the range from 15 to 65535 in the unit of seconds.
----------------	--

**Defaults** By default, the holdtime of the LDP session built in the extended discovery mechanism is 180 seconds. The sending interval of the keepalive message is 60 seconds, which is 1/3 of the session holdtime.

**Command** `config-mpls-router mode`  
**Mode**

**Usage Guide** This command is valid for the LDP session only built in the extended discovery mechanism, not for the LDP session already set up.

**Configuration Examples** The following example sets the keepalive holdtime to 90 seconds for LDP sessions established by the extended mechanism:

```
Ruijie(config)#mpls router ldp
Ruijie(config-mpls-router)# target-session holdtime 90
```

Related Commands	Command	Description
		<code>show mpls ldp parameters</code>

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

## 1.51 traceroute mpls ipv4

Use this command to detect an MPLS LSP hop by hop and trace the LSRs that the LSP passes.

**traceroute mpls ipv4** *ip-address/mask* [ **timeout** *timeout* ] [ **ttl** *time-to-live* ] [ **source** *ip-address* ] [ **destination** *ip-address* ] [ **force-explicit-null** ] [ **reply mode** { **ipv4** | **router-alert** } ] [ **flags fec** ] [ **verbose** ]

Parameter Description	Parameter	Description
		<i>ip-address/mask</i>
	<b>timeout</b> <i>timeout</i>	(Optional) Specifies the timeout time for packets, ranging from 0 to 3600, 2 by default
	<b>ttl</b> <i>time-to-live</i>	(Optional) Specifies the maximum TTL value for sending packets, ranging from 1 to 255, 30 by default
	<b>source</b> <i>ip-address</i>	(Optional) Source address. It is the destination address when the peer sends an Echo Reply packet.

<b>destination</b> <i>ip-address</i>	(Optional) Specified 127/8 segment address. It is used to fill the IP header, 127.0.0.1 by default.
<b>force-explicit-null</b>	(Optional) Whether to forcibly add an explicit null label to the MPLS label. By default, it is not added.
<b>reply mode</b> { <b>ipv4</b>   <b>router-alert</b> }	(Optional) Specifies the reply mode of the Echo Request packet: <b>ipv4</b> : reply with an IPv4 UDP packet (default) <b>router-alert</b> : reply with an IPv4 UDP packet with the Router Alert option
<b>flags fec</b>	(Optional) Sets forcible FEC stack check.
<b>verbose</b>	(Optional) Displays details about Echo Reply packets. By default, the details are not displayed.

**Defaults** See the preceding parameter description.

**Command Mode** Privileged EXEC mode

**Usage Guide** Use this command to detect an MPLS LSP hop by hop and trace the LSRs that the LSP passes. You can change some default parameter values by specifying optional parameters. In addition to the directly typed command, interactive typing mode is provided. You can enter the interactive typing mode by pressing **Enter** after typing the **traceroute mpls** command.

**Configuration Examples** The following example displays the LSRs that the LSP of the FEC corresponding to 10.10.10.10/32 passes.

```
Ruijie# traceroute mpls ipv4 10.10.10.10/32
Tracing MPLS Label Switched Path to 10.10.10.10/32, timeout is 2 seconds
  < press Ctrl+C to break >
Codes: '!' - success, 'Q' - request not sent, '.' - timeout,
  'L' - labeled output interface, 'B' - unlabeled output interface,
  'D' - DS Map mismatch, 'F' - no FEC mapping, 'f' - FEC mismatch,
  'M' - malformed request, 'm' - unsupported tlvs, 'N' - no label entry,
  'P' - no rx intf label prot, 'p' - premature termination of LSP,
  'R' - transit router, 'I' - unknown upstream index,
  'X' - unknown return code, 'x' - return code 0
Type escape sequence to abort.
 0 10.3.0.8 MRU 1500 [Labels: 17 Exp: 0]
L 1 10.3.0.1 MRU 1504 [Labels: implicit-null Exp: 0] 624 ms
! 2 10.2.0.1 708 ms
```

**Platform Description** N/A

## 1.52 transport-address

Use this command to configure globally the transport address used by basic LDP sessions. Use the **no** form of this command to restore the default setting.

**transport-address** { **interface** | *ip-address* | *interface-name* }

**no transport-address**

### Parameter Description

Parameter	Description
<b>interface</b>	The primary IP address of an interface is used as the transport address for basic LDP sessions created on each interface.
<i>ip-address</i>	The specified IP address is used as the transport address for all basic LDP sessions.
<i>Interface-name</i>	The primary IP address of the specified interface is used as the transport address for all basic LDP sessions.

**Defaults** The default transport address is the LSR ID of LDP.

**Command** **config-mpls-router** mode.

### Mode

**Usage Guide** This command is invalid for LDP sessions created by the extended discovery mechanism. The command is valid only for LDP sessions created by the basic discovery mechanism. LDP sessions created by the extended discovery mechanism always use the LSR ID of LDP as the transport address. If both an interface transport address and a global transport address are configured, the interface transport address has priority over the global transport address to take effect.

**Configuration** The following example configures the primary IP address of each interface as the transport address.

### Examples

```
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# transport-address interface
```

**Platform** N/A

### Description



## 2 L2VPN Commands

### 2.1 address-family l2vpn

Use this command to activate and enter the l2vpn address family configuration mode to configure l2vpn information exchange of the BGP neighbor.

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

**address-family l2vpn { vpls | vpws }**

**no address-family l2vpn { vpls | vpws }**

#### Parameter Description

Parameter	Description
<b>vpls</b>	L2VPN vpls address family.
<b>vpws</b>	L2VPN vpws address family.

#### Defaults

By default, l2vpn address family is not defined.

#### Command Mode

BGP configuration mode

#### Usage Guide

Use the **address-family l2vpn vpls** command to allow l2vpn vpls information exchange between PEs. Enter VPLS address family configuration mode. Use the **address-family l2vpn vpws** command to allow l2vpn vpws information exchange between PEs, and enter VPWS address family configuration mode. Use the **exit-address-family** command to exit address-family l2vpn configuration mode.

#### Configuration

```
Ruijie(config)# router bgp 100
```

#### Examples

```
Ruijie(config-router)# address-family l2vpn vpls
Ruijie(config-router)# address-family l2vpn vpws
```

#### Platform

N/A

#### Description

### 2.2 clear bgp l2vpn

Use this command to reset the l2vpn address family information in the BGP neighbor session.

**clear bgp l2vpn { vpls | vpws } { \* | as-number | neighbor-address } [ soft ] [ in [ prefix-filter ] | out ] ]**

#### Parameter Description

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

<b>vpls</b>	Resets the created BGP session with the VPLS capability.
<b>vpws</b>	Resets the created BGP session with the VPWS capability.
<b>*</b>	Resets all created BGP sessions with the VPLS or VPWS capability.
<i>neighbor-address</i>	Resets the created BGP session of the specified neighbor with the VPLS or VPWS capability.
<i>as-number</i>	Autonomous system number of the BGP peer (group) ranging from 1 to 65535 In the 10.4(3) or later versions, 4-byte AS number is supported, that is, the new AS number range is from 1 to 4294967295, which is 1..65535.65535 in dot mode.
<b>in</b>	Soft resets the received routing information.
<b>out</b>	Soft resets the distributed routing information.
<b>soft</b>	Soft resets routing information received from or sent to the specified peer.
<b>soft in</b>	Soft resets the received routing information.
<b>soft out</b>	Soft resets the distributed routing information.
<b>prefix-filter</b>	Currently, the parameter configuration is invalid. The parameter is set only for compatibility with partners' configurations.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** If the command is not used to specify the IP address of a certain peer, reset all sessions of BGP VPLS or VPWS neighbor sessions.

**Configuration** Ruijie#clear bgp l2vpn vpls \*

**Examples** Ruijie#clear bgp l2vpn vpws \*

**Related Commands**

Command	Description
<b>show bgp l2vpn</b>	Displays the Kompella vfi instance information.

**Platform Description** N/A

## 2.3 clear bgp l2vpn dampening

Use this command to reset the l2vpn route oscillation information in the specified BGP neighbor session.

**clear bgp l2vpn { vpls | vpws } dampening [ ve-id:offset ]**

Parameter Description	Parameter	Description
	<b>vpls</b>	Resets the BGP session of VPLS.
	<b>vpws</b>	Resets the BGP session of VPWS.
	<i>ve_id:offset</i>	Displays the vfi instance information of the specified ve_id:offset.
<b>Defaults</b>	N/A	
<b>Command Mode</b>	Privileged EXEC mode	
<b>Usage Guide</b>	This command is used to reset l2vpn route oscillation information in the BGP neighbor session.	
<b>Configuration Examples</b>	<pre>Ruijie#clear bgp l2vpn vpls dampening Ruijie#clear bgp l2vpn vpws dampening</pre>	

**Platform Description**  
N/A

## 2.4 clear bgp l2vpn external

Use this command to reset the all l2vpn EBGp connections.

**clear bgp l2vpn { vpls | vpws } external [ soft ] [ in | out ]**

Parameter Description	Parameter	Description
	<b>vpls</b>	Resets the EBGp session of VPLS.
	<b>vpws</b>	Resets the EBGp session of VPLS.
	<b>in</b>	Soft resets the received routing information.
	<b>out</b>	Soft resets the distributed routing information.
	<b>soft</b>	Soft resets the routing information received from and sent 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 all l2vpn EBGp connections, and to reset all l2vpn EBGp neighbor sessions.

**Configuration** Ruijie#clear bgp l2vpn vpls external

**Examples** Ruijie#clear bgp l2vpn vpws external

**Platform** N/A

**Description**

## 2.5 clear bgp l2vpn flap-statistics

Use this command to reset the l2vpn route oscillation statistics in the specified BGP neighbor session.

**clear bgp l2vpn { vpls | vpws } flap-statistics [ ve-id:offset ]**

Parameter Description	Parameter	Description
	<b>vpls</b>	Resets the EBGp session of VPLS.
	<b>vpws</b>	Resets the EBGp session of VPWS.
	<i>ve_id:offset</i>	Displays the vfi instance information of the specified ve_id:offset.

**Defaults** N/A

**Command** Privileged EXEC mode

**Mode**

**Usage Guide** This command is used to reset the l2vpn route oscillation statistics in the specified BGP neighbor session.

**Configuration** Ruijie#clear bgp l2vpn vpls flap-statistics

**Examples** Ruijie#clear bgp l2vpn vpws flap-statistics

**Platform** N/A

**Description**

## 2.6 clear bgp l2vpn peer-group

Use this command to reset the BGP sessions of all members in a peer group.

**clear bgp l2vpn { vpls | vpws } peer-group name [ soft ] [ in [ prefix-filter ] ] out ]**

Parameter Description	Parameter	Description
	<b>vpls</b>	Resets the BGP session of VPLS.

<b>vpws</b>	Resets the BGP session of VPWS.
<i>name</i>	Peer group name
<b>in</b>	Soft resets the received routing information.
<b>out</b>	Soft resets the distributed routing information.
<b>soft</b>	Soft resets the routing information received from and sent 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 is used to reset the BGP sessions of all members in a peer group.

**Configuration** Ruijie#clear bgp l2vpn vpls peer-groute group1

**Examples** Ruijie#clear bgp l2vpn vpws peer-groute group2

**Platform** N/A

**Description**

## 2.7 clear l2 vfi

Use this command to clear all the MAC address from the local or remote VPLS instance learnt from PW.

**clear l2 vfi** *name* **mac-address** { **remote** | **local** [ *mac-address* ] }

Parameter Description	Parameter	Description
	<i>name</i>	Name of VPLS instance
	<b>remote</b>	Sends the MAC address cancel message of zero MAC address to all the neighbors of the Hub PW of the specific VPLS instance.
	<b>local</b> [ <i>mac-address</i> ]	Removes all MAC addresses or specified dynamic MAC addresses of a specified VPLS instance.

**Defaults** N/A

**Command** Privileged EXEC mode.

**Mode**

**Usage Guide** The **clear l2 vfi mac-address local** command deletes all dynamic MAC addresses of a local VPLS

instance. This command is valid only for MAC addresses that are statically configured.

The **remote** parameter takes effect only for the VPLS of the LDP signaling. When the LDP is triggered to send a MAC withdraw message to a remote PE, the remote PE will clear all MAC addresses except the PW upon receiving the message. The **remote** parameter is invalid for the VPLS of the BGP signaling.

**Configuration** The following example removes a local dynamic MAC address of vrf1.

**Examples** Ruijie# clear 12 vfi vfi1 mac-address local 001a.a915.3218

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 2.8 description

Use this command to set the description of l2vpn vfi instance. Use the **no** form of this command to restore the default setting.

**description** *desc*

**no description**

**Parameter  
Description**

Parameter	Description
<i>desc</i>	Description of l2vpn vfi instance, a string of up to 63 characters

**Defaults** By default, no description is defined for l2vpn vfi instance.

**Command  
Mode** VFI configuration mode

**Usage Guide** N/A

**Configuration  
Examples** Ruijie (config-vfi)# description vfi-description

**Platform** N/A

**Description**

## 2.9 encapsulation

Use this command to specify the PW encapsulation method of the L2vpn vfi instance. Use the **no** form of this command to restore the default setting.

**encapsulation mpls** [ **ethernet** | **ethernetvlan** | **ppp** | **hdlc** | **ip-interworking** ]


**no encapsulation mpls**


Parameter Description	Parameter	Description
	<b>mpls</b>	Encapsulation type
	<b>ethernet</b>	The PW type for VPWS is specified as ethernet. The PW encapsulation mode for VPLS is raw mode.
	<b>ethernetvlan</b>	The PW type for VPWS is specified as ethernetvlan; The PW encapsulation mode for VPLS is tag mode.


**Defaults** By default, Kompella L2vpn is ethernet.

**Command Mode** VFI configuration mode

**Usage Guide** This command is valid only for the L2vpn realized in Kompella mode. It is invalid for the VPLS realized in Martini mode. Only ethernet and ethernetvlan are valid for the VPLS in Kompella mode to specify VPLS PW encapsulation mode: raw or tag.  
For the Kompella VPWS, all types are valid to specify the VPWS PW type for BGP signaling negotiation.

 For the Kompella VPLS, the PW encapsulation mode of one VPLS on different PEs should be the same, or else the asymmetry of the VLAN tag handling may lead to normal forwarding. It is recommended that the encapsulation mode of the specified PW be raw (ethernet) when every PE of a VPLS adopts ethernet interface access, and the encapsulation mode of the specified PW is tag (ethernetvlan) when every PE of a VPLS adopts subinterface access or hybrid interface access.

 For the Kompella VPLS, PW type on two ends of one PW must be the same, or else BGP signaling cannot negotiate to establish the PW.

 If the VFI instance has already bound with the interface, it is not allowed to modify the encapsulation mode, and the VFI must be unbound from the interface prior to modifying the encapsulation mode.

**Configuration Examples** The following example configures VPLS instance vpls-name1 with PW encapsulation type MPLS and PW type ethernet.

```
Ruijie# config terminal
Ruijie(config)# l2 vfi vpls-name1 vpnid 10 autodiscovery
```

```
Ruijie(config-vfi)# encapsulation mpls ethernet
The following example configures VPLS instance vpls-name2 with PW encapsulation
type MPLS and PW type ethernet.
Ruijie(config)# l2 vfi vpls-name2 vpnid 20
point-to-point
Ruijie(config-vfi)# encapsulation mpls ethernet
```

**Platform** N/A

**Description**

## 2.10 exist-site-mode

Use this command to exit config-vfi-site configuration mode.

**exit-site-mode**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** **config-vfi-site mode**

**Usage Guide** N/A

**Configuration Examples** Ruijie (config-vfi-site)# exit-site-mode

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 2.11 ignore match I2-extcommunity

Use this command to determine whether the PW created in Kompella mode matches the layer 2 extended community attribute. Use the **no** form of this command to restore the default setting.

**ignore match I2-extcommunity**

**no ignore match I2-extcommunity**



Parameter Description	Parameter	Description
	N/A	N/A
<b>Defaults</b>	By default, lay 2 extended community attribute must be matched when the PW is created between PEs in Kompella mode.	
<b>Command Mode</b>	VFI configuration mode	
<b>Usage Guide</b>	This command is valid only for the VPLS and VPWS implemented in Kompella mode. It is invalid for the VPLS implemented in Martini mode. During the creation of PW in Kompella l2vpn mode, the negotiation packet contains the l2vpn encapsulation type and MTU information, and this information is carried by the BGP extended community attribute. By default, when the encapsulation type and MTU of two vfi instances are the same, PW can be set up between these two vfi instances. If they are different, PW cannot be set up. To establish PW even if the encapsulation type and MTU do not match between two vfi instances, run the <b>ignore match l2-extcommunity</b> command.	
<b>Configuration Examples</b>	<p>The following example sets the Kompella VPLS instance not to match layer 2 extended community attribute.</p> <pre>Ruijie(config)# l2 vfi vpls-name vpnid 10 autodiscovery Ruijie(config-vfi)# ignore match l2-extcommunity</pre> <p>The following example sets the Kompella VPWS instance not to match layer 2 extended community attribute.</p> <pre>Ruijie(config)# l2 vfi vpls-name vpnid 10 point-to-point Ruijie(config-vfi)# ignore match l2-extcommunity</pre>	
<b>Platform Description</b>	N/A	

## 2.12 l2 vfi

Use this command to create an l2vpn vfi instance or enter the VFI configuration mode. Use the **no** form of this command to remove the l2vpn vfi instance.

**l2 vfi** *name* [ **vpnid** *id* [ **manual** | **autodiscovery** | **point-to-point** ] ]

**no l2 vfi** *name*

Parameter Description	Parameter	Description
	<i>name</i>	Name of the l2vpn vfi instance in the string of up to 31 characters
	<i>id</i>	VPLS instance ID, in the range of 1 to 2147483647

<b>manual</b>	Implement the VPLS in Martini mode which needs the user to create the PW by configuring the VPLS neighbor manually.
<b>autodiscovery</b>	Implement the VPLS in Kompella mode which creates the PW by autodiscovery.
<b>point-to-point</b>	Implement the VPWS in Kompella mode which auto-discovers the PE device specified in the VFI instance.

**Defaults** VPLS is implemented in Martini mode by default.

**Command** Global configuration mode

**Mode**

**Usage Guide** VPLS name corresponds to vpnid oen by one. Without **vpnid id**, this command enters VFI configuration mode. At this point, the *name* parameter means existent VPLS instance only. In case of conflicts, error information is displayed.

If the configurations are the same as the original ones, including the **name** parameter, ID, and configuration mode, the VFI configuration mode is entered.

Only when I2vpn VPLS or I2vpn VPWS in the BGP configuration mode is activated, the auto-discovery function takes effect.

Only when the keyword autodiscovery is specified, the VPLS is implemented in the Kompella mode.

Only when **point-to-point** is specified, the VPWS is implemented in the Kompella mode. If no keyword is specified or only the keyword **manual** is specified, the VPLS is implemented in the Martini mode.

Once the Kompella or Martini mode is decided for implementing the I2vpn vfi function, the mode cannot be changed. To change the mode, you can only delete the instance and re-configure it. For example, if the Kompella mode has been decided to be the VPLS implementation mode, do not change the implementation mode to Martini, unless you delete the VPLS instance, and re-configure Martini as the implementation mode.

The VPLS or VPWS function implemented in the Kompella VPLS mode, the VPLS or VPWS instance can create the PW when the following requirements are met:**rd** is configured. **site-id** is configured. **route-target** is configured. Interfaces are bound.

If the VPLS function is implemented in the Maitini VPLS mode, the VPLS or VPWS instance can create the PW when either of the following requirements are met: Interfaces are bound. A Spoke VC neighbor is created.

**Configuration** The following example creates a VPLS instance in Martini mode.

**Examples**

```
Ruijie(config)# l2 vfi vfi_1 vpnid 1
```

or

```
Ruijie(config)#l2 vfi vfi_1 vpnid 1 manual
```

The following example creates a VPLS instance in Kompella mode.

```
Ruijie(config)#l2 vfi vfi_1 vpnid 1 autodiscovery
```

The following example creates a VPWS instance in Kompella mode.

```
Ruijie(config)#l2 vfi vfi_2 vpnid 1 point-to-point
```

the following example enters VFI configuration mode to modify the configuration of a specified vfi instance.

```
Ruijie (config)# l2 vfi vfi_1
```

The following example deletes the vfi instance.

```
Ruijie (config)# no l2 vfi vfi_1
```

#### Related Commands

Command	Description
<code>show mpls vfi</code>	Displays the VPLS instance information.

**Platform** N/A

**Description**

## 2.13 l2 vfi tunnel-protocol stp

Use this command to enable transparent transmission of STP packets on the interface bound with the VPLS instance.

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

**l2 vfi tunnel-protocol stp**

**no l2 vfi tunnel-protocol stp**


#### Parameter Description

Parameter	Description
N/A	N/A

**Defaults** By default, the BPDU packet of STP is not transparently transmitted.

**Command Mode** Interface configuration mode

#### Usage Guide

 BDU packets generally do not carry VLAN tags. Assume that access to the CE is over a Trunk port or sub-interface, and the BPDU transparent transmission function is enabled on the connected interface. In this case, BPDU packets from the CE must carry VLAN tags, so that BPDU packets can be recognized by the VPLS instance and transparently transmitted in the VPLS instance.

 Besides, the **l2 vfi tunnel-protocol stp command** is independent of whether an interface is bound to the VPLS instance.

**Configuration Examples** `Ruijie(config-if)# l2 vfi tunnel-protocol stp`

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

## 2.14 label-saving

Use this command to configure the label-saving mode for Kompella VPWS. Use the **no** form of this command to restore the default setting.

**label-saving enable**  
**no label-saving enable**

**Parameter**  
**Description**

Parameter	Description
<b>enable</b>	Enables label-saving.

**Defaults** By default, label-saving mode is not supported.

**Command** VFI configuration mode  
**Mode**

**Usage Guide** This command is valid only for the VPWS implemented in Kompella mode. It is invalid for the VPLS implemented in Martini mode.  
 After enabling the saving tag mode, Kompella VPWS will set offset according to the configured remote site id and allocate a tag on demand. The site range locally configured is invalid.

**Configuration**

```
Ruijie# config terminal
```

**Examples**

```
Ruijie(config)# l2 vfi vpls-name vpnid 10 point-to-point
Ruijie(config-vfi)#label-saving enable
```

**Related**  
**Commands**

Command	Description
<b>l2 vfi</b>	Configures a VFI instance, including VPLS instance and Kompella VPWS instance.

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

## 2.15 mac-address aging-time

Use this command to configure the MAC aging time. Use the **no** form of command to restore the default setting.

**mac-address aging-time interval**

**no mac-address aging-time**


Parameter Description	Parameter	Description
	<b>aging-time</b> <i>interval</i>	Configures the MAC address aging time of the VPLS instance. The <i>interval</i> unit is measured by seconds, ranging from 5 to 65536.

**Defaults** The default is 300 seconds (five minutes).

**Command Mode** VFI configuration mode

**Usage Guide** The aging time is valid only for the MAC address dynamically learned, but invalid for the MAC address statically configured. The MAC address statically configured can be deleted only by static user configuration.

After the aging time is reset, the new aging time is taken as the benchmark and aging time of all MAC entries of the VPLS instance is updated. For example, after the aging time is changed from 5 minutes to 10 minutes, all MAC entries of the VPLS instance age after 10 minutes. On the contrary, if the aging time is changed from 10 minutes to 5 minutes, all MAC entries of the VPLS instance age after 5 minutes.

 When the M8600 EC series line cards are used for VPLS forwarding, the aging time of the MAC address is globally configured by running the **mac-address-table aging-time** command, and cannot be configured based on every VPLS instance.

**Configuration** The following example sets the aging time of the VPLS instance to 180 seconds (3 minutes).

**Examples**

```
Ruijie(config)#l2 vfi vfi_1 vpnid 1 manual
Ruijie(config-vfi)# mac-address aging-time 180
```

Related Commands	Command	Description
	<b>l2 vfi</b>	Creates a vfi instance, or enter VFI configuration mode. The <b>no</b> command is used to delete the vfi instance.
	<b>show mpls vfi</b>	Displays the l2vpn vfi instance information.

**Platform** N/A

**Description**

## 2.16 mac-limit

Use this command to configure MAC address learning limit rules of the VPLS instance. Use the **no** command of this command to restore the default setting.

**mac-limit** { **action** { **discard** | **forward** } | **alarm** { **disable** | **enable** } | **maximum** *count* }

**no mac-limit** { **action** | **alarm** | **maximum** }

Parameter Description	Parameter	Description
	<b>action</b>	Forwards the packets with new source MAC addresses when the number of MAC addresses of the VPLS instance reaches the threshold.
	<b>discard</b>	Discards the packets with new source MAC addresses when the number of MAC addresses of the VPLS instance reaches the threshold.
	<b>forward</b>	Continues to forward the packets with new source MAC addresses when the number of MAC addresses of the VPLS instance reaches the threshold.
	<b>alarm</b>	Whether to print the log information when the MAC capacity of the VPLS instance reaches the threshold or reduces below the threshold again.
	<b>disable</b>	Log information is not printed when the MAC capacity of the VPLS instance reaches the threshold or reduces to less than 80% of the threshold again.
	<b>enable</b>	Log information is printed when the MAC capacity of the VPLS instance reaches the threshold or reduces to less than 80% of the threshold again.
	<b>maximum count</b>	Configures the threshold of the MAC number of the VPLS instance. The value ranges from 0 to 65536, and 0 indicates that the MAC capacity of the VPLS instance is not limited.

**Defaults**

The default threshold of the MAC address number of the VPLS instance is 256.

By default, the packets with new source MAC addresses are discarded when the number of MAC addresses of the VPLS instance reaches the threshold.

By default, information is not printed when the MAC address number of the VPLS instance reaches the threshold or reduces to less than 80% of the threshold again.

**Command**

VFI configuration mode

**Mode****Usage Guide**

(1) The VPLS instance learns the source MAC addresses of the packets on both PW and AC ends during forwarding. If the number of MAC addresses learned by the VPLS instance reaches the MAC threshold of the VPLS instance itself, the VPLS instance does not learn new MAC addresses. In this case, the threshold of MAC addresses of the VPLS instance can be modified to a greater value by running the **maximum count** command.

(2) If the **maximum count** command is used to change the MAC threshold of the VPLS instance from big to small, the MAC addresses that exceed the current MAC threshold can only age automatically. For example, when the MAC threshold of the VPLS instance is 256 and the VPLS instance has already learned 200 MAC addresses, if the command is used to change the MAC threshold to 128, the left 72 MAC addresses (200-128 =72) age automatically and cannot be deleted instantly.

(3) The **mac-limit action { discard | forward }** command determines whether to discard or forward the packets that contain new source MAC addresses after the number of MAC addresses learned by the VPLS instance reaches the threshold.

(4) The **mac-limit action { disable | enable }** command determines whether to print information for users when the number of MAC addresses learned by the VPLS instance reaches or reduces to the threshold. If the **mac-limit alarm enable** command is configured, log information is printed in one of the following cases: when the accumulative number of MAC addresses learned by the VPLS instance reaches the MAC address threshold of the instance; the accumulative number of MAC addresses learned by the VPLS instance reached the threshold, but some MAC addresses are deleted due to MAC address aging or other reasons (such as command configuration) which causes the number of MAC addresses to be less than 80% of the threshold for the first time.

**Configuration** Ruijie(config)#l2 vfi vfi\_1 vpnid 1 manual

**Examples** Ruijie(config-vfi)# mac-limit maximum 1024

**Related  
Commands**

Command	Description
<b>l2 vfi</b>	Creates the VPLS instance, or enter the VPLS mode. The <b>no</b> command deletes the VPLS instance.
<b>show mpls vfi</b>	Displays the l2vpn vfi instance information.

**Platform** N/A

**Description**

## 2.17 l2vc-ftn

Use this command to configure the static VC-FTN entry. Use the **no** form of this command to delete the static vc-ftn entry

**mpls static l2vc-ftn** *vc\_id peer\_ip out-label label*

**no mpls static l2vc-ftn** *vc\_id peer\_ip out-label label*

**Parameter  
Description**

Parameter	Description
<i>Vc_id</i>	The VC ID.
<i>peer_ip</i>	The peer IP address.
<i>Label</i>	The out label.

**Defaults** N/A

**Command  
Mode** Global configuration mode

**Usage Guide** This command is used to create an FTN for a VC instance. After receiving a frame from AC bound

with the VC, the VC instance adds a private network tag to the frame based on the FTN. The VC instance forwards the frame after it finds the LSP to reach the peer PE device according to the IP address of the VC peer.

**Configuration** The following example configures the static VC-FTN entry.

**Examples** Ruijie(config)# mpls static l2vc-ftn 1 10.10.10.1 out\_label 21

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 2.18 mpls static vfi

Use this command to configure the static MAC address of the VPLS instance. Use the **no** form of this command to delete the configured static MAC address.

**mpls static vfi** *name* **mac-address** *H.H.H*{ **neighbor** *ip-address* | **interface** *interface-name* | **vlan-port** *interface-name* **vlan-if** **vlan** *vlan-num*}

**no mpls static vfi** *name* **mac-address** *H.H.H*{ **neighbor** *ip-address* | **interface** *interface-name* | **vlan-port** *interface-name* **vlan-if** **vlan** *vlan-num*}

**Parameter  
Description**

Parameter	Description
<i>name</i>	Name of the VPLS instance
<i>H.H.H</i>	Static MAC address
<b>neighbor</b> <i>ip-address</i>	Address of the VPLS neighbor
<b>interface</b> <i>interface-name</i>	Interface of the VPLS AC end
<b>vlan-port</b> <i>interface-name</i>	VLAN member port, including aggregate port and physical port.
<b>vlan-if</b> <b>vlan</b> <i>vlan-num</i>	SVI interface

**Defaults** N/A

**Command** Global configuration mode

**Mode**


**Usage Guide**

- (1) This command can be used to configure the MAC address of the VPLS neighbor or the MAC address of the interface bound with VPLS.
- (2) After the static MAC address of the VPLS neighbor is configured, it is valid only when the PW corresponding to the VPLS neighbor is up.
- (3) When the static MAC address of the VPLS AC is configured, the interface must be bound with the VPLS instance. If the interface is not bound with the VPLS instance, the MAC address is invalid. If the previously configured interface is bound with the VPLS instance and the later VPLS instance is



unbound from the interface, the MAC address is not valid.

(4) The MAC entry learned dynamically is overwritten when the statically and dynamically configured MAC addresses conflict.

 The static MAC address that associates with the PW through configuring the neighbor address can function normally only in the following scenario: There is only one PW for neighbors. If there are many PWs, the statically configured MAC address is randomly bound with one PW, which may lead to incorrect forwarding.

**Configuration** The following example configures the MAC address of the VPLS neighbor.

**Examples**

```
Ruijie(config)# mpls static vfi vfi1 mac-address 001a.a915.3218 neighbor
1.1.1.1
```

The following example configures the MAC address of the VPLS AC.

```
Ruijie(config)# mpls static vfi vfi1 mac-address 0022.7b15.3218 interface
gil/1
```

**Related  
Commands**

Command	Description
<b>l2 vfi</b>	Creates the vfi instance, or enters the VFI configuration mode. The <b>no</b> command deletes the vfi instance.
<b>show mpls vfi</b>	Displays the l2vpn vfi instance information.

**Platform** N/A

**Description**

## 2.19 mpls static-l2vc

Use this command to configure in and out labels for the static PW. Use the **no** form of this command to delete the in and out labels of the static PW.

**mpls static-l2vc** *ip-address vc-id out-label out-label-value in-label in-label-value*

**no mpls static-l2vc** *ip-address vc-id*

**Parameter  
Description**

Parameter	Description
<i>ip-address</i>	The peer IPv4 address of the static PW.
<i>vc-id</i>	The PW ID of the static PW, in the range from 1 to 2147483647. No default.
<b>out-label</b> <i>out-label-value</i>	Configures the out label value of the static PW, in the range from 16 to 1048575. No default.
<b>in-label</b> <i>in-label-value</i>	Configures the in label value of the static PW, in the range from 16 to 1023. No default.

**Defaults** N/A

**Command Mode** Global configuration mode

**Usage Guide** This command is used to configure in and out labels for the static PW. Make sure you follow the following instructions:

- You should create the static PW before configuring in and out labels.
- The static VC connection should be created on PE devices on both ends. The PW out label for one end is the in label for the other, and vice versa.

**Configuration Examples** The following example configures both in and out labels as 100 for the static PW.

```
Ruijie(config)#interface FastEthernet 0/2
Ruijie(config-if)#xconnect 1.1.1.1 1 encapsulation mpls manual
Ruijie(config-if)#exit
Ruijie(config)# mpls static-l2vc 1.1.1.1 1 out-label 100 in-label
100
```

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 2.20 mtu

Use this command to configure the mtu of vfi instance. Use the **no** form of this command to restore the default setting.

**mtu** *mtu*

**no mtu**

**Parameter Description**

Parameter	Description
<i>mtu</i>	mtu value, in the range from 68 to 1530.


**Defaults** 1500

**Command Mode** VFI configuration mode

**Usage Guide** The **mtu** parameter of a VFI indicates the packet size (the size after the MPLS label is encapsulated) that the PW can transmit, that is, the user's L2 packet size plus the size of PW encapsulated packets.

By default, if the PW does not enable control bits and two labels are encapsulated, 1492 is the size of the user's Ethernet packet that can be actually transmitted. Specifically, eight bits are encapsulated by the PW (two labels).

In a VFI, configuring the **mtu** parameter of the vfi takes effect for all PWs of the VFI. That is, the PWs will use the **mtu** parameter as the PW-negotiating MTU. By default, if the MTU values negotiated at PW's both ends are different, the PW fails to be created.

 If the PW signaling negotiation MTU is changed, the MTU of a user access service interface (generally equal to the PW MTU size minus the label encapsulation size) must be accordingly changed. At the same time, the MTU of the egress interface on the public network of the PW must be adjusted to be consistent with the PW MTU. Only then, the forwarding is normal. You can run the **mtu** command at an interface to change its MTU.

**Configuration** Ruijie(config-vpls)# mtu 1500

#### Examples

#### Related Commands

Command	Description
<b>l2 vfi</b>	Creates a vfi instance or enter vfi configuration mode. Use the <b>no</b> form to delete the vfi instance.
<b>mtu</b>	Configures the MTU of vfi instance.
<b>show mpls vfi</b>	Displays the l2vpn vfi instance information.

**Platform** N/A

#### Description

## 2.21 neighbor activate

Use this command to activate the neighbor to support l2vpn address family. Use the **no** form of this command to restore the default setting..

**neighbor** { *ip-address* | *peer-group-name* } **activate**

**no neighbor** { *ip-address* | *peer-group-name* } **activate**

#### Parameter Description

Parameter	Description
<i>ip-address</i>	IP address
<i>peer-group-name</i>	Specifies the peer group name, and the name should not contain more than 32 characters.

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

**Command** BGP l2vpn address family configuration mode  
**Mode**

**Usage Guide** For the configuration of the l2vpn VPLS or VPWS address family, set the command to activate l2vpn information exchange through BGP.

**Configuration** Ruijie# config terminal  
**Examples** Ruijie(config)# router bgp 100  
 Ruijie(config-router)# address-family l2vpn vpls  
 Ruijie(config-router-af)# neighbor 10.10.10.1 activate

**Related  
 Commands**

Command	Description
<b>address-family</b>	Enables the l2vpn address family.
<b>router bgp</b>	Enables the BGP protocol.
<b>neighbor remote-as</b>	Configures the BGP peer.

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

## 2.22 neighbor next-hop-unchanged (L2VPN address family)

Use this command to determine not to modify the next hop information when a route is sent to the peer group. Use the **no** 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**

**Parameter  
 Description**

Parameter	Description
<i>peer-address</i>	Specifies the peer address.
<i>peer-group-name</i>	Specifies the peer group name. The name should not contain more than 32 characters.
<b>next-hop-unchanged</b>	Not modify next hop when the route is not sent to the BGP peer group.

**Defaults** By default, the next hop is changed when the route is sent to the EBGp peer.

**Command** BGP l2vpn address family mode  
**Mode**

**Usage Guide** For cross-domain implementation of Kompella L2VPN that adopts Option C (Multihop MP-EBGP), if the MP-EBGP connection is established through the router reflector between autonomous systems, by default, the next hop is changed to itself while a route is sent to the EBGp peer. To implement cross-domain in Option C mode of Kompella L2VPN, set the command in the router reflector, or else

cross-domain forwarding fails.

**Configuration** Ruijie(config)# router bgp 60  
**Examples** Ruijie(config-router)# address-family l2vpn vpls  
 Ruijie(config-router-af)# neighbor 10.1.1.1 next-hop-unchanged

Related Commands	Command	Description
	<b>router bgp</b>	
<b>neighbor remote-as</b>		Configures the BGP peer (group).

**Platform** N/A

**Description**

## 2.23 neighbor send-community

Use this command to enable the BGP extended community attribute. Use the **no** form of this command to restore the default setting.

**neighbor** { *ip-address* | *peer-group-name* } **send-community** [ **both** | **standard** | **extended** ]

**no neighbor** { *ip-address* | *peer-group-name* } [ **both** | **standard** | **extended** ]

Parameter Description	Parameter	Description
		<i>ip-address</i>
	<i>peer-group-name</i>	Specifies the peer group name, and the name should not contain more than 31 characters.
	<b>both</b>	(Optional) Sends the standard and extended community attributes.
	<b>standard</b>	(Optional) Only sends the standard community attribute.
	<b>extended</b>	(Optional) Only sends the extended community attribute.

**Defaults** By default, no community attribute is sent to a BGP neighbor. When the information exchange of the L2vpn address family is activated for the first time, this attribute is enabled by default.

**Command Mode** BGP l2vpn address family configuration mode

**Usage Guide** If the peer group is specified during configuration, all members of the peer group inherit the configuration attribute of this command. By default, this attribute is enabled when the **neighbor activate** command is used for the first time.

**Configuration** Ruijie# config terminal  
**Examples** Ruijie(config)# router bgp 100  
 Ruijie(config-router)# address-family l2vpn vpls  
 Ruijie(config-router-af)# neighbor 10.10.10.1 activate

```
Ruijie(config-router-af)# neighbor 10.10.10.1 send-community extended
```

**Related  
Commands**

Command	Description
<b>address-family I2vpn</b>	Enters I2vpn VPLS or VPWS address family configuration mode.

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

## 2.24 neighbor (VPLS configuration mode)

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

**neighbor** *ip-address* **encapsulation mpls** [ *vc-id vc-id* ] [ **hub-vc** | **spoke-vc** ] [ **ethernet** | **ethernetvlan** ]

**no neighbor** *ip-address* **encapsulation mpls**

**Parameter  
Description**


Parameter	Description
<i>ip-address</i>	LSR ID of VPLS neighbor
<b>vc-id</b> <i>vc-id</i>	PW ID in the range from 1 to 2147483647, VPN ID by default
<b>hub-vc</b>	Specifies the PW as the hub PW.
<b>spoke-vc</b>	Specifies the PW as the spoke PW.
<b>ethernet</b>	Sets ethernet as the PW type.
<b>ethernetvlan</b>	Sets ethernetvlan as PW type.

**Defaults** By default, the created PW is ethernet-type hub VC and its VC ID is the same as the VPN ID of the VPLS instance.

**Command Mode** VFI configuration mode

**Usage Guide** The ID of a PW and the LSR ID of the PW peer as key are unique globally (including the PWs used by VPWS).

To avoid loop, VPLS should use full interconnection networking. A PW connection should be set up between every two PEs, namely Hub-VC. When U-PE accesses N-PE as a PW in the H-VPLS mode or user access VPLS as a PW in the basic VPLS model, the PW should be configured as **spoke-vc** type PW (Spoke-PW) on the VPLS N-PE or VPLS-PE.

 No matter Spoke-VC or Hub-VC, the MTU and PW type should be configured the same on both sides, or otherwise the PW cannot be up.

 The PW type cannot be modified once the VPLS PW is configured. To modify the PW type, you

need to delete the VPLS PW and then add one again.

**Configuration** The following example creates a default PW (VPNID as VC-ID and ethernet type Hub-VC)

**Examples**

```
Ruijie(config-vpls)# meogjbpr 2.2.2.2 encapsulation mpls
```

The following example creates an ethernetvla-type spoke-VC with VC ID of 100.

```
Ruijie(config-vpls)# meogjbpr 3.3.3.3 encapsulation mpls vc-id 100 spoke-vc
ethernetvlan
```

**Related  
Commands**

Command	Description
<b>l2 vfi</b>	Creates a vfi instance or enters VFI configuration mode.
<b>show mpls vfi</b>	Displays the vfi instance information.

**Platform** N/A

**Description**

## 2.25 rd (Kompella l2vpn)

Use this command to define the rd value of the Kompella l2vpn vfi instance.

**rd** *rd\_value*

**Parameter  
Description**

Parameter	Description
<i>rd_value</i>	RD value

**Defaults** By default, no RD value is configured.

**Command  
Mode** VFI configuration mode

**Usage Guide**

- (1) This command is valid only for the VPLS and VPWS implemented in Kompella mode. It is invalid for the VPLS implemented in Martini mode.
- (2) To configure the Kompella l2vpn instance, configure RD before configuring other parameters.
- (3) If the RD value is configured for a Kompella l2vpn instance, it can neither be modified nor deleted. To modify the RD value, delete the Kompella l2vpn instance and create it again, and then configure a new RD value. An l2vpn vfi instance can have only one RD value.

**Configuration** The following example configures the RD value of the Kompella VPLS.

**Examples**

```
Ruijie(config)# l2 vfi vpls-1 vpnid 1 autodiscovery
Ruijie(config-vfi)# rd 100:1
```

The following example configures the RD value of the Kompella VPWS.

```
Ruijie(config)# l2 vfi vpls-2 vpnid 2 point-to-point
Ruijie(config-vfi)# rd 200:1
```

#### Related Commands

Command	Description
<b>show bgp l2vpn</b>	Displays the Kompella l2vpn instance information.
<b>site-id</b>	Configures the site ID of the vfi instance.
<b>route-target</b>	Configures the route-target attribute of the vfi instance.
<b>show mpls vfi</b>	Displays related information about the l2vpn vfi instance.

**Platform** N/A

#### Description

## 2.26 route-target (Kompella l2vpn)

Use this command to define or cancel the RT attribute of a Kompella l2vpn instance. Use the **no** form of this command to restore the default setting.

**route-target** { **import** | **export** | **both** } *rt\_value*

**no route-target** { **import** | **export** | **both** } *rt\_value*

#### Parameter Description

Parameter	Description
<b>import</b>	Sets the import RT value.
<b>export</b>	Sets the export RT value.
<b>both</b>	Sets the import and export values.

**Defaults** By default, the **Route Target** value is not defined.

**Command** VFI configuration mode

#### Mode

**Usage Guide** This command is valid only for the VPLS and VPWS implemented in Kompella mode. It is invalid for the VPLS implemented in Martini mode.

A Kompella l2vpn instance can be configured with multiple RT attribute values, and can specify **import/export/both**. Multiple RTs can be the mark of the l2vpn vfi instance.

If you specify the import and export attributes of the RT in the same l2vpn vfi instance at the same time, it means that you configure the **both** attribute of the RT.

For different vfi instances of the same PE, it is recommended not to configure the same RT. If it is configured, the two vfi instances of the local PE cannot interwork, that is, the RT does not support the interworking between vfi instances in the local PE.



**Configuration** The following example configures the RT value of the VPLS instance.

**Examples**

```
Ruijie(config)# l2 vfi vpls1 vpnid 1 autodiscovery
Ruijie(config-vfi)# route-target both 200:1
```

The following example configures the RT value of the VPWS instance.

```
Ruijie(config)# l2 vfi vpws1 vpnid 2 point-to-point
Ruijie(config-vfi)# route-target both 300:1
```

**Platform** N/A

**Description**

## 2.27 show bgp l2vpn

Use this command to display the related information about BGP l2vpn.

```
show bgp l2vpn { vpls | vpws } all [ ve-id:offset | neighbor ip-address | summary ]
```

```
show bgp l2vpn { vpls | vpws } rd vpn_rd [ ve-id:offset ]
```

```
show bgp l2vpn { vpls | vpws } vfi vfi-name [ ve-id:offset ]
```

**Parameter Description**

Parameter	Description
<b>vpls</b>	Displays VPLS information.
<b>vpws</b>	Displays VPWS information.
<b>all</b>	Displays NLRI information of all VPLS or VPWS instances.
<i>vpn-rd</i>	Displays the VPLS instance information of the specified RD.
<i>vfi-name</i>	VFI instance name
<b>neighbor</b> address	BGP neighbor address
<i>ve_id:offset</i>	Displays the vfi instance information of the specified <i>ve_id:offset</i> .
<b>summary</b>	Displays the main information about bgp l2vpn, including ID, offset, label base and next hop information.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** The **show bgp l2vpn vpls** command can be used to show locally configured VPLS information, including RD value, site ID, label block offset, and label base. Only when the VPLS instance is configured completely can the related VPLS configuration information be seen in BGP.

**Configuration** Ruijie(config)# show bgp l2vpn vpls all

**Examples**

```
BGP table version: 4, local router ID is 172.168.201.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal, r
```

```
RIB-failure, S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete
```

Network	Next Hop	Metric	LocPrf	Path
Route Distinguisher: 45000:100				
*> 2:0	0.0.0.0			?
*> 100:3	172.168.201.2	0	100	?
Route Distinguisher: 45000:200				
*>01:10	0.0.0.0	0	32768	?
*>i200:11	172.168.201.2	0	100	?

```
Ruijie(config)# show bgp l2vpn vpws all
BGP table version: 4, local router ID is 172.168.201.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal, r
RIB-failure, S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete
Network Next Hop Metric LocPrf Path
Route Distinguisher: 45000:100
*> 3:0 0.0.0.0 ?
*> 300:3 172.168.201.2 0 100 ?
Route Distinguisher: 45000:200
*>01:30 0.0.0.0 0 32768 ?
*>i300:11 172.168.201.2 0 200 ?
```

```
Ruijie(config)# show bgp l2vpn vpls all 4:0
BGP routing table entry for 100:100:4:0
 77 100
 192.168.250.77 from 192.168.250.77 (0.54.121.150)
  Origin IGP, metric 0, localpref 100, valid, external, best
  Extended Community: RT:1:200 RT:12345:11 SoO:12345:11 SoO:0.0.48.58:11
Unknown:12345:0:11 Layer2:5.0.1500
  ve id: 4 offset: 0 block size: 10 label base: 8196
  Last update: Wed Aug 19 04:06:17 1970
Ruijie(config)# show bgp l2vpn vpls summary
BGP router identifier 192.168.250.8, local AS number 23
BGP table version is 1
2 BGP AS-PATH entries
0 BGP Community entries
0 BGP Prefix entries (Maximum-prefix:4294967295)
Neighbor V AS MsgRcvd MsgSent TblVer InQ OutQ Up/Down
State/PfxRcd
192.168.250.77 4 77 6 5 1 0 0 00:01:55
11
Total number of neighbors 1
```

Field	Description
BGP table version	BGP table version
Local Router ID	Local Router ID, generally the loopback address
status codes	Status codes: s – The route is suppressed. d – The route oscillation is shielded. h – history route, unavailable route * – effective route > – the best route l – IBGP route r – failed RIB installation routing table s – old route
Origin Codes	Origin Codes: i – IGP e – EGP ? - incomplete
Network	Network routing information. The format is aa:bb, and aa represents site ID and bb represents label block offset.
Next hop	Next hop IP address
Metric	If displayed, it represents the route metric.
LocPrf	Local priority
Path	Autonomous system path to the destination network
Route Distinguisher	RD of VPLS

**Platform** N/A

**Description**

## 2.28 show bgp l2vpn connections

Use this command to display the connection information of Kompella VPLS or VPWS PW.

```
show bgp l2vpn { vpls | vpws } all connections [ vfi vfi_name ] [ neighbor address ] [ site-id id ]
[ detail ]
```

**Parameter  
Description**

Parameter	Description
<b>vfi</b> <i>vfi_name</i>	Displays the PW information of the specified vfi instance.
<b>neighbor</b> <i>address</i>	Displays information about the Kompella vfi PW established with a neighbor.
<b>site-id</b> <i>id</i>	Displays the connection information of all VFI instances with specified

	local site IDs.
<b>detail</b>	Displays the detailed connection information of the specified l2vpn.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** This command is used to display the local configuration and remote information of L2 VFI. If there is no remote site information, only local information is displayed.

**Configuration** The following example displays the VPLS connection.

**Examples**

```
Ruijie# show bgp l2vpn vpls all connections
```

```
Vfi: vpls1 (VPLS: vpnid 1)
```

```
Local Site: 1
```

Connect-Site	Status	Neighbor	Remote-Label	local-Label
2	up	2.2.2.2	1024	80000
3	up	3.3.3.3	1025	9192
4	up	4.4.4.4	1024	8192

```
vfi: vpls2 (VPLS: vpnid 2)
```

```
Local Site: 1
```

Connect-Site	Status	Neighbor	Remote-Label	local-Label
2	up	2.2.2.2	1124	80001
3	up	3.3.3.3	1125	9193
4	down	4.4.4.4	--	--

The following example displays the VPWS connection. Ruijie# show bgp l2vpn vpws all connections

```
vfi: vpws1 (VPWS: vpnid 3)
```

```
Local Site: 1
```

Connect-Site	Status	Neighbor	Remote-Label	Local-Label
5	up	2.2.2.2	1124	73728
6	up	3.3.3.3	1125	73729
7	up	4.4.4.4	1124	73730

The following example displays the VPWS connection of site 1. Ruijie# show bgp l2vpn vpws all connections site 1 detail

```
vfi: vpws1 (VPWS:vpnid 1)
```

```
Local site: 1
```

Label-base	offset	range
73728	1	10
73738	11	10

```
Remote site: 2 (connected)
```

```
Neighbor address: 172.10.10.2
```

Label-base	offset	range
9000	1	10

```
Incoming label: 73729, Outgoing label: 9000
```

```
The following example displays the VPLS connection of site 1. Ruijie# show bgp
l2vpn vpls all connections site 1 detail
vfi: vpls1 (VPLS:vpnid 1)
  Local site: 1
  Label-base  offset  range
  8192        1       10
  8292        11      10
  Remote site: 2 (connected)
  Neighbor address: 172.10.10.2
  Label-base  offset  range
  9000        1       10
  Incoming label: 8193, Outgoing label: 9000
  Remote site: 25 (unconnected)
  Neighbor address: 172.10.10.3
  Label-base  offset  range
  10000       1       10
  Incoming label: --, Outgoing label: --
```

Field	Description
vfi	The name of vfi instance, (n) represents the vfi instance related to the VPN ID.
Local Site	Local site ID
Connect-Site	Connected remote site ID
Status	Whether the PW is Up or Down
Neighbor	Neighbor address of the created PW
Remote-Label	Remote label of the created PW, that is, the outgoing label
Local-Label	Local label of the created PW, that is, the incoming label

**Platform** N/A

**Description**

## 2.29 show ip ref mpls forwarding-table vfi

Use this command to display the forwarding information of the MAC fast forward plane for a VPLS instance.

**show ip ref mpls forwarding-table**vfi[vpls\_name][mac-address-table[H.H.H][static] [dynamic]

**Parameter**


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

Description	
<i>Vpls_name</i>	Displays the name of a specified VPLS instance.
<b>mac-address-table</b> <i>H.H.H</i>	Displays the specified MAC address.
<b>static</b>	Displays the static MAC address.
<b>dynamic</b>	Displays the dynamic MAC address.

**Defaults**

**Command Mode** Privileged EXEC mode

**Usage Guide** This command shows information about VPLS instance forwarding entries and forwarding statistics. This command is invalid for a Kompella VPWS.

 For the router, the fast forwarding function of the interface must be enabled.

Switches do not support the fast forwarding statistics function.

```
Ruijie#show ip ref mpls forwarding-table vfi vpls_a mac-address-table
aging time : 300
total number of addresses : 2
mac-limit action : discard
mac-limit alarm : disable

  MAC Address      VC Label  Peer Address      Type  Interface
0000.b000.0001    1024      2.2.2.2           D     --
0000.a000.0001    --        --                D     GigabitEthernet 3/5
```

Field	Description
MAC Address	Information about a MAC address.
VC Label	VC label. If the MAC address egress interface is VC, the parameter shows the VC label to be used. If the MAC address egress interface is at the AC end, the parameter is invalid.
Peer Address	VPLS neighbor information. If the MAC address egress interface is VC, the parameter shows the corresponding VC peer address. If the MAC address egress interface is at the AC end, the parameter is invalid.
Type	Type of a MAC address. <b>D</b> : The MAC address is dynamically learnt. <b>S</b> : The MAC address is statically configured.

Interface	If the MAC address egress interface is VC, the parameter is invalid. IF the MAC address egress interface is at the AC end, the parameter shows information about the egress interface.
-----------	--

**Platform****Description**

## 2.30 show mpls forwarding-table vfi

Use this command to display the MAC forwarding information of the MPLS of a VPLS instance.

**show mpls forwarding-table vfi** [ *vfi\_name* ] { **mac-address-table** [ *H.H.H* ] | **statistics** }

**Parameter Description**

Parameter	Description
<b>vfi</b> <i>vfi_name</i>	Displays the name of a specified VPLS instance. If the parameter is not specified, names of all VPLS instances are displayed.
<b>mac-address-table</b>	Displays information about the MAC forwarding table.
<i>H.H.H</i>	Displays forwarding information about a specified MAC address.
<b>statistics</b>	Displays forwarding statistics information about a VPLS instance.

**Defaults**

N/A

**Command Mode**

Privileged EXEC mode

**Usage Guide**

This command displays information about VPLS instance forwarding entries and forwarding statistics. This command is invalid for a Kompella VPWS.

- ✔ For the router, the fast forwarding function of the interface must be enabled.
- ✔ Switches do not support the fast forwarding statistics function.

**Configuration Examples**

```
Ruijie# show mpls forwarding-table vfi aa mac-address-table
VPLS: aa(10)
  aging time : 300 sec , mtu : 1500
  total number of addresses : 4
  maximum number of addresses: 256
  mac-limit action: discard
  mac-limit alarm: enable
```

MAC Address	VC Label	Peer Address	Type	Interface
001a.a915.3218	1024	2.2.2.2	D	--
0022.1132.3425	--	--	S	Gi1/1
0022.1135.0a91	1025	3.3.3.3	D	--
0022.2002.3126	--	--	D	Gi1/1

Field	Description
MAC Address	Information about a MAC address.
VC Label	VC label. If the MAC address egress interface is at the VC end, the parameter shows the VC label to be used. If the MAC address egress interface is at the AC end, the parameter is invalid.
Peer Address	VPLS neighbor information. If the MAC address egress interface is VC, the parameter shows the corresponding VC peer address. If the MAC address egress interface is at the AC end, the parameter is invalid.
Type	Type of a MAC address. <b>D:</b> The MAC address is dynamically learnt. <b>S:</b> The MAC address is statically configured.
Interface	If the MAC address egress interface is VC, the parameter is invalid. IF the MAC address egress interface is at the AC end, the parameter shows information about the egress interface.

**Platform** N/A

**Description**

## 2.31 show mpls l2transport vc

Use this command to display information of the VPWS PW and VPLS PW.

```
show mpls l2transport vc [ vc_id [ ip-address ] [ detail ] | count | interface interface_name [ detail ]
| [ detail ] ]
```

Parameter	Description
<i>vc_id</i>	Displays only the PW with the specified PW ID.
<i>ip-address</i>	Displays only the PW whose peer LSR ID is the specified IP address.
<b>interface</b> <i>interface_name</i>	Displays only the VPWS PW bound to an interface. This parameter is invalid for the VPLS PW.
<b>count</b>	Displays PW statistics information.
<b>detail</b>	Displays PW details.

**Defaults** N/A

**Command** Privileged EXEC mode



**Mode**

**Usage Guide** A Martini VC can have multiple PWs using the same PW ID. Therefore, the **show mpls l2transport vc *vc-id*** command may print information about multiple PWs. You can use the *ip-address* parameter to filter these PWs.

**Configuration** The following example displays detailed information about VC1.

**Examples**

```
Ruijie# show mpls l2transport vc 1 detail
VC ID: 1 (manual), Status: up
Signaling protocol: LDP
Local interface : vlan 10(up)
Peer address: 192.168.0.1
VC type: ethernetvlan(vpws) VC mode:tagged
Attached VFI: kom1 (vpnid: 1)
Local/Remote VC label: 100/200
Local/Remote group id: 0/0
Local/Remote mtu: 1500/1500
Control word : disable
  Depend LSP info:
Output interface: Gi 3/3, imposed label stack { 200 ,501 }
Create time: 01:01:30 Last change time: 00:01:30 Up time: 00:01:30
```

```
The following example displays detailed information about VC.Ruijie# show mpls
l2transport vc detail
VC ID: 2147483650 (auto), Status: up
Signaling protocol: BGP
Local/Remote site id: 8/9
Peer address: 192.168.0.1
VC type: vlan(vpls-hub) VC mode:tagged
Attached VFI: vpls1 (vpnid:2)
Local/Remote VC label: 16384/8097
Local/Remote group id: --/--
Local/Remote mtu: 1500/1500
Control word : disable
  Depend LSP info:
Output interface: Gi 3/3, imposed label stack { 8097 ,501 }
Create time: 01:01:30 Last change time: 00:01:30 Up time: 00:01:30

VC ID: 100 (manual), Status: up
Signaling protocol: LDP
Local interface : vlan 10 (up)
Peer address: 192.168.0.1
VC type: ethernet(vpws) VC mode:raw
Local/Remote VC label: 100/200
Local/Remote group id: 0/0
```

```
Local/Remote mtu: 1500/1500
Control word : disable
Depend LSP info:
Output interface: Gi 3/3, imposed label stack { 200 ,501 }
Create time: 01:01:30 Last change time: 00:01:30 Up time: 00:01:30
```

The following example displays the VC count.

```
Ruijie# show mpls l2transport vc count
VPLS VC count: 20
VPWS VC count: 15
Up VC count: 30 (VPLS: 15, VPWS 15)
Down VC count: 5 (VPLS: 0, VPWS 5)
Total VC count: 35
```

Field	Description
VC ID	<p>Unique ID of a VC.</p> <p><b>manual:</b> A VC ID is manually configured by a user.</p> <p><b>auto:</b> A VC ID is automatically generated. Currently, VC IDs of the Kompella VPWS and the Kompella VPLS are automatically generated.</p> <p><b>Status</b> indicates the VC status, and the values include <b>up</b> and <b>down</b>.</p>
Signaling Protocol	Signaling protocol, which can be BGP or LDP.
Local/Remote site id	Show the local/remote site IDs used to create a VC of the Kompella VPLS or Kompella VPWS. This field is not displayed for the Martini VPLS and Martini VPWS.
Local interface	<p>Interface bound to a VC. This field is valid only for a VPWS VC. This field is invalid and not displayed for the VPLS VC.</p> <p>Up/down indicate the interface status.</p>
Peer address	Peer IP address of a VC.
VC type	<p>Type of a VC, which can be only <b>ethernet</b> or <b>vlan</b> for the VPLS. For the VPWS, the VC type can be:</p> <p><b>ethernet</b></p> <p><b>vlan</b></p> <p><b>PPP</b></p> <p><b>HDLC.</b></p> <p><b>vpws:</b> indicates that a VC belongs to the VPWS.</p> <p><b>vpls-hub:</b> indicates that a hub VC belongs to the VPLS.</p> <p><b>vpls-spoke:</b> indicates that a spoke VC belongs to the VPLS.</p>

Attached VFI	Show the homing VFI of a VC for the Kompella VPLS or Kompella VPWS. This field is not displayed for the Martini VPLS and Martini VPWS.
VC mode	VC mode, which can be <b>tagged</b> or <b>raw</b> . This field is not displayed for a non-Ethernet VC.
Local ce mac	Show the CE MAC address configured on the local end if: The VC is of the variant medium type. The local end has an Ethernet interface.
Local/Remote VC label	Private network label bound to a VC by the local/peer end. If the label is not assigned, it shows --.
Request ingress PE rewrite lan	Indicate whether rewriting the VLAN is required at the ingress interface. The value can be <b>enable</b> or <b>disable</b> .
Local/Remote group id	ID of the VC's homing group on the local/peer end. If the VC is not in the UP state, it shows --. This field is valid only for PWs created in the LDP mode. This field is invalid and not displayed for PWs created by the BGP signaling.
Local/Remote mtu	MTU negotiation value of a VC on the local/peer end. If the VC is not in the UP state, it shows --.
Control word	Indicate whether control bits are supported. The value can be <b>enable</b> or <b>disable</b> .
Depend LSP info	<b>Output interface:</b> indicates the egress interface on the public network used to transmit VC traffic. <b>imposed label stack:</b> indicates the label stack carried by VC data. For {200 ,501}, 200 is the VC label, while 501 is the dependent LSP label.
Create time	Time length used to create a VC.
Last change time	Time length of the preceding status change of a VC.
Up time	Time length of the UP state of a VC.

**Platform** N/A

**Description**

## 2.32 show mpls l2vc ftn-table

Use this command to display FTN information of a PW.

**show mpls l2vc ftn-table**

**Parameter  
Description**

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>	<pre>Ruijie# show mpls l2vc ftn-table</pre>
<b>Examples</b>	<pre>Local intf   Dest address  VC ID  VC_label  Out intf ----- -           2.2.2.2      1      1024     GigabitEthernet 1/1 -           3.3.3.3      1      21       GigabitEthernet 1/2</pre>

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

## 2.33 show mpls ldp vc

Use this command to display PW information in LDP.

**show mpls ldp vc { all | vpws | hub | spoke } [ vc-id ]**

Parameter Description	Parameter	Description
	<b>all</b>	Displays PWs of all types.
	<b>vpws</b>	Displays VPWS PWs and PWs of unknown types.
	<b>hub</b>	Displays VPLS PWs of the hub type.
	<b>spoke</b>	Displays VPLS PWs of the spoke type.
	<i>vc-id</i>	Displays PWs filtered by using a PW ID.

<b>Defaults</b>	N/A
<b>Command Mode</b>	Privileged EXEC mode
<b>Usage Guide</b>	N/A

<b>Configuration</b>	<pre>Ruijie# show mpls ldp vc all</pre>
<b>Examples</b>	<pre>Total VC Count: 1 VC: vcid: 1, peer: 3.3.3.3   local info:     vpn_id: 1, vc bind type: vpls hub vc (vpls-name vpls1)     Local vc type: Ethernet VLAN, local group id: 0, local mtu: 1500</pre>

```

local prefer use Control Word: no, local use Control Word: no
Remote info:
  remote vc type: Ethernet VLAN, remote group id: 0, remote mtu: 1500
  remote use Control Word: no
  remote label: 21
VC info:
  state: (0x27) create | map_send | map_recv | AC up
  session: 3.3.3.3:0
  local_label: 1027
  last send message id: 398
  last recv message id: 105
create time: 02:47:06, last change time: 01:17:29, up time: 01:17:29

```

Field	Description
Total VC Count	VC count in LDP.
vcid	Unique ID of a VC.
peer	Peer IP address of a VC.
local info	Local configuration information of a VC.
vpn id	ID of a VC's homing VPN, or VC ID of a VPWS VC, or VPLS ID of a VPLS VC.
vc bind type	Indicate the binding type of a VC. The value can be: VPWS VC VPLS HUB VC VPLS SPOKE VC
local vc type	VC type that is locally configured.
local group id	Local group ID of a VC.
local mtu	Local MTU of a VC.
local prefer use Control Word	Whether Control Word is enabled in the local configuration.
local use Control Word	Whether to use the negotiation result of Control Word.
Remote info	Peer configuration information of a VC.
remote vc type	VC type that is configured on the peer end.
remote group id	Peer group ID of a VC.
remote mtu	Peer MTU of a VC.
remote use Control Word	Whether Control Word is enabled in the peer configuration.
remote label	Label that is assigned to a VC by the peer end.
VC info	Other VC information.

state	VC status. The value can be: <b>None</b> : No status is available. <b>create</b> : creating. <b>map_send</b> : A label mapping message is sent. <b>map_rcv</b> : A label mapping message is received. <b>withdraw_send</b> : A label withdrawing message is sent. <b>req_send</b> : A label request message is sent. <b>AC up</b> : The AC bound to the VC is up. <b>AC down</b> : The AC bound to the VC is down.
session	LDP session used to exchange VC information.
local label	Label that is assigned to a VC by the local end.
last send message id	ID of the latest sent LDP message that carries information about a VC.
last rcv message id	ID of the latest received LDP message that carries information about a VC.
create time	Time length used to create a VC on the LDP plane.
last change time	Time length used to modify a VC on the LDP plane.
up time	Time length of the UP state of a VC on the LDP plane.

**Related Commands**

Command	Description
N/A	N/A

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

## 2.34 show mpls ldp vfi

Use this command to display PW information in LDP.

**show mpls ldp vfi** [ *name* ]

**Parameter Description**

Parameter	Description
<i>name</i>	Name of a VPLS instance.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** Unlike the **show mpls vfi** command, the **show mpls ldp vfi** command shows only LDP VPLS instances. Only effective VPLS instances are displayed.

**Configuration** Ruijie (config)#show mpls ldp vfi

**Examples**

```

Total VPLS Count: 1

VPLS: name:vppls1, vpls id: 1, admin state up
Create time: 02:46:28, last change time: 02:46:28
Hub-vc number:2   Spoke-vc number 0
Hub vc info:
VC: vcid: 1, peer: 2.2.2.2
local info:
vpn_id: 1, vc bind type: vpls hub vc (vpls-name vppls1)
Local vc type: Ethernet, local group id: 0, local mtu: 1500
local prefer use Control Word: no, local use Control Word: no
Remote info:
remote vc type: Ethernet, remote group id: 0, remote mtu: 1500
remote use Control Word: no
  remote label: 1024
VC info:
state: (0x27) create | map_send | map_recv | AC up
session: 2.2.2.2:0
local_label: 1026
last send message id: 556
last recv message id: 394
create time: 02:46:28, last change time: 01:00:36, up time: 01:00:36
VC: vcid: 1, peer: 3.3.3.3
local info:
vpn_id: 1, vc bind type: vpls hub vc (vpls-name vppls1)
Local vc type: Ethernet VLAN, local group id: 0, local mtu: 1500
local prefer use Control Word: no, local use Control Word: no
Remote info:
remote vc type: Ethernet VLAN, remote group id: 0, remote mtu: 1500
remote use Control Word: no
remote label: 21
VC info:
state: (0x27) create | map_send | map_recv | AC up
session: 3.3.3.3:0
local_label: 1027
last send message id: 398
last recv message id: 105
create time: 02:47:06, last change time: 01:17:29, up time: 01:17:29

```

Field	Description
Total VPLS Count	VPLS instance count in LDP.
name	Name of a VPLS instance.
vpls id	ID of a VPLS instance.
adm n state	Management status of a VPLS instance.

Create time	Time length used to create a VPLS instance on the LDP plane.
last change time	Latest time length used to modify a VPLS instance on the LDP plane.
Hub-vc number	Hub-VC count of a VPLS instance.
Spoke-vc number	SPOKE-VC count of a VPLS instance.
Hub vc info	Details about all HUB-VCs of a VPLS instance. For details, see the description about the <code>show mpls ldp vc</code> command.
Spoke vc info	Details about all SPOKE-VCs of a VPLS instance. For details, see the description about the <code>show pls ldp vc</code> command.

#### Related Commands

Command	Description
<b>l2 vfi</b>	Creates a VPLS instance, or enters the VPLS mode. Use the <b>no</b> form to delete a VPLS instance.
<b>neighbor</b>	Configures a VPLS neighbor.
<b>xconnect</b>	Binds an interface to a VPWS PW and creates a VPWS PW instance at the same time; or binds an interface to a VPLS instance.

**Platform** N/A

**Description**

## 2.35 show mpls ref vc

Use this command to display the VC entry related to MPLS REF.

**show mpls ref vc** [ **summary** | *vc\_id* [ **detail** ] | **vpls** *vpls\_id* [ **detail** ] ]

#### Parameter Description

Parameter	Description
<b>summary</b>	Displays brief information.
<i>vc_id</i>	Displays the specified VC entry.
<i>vpls_id</i>	Displays all VC entries of the VPLS to be displayed.
<b>detail</b>	Displays detailed information

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A



**Configuration** The following example displays the VC entry related to MPLS REF.

**Examples**

```
Ruijie#show mpls ref vc
Flags: * - enable fwd
 VC ID      VC Type      In Label Out Label Owner Type VPLS ID   Intf      Port
Peer
-----
*1          eth           0        111      hub       1        na        0
2.2.2.2
```

Field	Description
VC ID	The VC ID.
VC Type	The VC encapsulation type.
In Label	The in label of the VC.
Out Label	The out label of the VC.
Owner Type	The VC type, either Spoke or Hub.
VPLS ID	The VPLS instance ID.
Intf	The PW-bound interface, which is AC for VPWS and is N/A for VPLS.
PORT	Sets the L2 port number of AC, which validates only when the L3 port is an SVI port. Otherwise, the port number of 0.
Peer	The IP address of the PW peer.

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 2.36 show mpls ref vpls

Use this command to display the VPLS entry related to MPLS REF.

**show mpls ref vpls [ summary | id *id* [ detail ] | name *name* [ detail ] ]**

**Parameter Description**

Parameter	Description
<i>id</i>	Displays VPLS instance ID.
<i>name</i>	Displays VPLS instance name.

**Defaults** N/A

**Command** Privileged EXEC mode

**Mode****Usage Guide** N/A**Configuration** The following example displays the details of the VPLS instance.**Examples**

```
Ruijie#show mpls ref vpls id 1 detail
MPLSREF VPLS Instance Detail:
vpls_id: 1
vpls_name: vpls
mac_aging_time: 300 seconds
mac_thresh: 256
mac_lim_alarm_enable: 0
mac_lim_alarm_raised: 0
mac_lim_fwd_enable: 0
mtu: 1500
interfaces: 1
  GigabitEthernet 0/2 (ifx=4), encap_vid=0
hub pw: 1
  1          2.2.2.2
spoke pw: 0
static mac: 0
total mac: 4
```

Field	Description
vpls Id	VPLS instance ID.
vpls name	VPLS instance name.
Mac aging time	The aging time of the MAC address.
Mac thread	The MAC address threshold.
MAC limit alarm enable	Whether to enable the MAC address threshold violation alarm.
mac_lim_alarm_raised	Whether the MAC address has reached the threshold.
mac_lim_fwd_enable	Whether to forward the packet whose source MAC address is not in the VPLS MAC address list after the MAC address reaches the threshold.
MTU	VPLS maximum transmission unit (MTU).
Interface	The interface bound to the VPLS.
Hub pw	Hub pw information
Spoke pw	Spoke pw information
Static mac	The total number of static MAC addresses.
Total mac	The total number of MAC addresses.

**Related Commands**

Command	Description
N/A	N/A

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

## 2.37 show mpls ref vpls-mac

Use this command to display the MAC address of the VPLS instance related to MPLS REF.

**show mpls ref vpls-mac** *id* [ *mac-address* ]

Parameter Description	Parameter	Description
	<i>id</i>	VPLS instance ID.
	<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 MAC address of the VPLS instance.

### Examples

```
Ruijie#show mpls ref vpls-mac 1
VPLS vpls (1) MAC entries:
Flags: s - static
Mac address      Age(sec)  Vc/Intf
-----
6c:62:6d:d5:96:b6 0          GigabitEthernet 0/2 (ifx=4)
00:d0:f8:fb:b8:81 0          GigabitEthernet 0/2 (ifx=4)
00:d0:f8:22:66:77 127       GigabitEthernet 0/2 (ifx=4)
00:d0:f8:fb:b6:81 0          GigabitEthernet 0/2 (ifx=4)
```

Field	Description
MAC address	The MAC address.
Age(sec)	The aging time of the MAC address.
VC/Intf	The VC or interface corresponding to the MAC address.

Related Commands	Command	Description
	N/A	N/A

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

## 2.38 show mpls vfi

Use this command to display information of the specified VFI or all configured VFIs.

**show mpls vfi** [ *name* ]

Parameter Description	Parameter	Description
	<i>name</i>	Name of a l2vpn VFI.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** If the optional parameter *name* is not specified, the command displays all VPLS instances and Kompella VPWS instances.

Configured VFIs are displayed in the following order:

Martini VPLS

Kompella VPLS

Kompella VPWS

For VFIs of the same type, the alphabetic order is used.

**Configuration** Ruijie#show mpls vfi

**Examples**

```
Total VFI count: 2
Autodiscovery VFI count: 1
Manually VFI count: 1
Point-to-Point VFI count: 0
Total VPLS PW count: 4
Total PW count:4 where PW up 2 and PW down 2
VFI name:vpls1 (vpnid 1) Admin State:up
Description: Martini vpls example
VFI Type: Martini VPLS, Signal: LDP , mtu: 1500
Maximum num of MAC: 1024
Mac-limit action: forward
Mac-limit alarm: enable
Local Attachment Circuit (AC):
AC Name      AC State
Gi 0/0      Up
Pw count:2
Neighbor connected via pseudowires:
Peer-Address  VC-ID  Type  State  Local-label  Remote-label
2.2.2.2      1      Hub  up     1026         1024
3.3.3.3      2      Spoke up     1027         21
```

```

VFI name:vpls2 (vpnid 2) Admin State:up
VFI Type: KOMPELLA VPLS, Signal: BGP, mtu: 1500
PW Encapsulation type: ethernet
  Maximum num of MAC: 1024
  Mac-limit action: forward
  Mac-limit alarm: enable
Local Attachment Circuit (AC):
AC Name      AC State
Gi 0/1       Up
Gi 0/2       Down
Matched l2 extcommunity
  Route-Distinguisher: 23:23
Import Route Target: 1:200
Export Route Target: 1:200
Local site-id info:
  Site-id: 1, Site-range: 16
  Total PW count:2 where PW up 2 and PW down 0
  Neighbor connected via pseudowires:
  LSID  RSID  Peer-Address  VC-ID      Type  State  Local-label
Remote-label
  1     2     4.4.4.4      2147483648 Hub  up     8096     1024
  1     3     5.5.5.5      2147483649 Hub  up     8097     1024

```

Field	Description
Total VFI count	Number of static VFIs that are configured.
Autodiscovery VFI count	Number of VFIs using the BGP signaling, including the VPWS VFIs and VPLS VFIs.
Manually VFI count	Number of VFIs using the LDP signaling, that is the number of VFIs of the Martini VPLS.
Point-to-Point VFI count	Number of VPWS VFIs using the BGP signaling.
Total VPLS PW count	Number of VPLS PWs.
Total PW count	Number of all PWs, including VPLS PWs.
vfi name(n)	Number of VPLS instances, with <i>n</i> indicating a VPNID corresponding to a VPLS instance.
State	Status of a VPLS instance. The value can be <b>up</b> or <b>down</b> .
Signal	Signaling
Site id	Site ID
mtu	MTU of a VPLS instance.
Route-Distinguisher	RD value, such as 100:1 or 202.118.239.165:1.
Route Target	RT value, such as 100:1 or 202.118.239.165:1.
Local Attachment Circuit	AC bound to a VPLS instance.
Pw count	VC count of a VPLS instance.
LSID	ID of a VC local site associated with a VPLS instance.
RSID	ID of a VC peer remote site associated with a VPLS instance.

Peer-Address	IP address of a VC peer remote site associated with a VPLS instance.
VC-ID	ID of a VC associated with a VPLS instance.
Type	<b>Hub:</b> Hub VC of a VPLS. <b>Spoke:</b> Spoke VC of a VPLS. <b>P2P:</b> VPWS VC.
State	Status of a VC associated with a VPLS instance. The value can be <b>up</b> or <b>down</b> .
local-label	Label value assigned to a VC associated with a VPLS instance.
remote-label	Received label value of a VC associated with a VPLS instance.

**Platform** N/A

**Description**

## 2.39 signal

Use this command to specify the PW signaling of l2vpn vfi. Use the **no** form of this command to restore the default setting.

**signal bgp**

**no signal**

**Parameter Description**

Parameter	Description
<b>bgp</b>	Specifies the use of the BGP signaling.

**Defaults**

The PW signaling needs to be configured in the automatic discovery mechanism, and by default, the BGP signaling is used.

**Command**

VFI configuration mode

**Mode**

**Usage Guide**

(1) This command is valid only for the VPLS and VPWS implemented in Kompella mode. It is invalid for the VPLS implemented in Martini mode.

(2) By default, BGP is used as the signaling protocol when automatic discovery is enabled.

**Configuration**

```
Ruijie# config terminal
```

**Examples**

```
Ruijie(config)# l2 vfi vpls-name vpnid 10 autodiscovery
Ruijie(config-vfi)#signal bgp
```

**Related Commands**

Command	Description
<b>encapsulation</b>	Configures the encapsulation mode of

	Kompella l2vpn.
--	-----------------

**Platform** N/A

**Description**

## 2.40 site-id

Use this command to configure the site information of the PE in the Kompella l2vpn vfi instance, and enter the site configuration mode. Exit the site configuration mode by using the exit-site-mode command. Use the **no** form of this command to restore the default setting.

**site-id** *id* [ **site-range** *range* ]

**no site-id** *id*

**Parameter Description**

Parameter	Description
<i>id</i>	The site ID of the vfi instance, in the range from 1 to 256
<i>range</i>	The number of sites to be accessed, in the range from 1 to 256

**Defaults** The default *range* is 16.

**Command Mode** VFI configuration mode

- Usage Guide**
1. This command is valid only for the VPLS and VPWS implemented in Kompella mode.
  2. The site-range parameter of the command can be used to adjust the number of sites to be accessed by the l2vpn vfi instance, that is, the number of connections between the l2vpn vfi instance of the PE and remote PEs that belong to the same l2vpn site. You can modify the maximum number of remote PEs that can be connected to the instance. If the number is changed from small to big, this does not affect the l2vpn service. However, if the number is changed from big to small, this may interrupt the current l2vpn service and establish a new PW, and forwarding is restored only when the PW is established.
  3. For Kompella l2vpn, use this command to enter the vfi-site configuration mode, and configure the local interfaces bound with the vpws or vpls.



Different vfi instances of the same PE can be configured with the same ID.



The local ID value is greater than or equal to the remote offset value and less than the sum of remote size and offset values (that is, the site-range configured by the peer PE).



It is recommended that the maximum number of accessed sites allowed by the same VPLS instance should be the same. Otherwise, the previous restrictions must be met.



The l2vpn vpls instance can be configured with only one site and the configured site ID cannot be changed. To change it, delete the site ID and then configure it again.



The l2vpn vpws instance can be configured with several site IDs, and every site ID represents a

VPWS site of the instance. Specify the locally bound interface and the remote site to be connected in vfi-site configuration mode. If the specified remote site ID is also configured locally, the sham line cannot be established successfully.

 For the Kompella VPWS instance, the site range configuration is not valid in label saving mode.

**Configuration** The following example configures the site ID of the VPLS instance.

**Examples**

```
Ruijie# config terminal
Ruijie(config)# l2 vfi vpls-name vpnid 25 autodiscovery
Ruijie(config-vfi)# site-id 1
Ruijie(config-vfi-site)# xconnect interface gi 0/1
```

The following example configures the site ID of the VPWS instance.

```
Ruijie# config terminal
Ruijie(config)# l2 vfi vpls-name vpnid 25 point-to-point
Ruijie(config-vfi)# site-id 1
Ruijie(config-vfi-site)# xconnect interface gi 0/2 remote-ce-id 2
```

**Related  
Commands**

Command	Description
<b>l2 vfi</b>	Creates the l2vpn vfi instance, or enter the vfi configuration mode.
<b>rd</b>	Configures the RD information of the vfi instance.
<b>route-target</b>	Configures the RT information of the vfi instance.
<b>show mpls vfi</b>	Displays related information about the l2vpn vfi instance.

**Platform** N/A

**Description**

## 2.41 vc-withdraw-expect-release

Use this command to wait the release of PW label from the peer after the LDP sends the PW label withdraw message. Use the **no** form of this command to restore the default setting.

**vc-withdraw-expect-release**

**no vc-withdraw-expect-release**

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults** The LDP waits the release of PW label from the peer after sending the PW label withdraw message



**Command** config-mpls-router configuration mode  
**Mode**

**Usage Guide** With this command, the LDP releases the label only after receiving the PW label release message from the peer. For example, the LDP sends the PW label release message for AC down. If the LDP does not receive the PW label release message from the peer, the LDP will not resend the PW label mapping message when AC is up and then the PW is up again, till it receives the PW label release message from the peer or the **no vc-withdraw-expect-release** command runs.

**Configuration Examples** Ruijie (config-mpls-router) #vc-withdraw-expect-release

#### Examples

#### Related Commands

Command	Description
N/A	N/A

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

## 2.42 xconnect

Use this command to enable VPWS service on the interface. Use the **no** form of this command to restore the default setting.

**xconnect** *vc\_peer* *vc\_id* **encapsulation** **mpls** [ **ethernet** | **ethernetvlan** ] [ { **raw** | **tagged** } [ **send-vlanrewrite-req** | **not-send-vlanrewrite-req** ] ] [ *group\_id* ] [ *mtu* ] [ **manual** ]  
**no xconnect**

#### Parameter Description

Parameter	Description
<i>vc_id</i>	ID of the PW service instance in the range from 1 to 4294967295
<i>vc_peer</i>	LSR ID of the peer in the form of A.B.C.D
<b>ethernet</b>	Specifies the PW type as ethernet in the raw encapsulation mode
<b>ethernetvlan</b>	Specifies the PW type as ethernetvlan in the tag encapsulation mode.
<b>raw</b>	Specifies the encapsulation mode as raw. This parameter is valid only for PW types of <b>ethernet</b> and <b>ethernetvlan</b> .
<b>tagged</b>	Specifies the encapsulation mode as tagged. This parameter is valid only for PW types of <b>ethernet</b> and <b>ethernetvlan</b> .
<b>send-vlanrewrite-req</b>	Sends the VLAN rewrite request message to the peer. This parameter is valid only for PW types of <b>ethernet</b> and <b>ethernetvlan</b> .
<b>not-send-vlanrewrite-req</b>	Not send the VLAN rewrite request message to the peer.

	This parameter is valid only for PW type of <b>ethernetvlan</b> .
<i>group-id</i>	Group ID of the specific PW in the range from 0 to 4294967295, 0 by default.
<i>mtu</i>	MTU setting of a PW, in the range from 68 to1530.
<b>manual</b>	Configures the static PW, including the static VC-ftn and VC-ilm.

### Defaults

The Martini VPWS is unavailable.

The default PW type is **ethernet** for the Martini VPWS, and the encapsulation mode is raw.



### Command

Interface configuration mode

### Mode

### Usage Guide

The **mtu** parameter in this command indicates the packet size that the PW can transmit, that is, the user's L2 packet size plus the size of PW encapsulated packets. By default, if the PW does not enable control bits and two labels are encapsulated, 1492 is the size of the user's Ethernet packet that can be actually transmitted. Specifically, eight bits are encapsulated by the PW (two labels). If the PW signaling negotiation MTU is changed, the MTU of a user access service interface (generally equal to the PW MTU size minus the PW encapsulation size) must be accordingly changed. At the same time, the MTU of the egress interface on the public network of the PW must be adjusted to be consistent with the PW MTU. Only then, the forwarding is normal. You can run the **mtu** command at an interface to change its MTU.

-  When a PW is created in the Martini mode, the MTUs and PW types on both ends of the PW must be the same. Otherwise, the PW cannot be up.
-  After an interface is connected to the VPWS, do not change the PW type, encapsulation mode, and MTU. To change them, you must unbind the VPWS from interface and re-configure these items.

**Configuration** The following example binds gi2/1 to the VPWS.

### Examples

```
Ruijie(config)#int gi 2/1
Ruijie(config-if)# xconnect 1.1.1.1 1 encapsulation mpls
```

The following example configures the static PW.

```
Ruijie(config)# interface FastEthernet 0/2
Ruijie(config-if)# xconnect 1.1.1.1 200 encapsulation mpls pw-class pwcl
manual
Ruijie(config-if)# exit
Ruijie(config)# mpls static-l2vc 1.1.1.1 200 out-label 100 in-label
100
```

### Related Commands

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

<b>show mpls l2transport vc</b>	Displays the PW service instance.
---------------------------------	-----------------------------------

**Platform** N/A

**Description**

## 2.43 xconnect interface

Use the following command to enable the Kompella l2vpn service and connect the local interface to the remote CE of the vfi. Use the **no** form of this command to restore the default setting,

**xconnect interface** *interface-type interface-number* [ **remote-ce-id** *id* ]

**no xconnect interface** *interface-type interface-number*

Parameter Description	Parameter	Description
	<i>interface-type</i> <i>interface-number</i>	Configures the interface type and interface number
	<i>id</i>	The remote CE ID in vfi, valid only for the Kompella VPWS, and no need to be configured for Kompella VPLS.

**Defaults** By default, the interface does not provide the l2vpn service.

By default, the PW used by Kompella l2vpn is ethernet type, and the encapsulation mode is raw.

**Command** VFI site configuration mode

**Mode**

- Usage Guide**
- It is recommended to run the **encapsulation mpls** command to set the VPWS PW type as **ethernetvlan** when the local subinterface is used to access the VPWS service, and set the VPWS PW type as **ethernet** when the Ethernet interface is used to access the VPWS service.
  - For Kompella VPWS, one interface can be bound in the same site mode. If an interface is bound, other interfaces cannot be bound.
  - It is recommended to use the **encapsulation mpls ethernetvlan** command to set the PW encapsulation mode of VPLS PW as **tag** when the subinterface is used to access the VPLS service, and set the encapsulation mode of the VPLS PW as **raw** when the Ethernet interface is used to access the VPLS service.

**Configuration** The following example binds Gi2/2 to VPWS.

**Examples**

```
Ruijie(config)# l2 vfi vpls-name vpnid 25 point-to-point
Ruijie(config-vfi)# site-id 1
Ruijie(config-vfi-site)# xconnect interface gi 2/2 remote-ce-id 2
```

The following example binds Gi2/1 to VPLS.

```
Ruijie(config)# l2 vfi vpws-name vpnid 26 autodiscovery
```

```
Ruijie(config-vfi)# site-id 1
Ruijie(config-vfi-site)# xconnect interface gi 2/1
```

**Related  
Commands**

Command	Description
<b>ignore match l2-extcommunity</b>	Whether the layer 2 extended community attribute is matched when the PW is created in Kompella mode.
<b>show mpls vfi</b>	Displays the l2vpn vfi instance information.

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

## 2.44 xconnect vfi

The following command is used to enable the Martini VPLS service of the interface. Use the **no** form of this command to restore the default setting.

```
xconnect vfi name
no xconnect
```

**Parameter  
Description**

Parameter	Description
<i>name</i>	Specifies the name of the bound VFI instance.

**Defaults** By default, the interface does not provide the Martini VPLS service.

**Command Mode** Interface configuration mode

**Usage Guide** Use this command to bind the VPLS service of Martini.



**Configuration Examples** The following example binds Gi2/2 to Martini VPLS.

```
Ruijie (config)#int gi 2/2
Ruijie (config-if)# xconnect vfi vfi1
```

**Related  
Commands**

Command	Description
<b>ignore match l2-extcommunity</b>	Whether the layer 2 extended community attribute is matched when PW is created in Kompella mode.
<b>show mpls vfi</b>	Displays the l2vpn vfi instance information.

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

## 3 BGP/MPLS L3 VPN Commands

### 3.1 alloc-label

Use this command to allocate label per VPN. Use the **no** or **default** form of this command to restore the default setting,

**alloc-label** { **per-vrf** | **per-route** }

**no alloc-label**

**default alloc-label**

Parameter Description	Parameter	Description
	<b>per-vrf</b>	Allocates a label per VPN.
	<b>per-route</b>	Allocates a label per VPN route.

**Defaults** By default, a label is allocated per VRF.

**Command Mode** VRF configuration mode

**Usage Guide** RFC4364 outlines two label assignment methods for L3VPN: per route and per VRF. The former method rapidly forwards packets to the next hop by label by searching the ILM table, but it requires a large ILM table. For the latter method, all routes of a VRF share the label that significantly reduces the size of the ILM table, but its forwarding efficiency is lower for it searches the ILM table two times. First it searches the VRF of a packet from the ILM table, and then forwards the packet according to the destination IP address of the routing table of the VRF.

**Configuration Examples** The following example configures label assignment per route for VPNA.

```
Ruijie(config)# ip vrf VPNA
Ruijie(config-vrf)# alloc-label per-route
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 3.2 area sham-link

Use this command to configure a sham link. Use the **no** or **default** command to restore the default setting.

```

area area-id sham-link source-address destination-address [ cost number ] [ dead-interval
seconds ] [ hello-interval seconds ] [ retransmit-interval seconds ] [ transmit-delay seconds ]
[ authentication [ message-digest | null ] ] [ [ authentication-key key ] ] [ [ message-digest-key
key-id md5 key ] ]
no area area-id sham-link source-address destination-address [ cost ] [ dead-interval
[ hello-interval ] [ retransmit-interval ] [ transmit-delay ] [ authentication ] [ [ authentication-key
] [ message-digest-key key-id ] ]
default area area-id sham-link source-address destination-address [ cost ] [ dead-interval
[ hello-interval ] [ retransmit-interval ] [ transmit-delay ] [ authentication ] [ authentication-key |
message-digest-key key-id ]

```

**Parameter  
Description**

Parameter	Description
<i>area-id</i>	It indicates the OSPF area ID of the sham link that can be a decimal integer ranging from 0 to 4294967295 or an IP address.
<i>source-address</i>	Sham link source address
<i>destination-address</i>	Sham link destination address
<b>cost</b> <i>number</i>	(Optional) It indicates the COST value for OSPF to send packets on the sham link. It ranges from 0 to 65535 with the default value of 1.
<b>dead-interval</b> <i>seconds</i>	(Optional) It indicates the time interval when the neighbor of the sham link dies. It ranges from 0 to 2147483647 with the default value of 40s.
<b>hello-interval</b> <i>seconds</i>	(Optional) It indicates the time interval for sending the Hello packet on the sham link. It ranges from 1 to 65535 with the default value of 10s.
<b>retransmit-interval</b> <i>seconds</i>	(Optional) It indicates the retransmission time interval for sending packets on the sham link. It ranges from 0 to 65535 with the default value of 5s.
<b>transmit-delay</b> <i>seconds</i>	(Optional) It indicates the delay for transmitting the LSU packet on the sham link. It ranges from 0 to 65535 with the default value of 1s.
<b>authentication-key</b> [ <b>0</b>   <b>7</b> ] <i>key</i>	(Optional) It defines the key for OSPF plain text authentication. The keys for plain text authentication between neighbors must be consistent. The <b>service password-encryption</b> command can make the key to be displayed in an encrypted way. 0 Specify the key to be displayed in plain text. 7 Specify the key to be displayed in encrypted text.
<b>message-digest-key</b> <i>key-id</i> <b>md5</b> [ <b>0</b>   <b>7</b> ] <i>key</i>	(Optional) It defines the key identifier and key for OSPF MD5 authentication. The key identifier and key for MD5 authentication between neighbors must be consistent. The <b>service password-encryption</b> command can make the key to be displayed in an encrypted way. 0 Specify the key to be displayed in plain text. 7 Specify the key to be displayed in encrypted text.
<b>authentication</b>	Sets the authentication type: plain text authentication.
<b>message-digest</b>	Sets the authentication type to MD5 authentication.
<b>null</b>	Sets authentication not to be carried out.

**Defaults** By default, no sham link is configured.

**Command Mode** OSPF Router mode


**Usage Guide** This command is valid only to the OSPF instance that associates the VRF.

To configure a sham link, configure the two PEs that set up the sham link. If you configure only one PE, the sham link cannot be set up.

The two PEs that establish the sham link must meet the following configuration requirements:

- The sham link area-id of two PEs must be the same.
- The source address of the sham link configured on one PE must be equal to the destination address of the sham link configured on the other PE.
- The source address of the sham link configured on the PE must be a 32-bit loopback address, and this address must be bound to the corresponding VRF instance.

As the OSPF route announced through the sham link lacks a VPN tag, this route cannot be used for forwarding, and the actual forwarding still needs to use the BGP VPNv4 route. Therefore, during the actual configuration, the route announced through the sham link must announce the VPNv4 route to the related BGP neighbor through the MP-BGP protocol.

 The source address for setting up a sham link must participate in the BGP VPNv4 route announcement, but cannot participate in the calculation of the VRF OSPF instance.

**Configuration Examples** The following example configures a sham link for an OSPF instance. The sham link belongs to the area 0, the source address is 1.1.1.1, the destination address is 2.2.2.2, and the COST value for transmitting packets on the sham link by the OSPF protocol is 10.

```
Ruijie(config)# router ospf 10 vrf vpn1
Ruijie(config-router)# area 0 sham-link 1.1.1.1 2.2.2.2 cost 10
```

**Related Commands**

Command	Description
<b>show ip ospf sham-links</b>	Displays all sham-link information of the OSPF instance.

**Platform Description** N/A

### 3.3 capability vrf-lite

Use this command to control the loop inspection of the OSPF instance. Use the **no** form of this command to enable loop inspection. Use the **default** form of this command to restore the default setting.

**capability vrf-lite [ auto ]**

**no capability vrf-lite [ auto ]**



[ default ] **capability vrf-lite** [ auto ]

Parameter Description	Parameter	Description
	<b>auto</b>	The OSPF instance associated with the VRF automatically determines whether to support loop inspection.

**Defaults** By default, the OSPF instance associated with the VRF supports loop inspection.

**Command Mode** OSPF Router mode

**Usage Guide** This command is valid only for the OSPF instance associated with the VRF. By default, the OSPF instance associated with the VRF supports loop inspection and the PE-CE OSPF feature (the so-called PE-CE OSPF feature is to convert different OSPF LSAs to CE based on the BGP extension attribute). Configuring the **capability vrf-lite** command will disable the function above. Loop inspection of the OSPF instance is to prevent the possible loop during transmission through the VPN route. The OSPF instance associated with the VRF will deal with the received LSAs according to the following rules:

LSA Type	Implementation Process
Types 3, 5, 7 LSA	Inspect the DN bit. If the received LSA has a DN bit, the LSA will not participate in the OSPF calculation.
Types 5, 7 LSA	Inspect the VPN domain-tag. If the VPN domain-tag of the received LSA and the VPN domain-tag of the local OSPF instance are the same, the LSA will not participate in the OSPF calculation.

After receiving the LSA packet, the OSPF protocol will not inspect the DN bit and the VPN domain-tag in the LSA packet, and let the LSA participate in the OSPF calculation. Disabling the PE-CE OSPF feature (for the introduction to "PE-CE OSPF Feature", please see the *MPLS Configuration Guide*) means that different OSPF LSAs are not converted based on the BGP attribute.

By default, the OSPF instance associated with the VRF supports loop inspection.

The purpose of loop inspection is expected to disable the loop inspection of the VRF OSPF instance in some scenarios. For example, assume that a VPN user uses an MCE device exchange VPN routes with a PE. If the OSPF protocol runs for VPN route exchange between the MCE and PE and the MCE and VPN site exchange VPN routes through the EBGP, the OSPF and BGP in the MCE should be set to redistribute each other. To enable the BGP to completely redistribute OSPF routes, it is required to disable loop inspection of the VRF OSPF instance in the MCE by using the **capability vrf-lite** command.

**Configuration Examples** The following example disables loop inspection of the OSPF instance.

```
Ruijie(config)# router ospf 10 vrf vpn1
Ruijie(config-router)# capability vrf-lite
```

Related Commands	Command	Description
------------------	---------	-------------

<b>domain-tag</b>	Configures domain-tag information of the OSPF instance.
-------------------	---

**Platform** N/A

**Description**

### 3.4 domain-id

Use this command to configure the domain ID of the OSPF instance. Use the **no** or **default** form of this command to restore the default setting.

**domain-id** [ *ip-address* [ **secondary** ] ] | **null** | **type** { **0005** | **0105** | **0205** | **8005** } **value** *hex-value* [ **secondary** ] ]

**no domain-id** [ *ip-address* [ **secondary** ] ] | **null** | **type** { **0005** | **0105** | **0205** | **8005** } **value** *hex-value* [ **secondary** ] ]

**default domain-id**

**Parameter Description**

Parameter	Description
<i>ip-address</i>	Sets the domain ID to the IP address.
<b>secondary</b>	The configured domain ID serves as the secondary identifier.
<b>null</b>	The OSPF instance has no domain ID.
<b>type</b> { <b>0005</b>   <b>0105</b>   <b>0205</b>   <b>8005</b> }	Sets the domain ID type of the OSPF instance. It has the following four values: 0x0005, 0x0105, 0x0205, 0x8005, and the default type is 0x0005.
<b>value</b> <i>hex-value</i>	Sets the domain ID of the OSPF instance which is a hexadecimal numeral containing six bytes.
<b>secondary</b>	The configured domain ID serves as the secondary identifier.

**Defaults** By default, the domain-id value of the OSPF instance is NULL, and the type is 0005.

**Command** OSPF Router mode

**Mode**

**Usage Guide** This command is valid only for the OSPF instance associated with the VRF. Assume that the OSPF instance is configured with a domain ID. When an OSPF route changes into a VPN route after redistributed to BGP, the domain ID is also redistributed to the BGP, and is finally announced to other PEs as a part of the extended community attribute of the VPN route. The OSPF instance can be configured with multiple domain IDs by using the **domain-id secondary** command, but there is only one primary domain ID, and others are secondary domain IDs. When the conversion from the OSPF route to the VPN route is announced, the related extended community attribute also carries the primary domain ID information only. Generally, the OSPF protocol runs between PE and CE to exchange VPN routes. After receiving the VPN route and redistributing it to the OSPF instance, PE announces this to the VPN site as type 5 LSA. However, for different sites that belong to one OSPF domain, the route should be announced as type 3 LSA. Therefore, after the same domain ID is configured for the related VRF OSPF instance on

the PE, the route inside the domain can be announced as type 3 LSA.

In one PE, domain IDs of different VRF OSPF instances do not affect each other. They can be the same or different. The VRF OSPF instances that belong to one VPN should be configured with the same domain ID to ensure correct route announcement.

**Configuration** The following example configures the domain ID of the VRF OSPF instance.

**Examples**

```
Ruijie(config)# router ospf 10 vrf vpn1
Ruijie(config-router)# domain-id type 0005 value 000000000001
```

**Related  
Commands**

Command	Description
<b>show ip ospf</b>	Displays the summary information of the OSPF instance.

**Platform** N/A

**Description**

### 3.5 domain-tag

Use this command to configure the VPN domain-tag of the OSPF instance associated with the VRF.

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

**domain-tag tag**

**no domain-tag**

**default domain-tag**

**Parameter  
Description**

Parameter	Description
<i>tag</i>	The domain-tag value of the OSPF instance, in the range from 1 to 4294967295

**Defaults** The default value of the VRF OSPF instance is the AS number of the local BGP protocol.

**Command  
Mode** OSPF Router mode

**Usage Guide** This command is valid only for the OSPF instance associated with the VRF, and only for the BGP redistributed route.

If a VPN site connects multiple PEs, the VPN site learns the VPN route through MP-BGP from PEs. If the VPN route is announced to the VPN site through type 5 or type 7 LSA which may be learned by other PE routers connected to the VPN site and advertised, a loop may come into being. To prevent such a loop, configure the same VPN domain-tag for the VRF OSPF instances connected to the same VPN site on a PE. When the VRF OSPF instance sends type 5 or type 7 LSA to the VPN site, the LSA is attached with the VPN domain-tag information. When other PE sites receive type 5 or type 7 LSA, if the VPN domain-tag in the LSA is identical to the VPN domain-tag of the local OSPF instance, the LSA does not participate in OSPF calculation.

Generally, the OSPF instances that belong to the same VPN should be configured with the same tag value.

The VPN domain-tag contains four bytes in the OSPF packet. If this command is not configured for the VRF OSPF instance, by default, when the OSPF instance announces type 5 or type 7 LSA, the former two bytes of the VPN domain-tag are set to 0xD000, and the latter two bytes are set to the AS number of the local BGP. For example, if the AS number of the local BGP is 1, the hexadecimal value of the VPN domain-tag is 0xD0000001.

**Configuration** The following example sets the domain-tag value of the OSPF instance to 10.

**Examples**

```
Ruijie(config)# router ospf 10 vrf vpn1
Ruijie(config-router)# domain-tag 10
```

**Related  
Commands**

Command	Description
<b>capability vrf-lite</b>	Enables/Disables loop inspection.

**Platform** N/A

**Description**

### 3.6 export map

Use this command to define the policy rule of exporting extended community attribute from local VRF to remote VPN route. Use the **no** or **default** form of this command to restore the default setting.

**export map** *routermap-name*

**no export map**

**default export map**

**Parameter  
Description**

Parameter	Description
<i>routermap-name</i>	Associated route map policy rule.

**Defaults** By default, no policy rule of extended community attribute is exported.

**Command  
Mode** VPN configuration mode

**Usage Guide** This command allows you to more precisely control the extended group attribute of an exported route. You are allowed to add or modify the extended community attribute defined by the **route-target export** command. The route map associated by this command supports two rules only: match IP address and set extcommunity.

**Configuration  
Examples** The following example configures the extended group attribute associated with rma on VPNA, use the following command:

```
Ruijie(config)# ip vrf VPNA
```

```
Ruijie(config-vrf)# export map rma
```

#### Related Commands

Command	Description
<b>route-target</b>	Defines the import and export RT policy of VRF.

Platform N/A

#### Description

## 3.7 extcommunity-type

Use this command to configure router-id or route-type of the OSPF instance associated with the VRF.

Use the **no** or **default** form of command restores the default value.

```
extcommunity-type { router-id { 0107 | 8001 } | route-type { 0306 | 8000 } }
```

```
no extcommunity-type { router-id | route-type }
```

```
default extcommunity-type { router-id | route-type }
```

#### Parameter Description

Parameter	Description
<b>router-id { 0107   8001 }</b>	Sets the router-id type of the OSPF instance. The value can be 0107 or 8001.
<b>route-type { 0306   8000 }</b>	Sets the route-type type of the OSPF instance. The value can be 0306 or 8000.

**Defaults** By default, the router-id type is 0107, and the route-type type is 0306.

**Command Mode** OSPF Router mode

**Usage Guide** The command is valid only for the OSPF instance associated with the VRF, and not valid for the global VRF instance.

When the OSPF route of VRF forms the VPN route, the extended community attribute of the VPN route also carries the router-id information of the OSPF instance. The type field value of the extended community attribute can be set to 0x0107 or 0x8001 by running the **extcommunity-type router-id** command.

When the OSPF route of VRF forms the VPN route, the extended community attribute of the VPN route can also carry the router-type information of the OSPF instance. The type field value of the extended community attribute can be set to 0x0306 or 0x8000 by running the **extcommunity-type router-type** command.

**Configuration Examples** The following example sets router-id of the OSPF instance to 8001.

```
Ruijie(config)# router ospf 10 vrf vpn1
Ruijie(config-router)# extcommunity-type router-id 8001
```

Related Commands	Command	Description
	N/A	N/A

Platform N/A  
Description

### 3.8 import map

Use this command to define the policy rule of importing remote VPN routes to local VRF. Use the **no** or **default** form of this command to restore the default setting.

**import map** *route-map-name*

**no import map** *route-map-name*

Parameter Description	Parameter	Description
		<i>route-map-name</i>

Defaults By default, no import policy rule is defined.

Command VPN configuration mode  
Mode

Usage Guide This command allows you to more precisely control the import of remote VPN route to local VRF . The rule defined by the **import map** command takes effect after the import of extended community attribute defined in the VRF. Namely, the rule defined by this command filters the received remote VPN routes only when they match the extended community attribute defined by the **route-target import** command in the VRF. The route map associated by this command supports two rules only: match IP address and match extcommunity.

Configuration The following example configures the extended group attribute associated with rma on VPNA.

Examples

```
Ruijie(config)# ip vrf VPNA
Ruijie(config-vrf)# import map rma
```

Related Commands	Command	Description
		<b>route-target</b>

Platform N/A  
Description

### 3.9 mpls static l3vpn-ftn

Use this command to add a FTN to L3 VPN FTN table. Use the **no** or **default** form of this command to restore the default setting.

**mpls static l3vpn-ftn** *vrf-name ip-address/mask out-label label remote-pe ip-addr*

**mpls static l3vpn-ftn** *vrf-name ip-address/mask local-forward nexthop interface-name nexthop-ip*

**no mpls static l3vpn-ftn** *vrf-name ip-address/mask*

**default mpls static l3vpn-ftn** *vrf-name ip-address/mask*

Parameter Description	Parameter	Description
	<i>vrf-name</i>	Specifies the VRF FTN table where the FTN is added.
	<i>ip-address/mask</i>	FEC, the destination network.
	<b>out-label</b> <i>label</i>	The FTN is forwarded to other PEs through the LSP tunnel , with the private network label set.
	<b>remote-pe</b> <i>ip-addr</i>	Egress PE address.
	<b>local-forward nexthop</b> <i>interface-name nexthop-ip</i>	The FTN is directly forwarded to the next hop from local PE. The egress port and the next hop IP address are set.

**Defaults** N/A

**Command Mode** Global configuration mode

**Usage Guide** This command is used to add an FTN to the specified VRF FTN table. After receiving a packet containing an IP address in this VRF, the device enabled with MPLS uses the longest match to search the VRF FTN table for the next hop according to the destination address. If the next hop is found, label forwarding is performed on this IP packet. The FTN whose destination address and mask are both 0 takes effect only when this route is also in the route forwarding table.

**Configuration Examples** The following example configures an L3 VPN FTN with FEC 192.168.0.0/16, out label 100, and egress PE address 10.10.10.1.

```
Ruijie(config)# mpls static l3vpn-ftn 192.168.0.0/16 out-label 100 remote-pe 10.10.10.1
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 3.10 recursive-route lookup lsp

Use this command to enable the capability of resolving the next hop of the BGP route to the LSP tunnel, Use the **no** or **default** form of this command to restore the default setting.

**recursive-route lookup lsp**

**no recursive-route lookup lsp**

**default recursive-route lookup lsp**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** By default, the function is disabled.

**Command Mode** Global configuration mode

**Usage Guide** By default, the next hop of the BGP route without a tag is not resolved to the LSP tunnel. In a CSC application scenario, for the model where level 2 carriers provide Internet services based on the IP core, the next hop of the BGP route must be resolved to the LSP tunnel in the CSC CE by running this command.

**Configuration Examples** The following example enables the capability of resolving next hop of the BGP route to the LSP tunnel.

```
Ruijie(config)# recursive-route lookup lsp
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 3.11 show ip ospf sham-links

Use this command to display the OSPF sham-link information.

**show ip ospf [ process-id ] sham-links [ area area-id ]**

Parameter Description	Parameter	Description
	<i>process-id</i>	OSPF process-id
	<b>area</b> <i>area-id</i>	The OSPF area-id of the sham-link can be a decimal integer ranging from 0 to 4294967295 or an IP address.



**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** This command is used to display the sham-link information of the OSPF instance.

**Configuration** ruijie#show ip ospf sham-links

**Examples**

```
Sham Link SLINK1 to address 8.8.8.8 is up
Area 0.0.0.0 source address 7.7.7.7, Cost: 10
Output interface is GigabitEthernet 0/8
Nexthop address 192.168.1.2
Transmit Delay is 1 sec, State Point-To-Point,
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
Hello due in 00:00:07
Adjacency state Full
```

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 4 MPLS GR Commands

### 4.1 bfd bind backward-lsp-with-ip

Use this command to configure BFD to detect whether the LSP backward link uses an IP address.

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

**bfd bind backward-lsp-with-ip peer-ip** *ip-address* [ **vrf** *vrf-name* ] **interface** *interface-type*  
*interface-number* [ **source-ip** *ip-address* ] **local-discriminator** *discr-value* **remote-discriminator**  
*discr-value*

**no bfd bind backward-lsp-with-ip peer-ip** *ip-address* [ **vrf** *vrf-name* ]

#### Parameter Description

Parameter	Description
<b>peer-ip</b> <i>ip-address</i>	Peer IP address bound by the BFD session
<b>vrf</b> <i>vrf-name</i>	VRF name bound by the BFD session
<b>interface</b> <i>interface-type</i> <i>interface-number</i>	Configures the interface type and interface number.
<b>source-ip</b> <i>ip-address</i>	Sets the source IP address carried by the BFD session
<b>local-discriminator</b> <i>discr-value</i>	Configures the local identifier of the current BFD session, ranging from 1 to 8191.
<b>remote-discriminator</b> <i>discr-value</i>	Configures the remote identifier of the current BFD session, ranging from 1 to 8191.

#### Defaults

This function is disabled by default.

#### Command mode

Global configuration mode

#### Usage Guide

Use this command to configure BFD to detect whether the LSP backward link uses an IP address as follows:

- If the LSP backward link uses an IP address, the forward LSP must be configured with a local identifier and a remote identifier, that is, manual configuration mode must be adopted.
- The peer IP address needs to be configured, and the source IP address is optional.
- In the case of having no specified source IP address, the source IP address in the BFD packet is not updated if the IP address of the outgoing interface is changed after the BFD session is configured successfully. In the case of having a specified source IP address, the source IP address in the BFD packet is not updated if the source IP address is changed after the BFD session is configured successfully. After the BFD session is established successfully, the identifier cannot be modified.
- The system regularly queries the BFD configuration items that sessions have been submitted but not been established and attempts to establish BFD sessions.
- The system has a limit on the number of BFD sessions. If the number of BFD sessions

submitted and established by a user exceeds the upper limit allowed by the system, the system will generate log information to prompt the user.

**Configuration Examples** In global configuration mode on the switch, the following example configures BFD to detect whether the LSP backward link uses an IP address. The source IP address is 20.20.20.20, and the destination IP address is 10.10.10.10. The outgoing interface is GigabitEthernet 0/2. The local identifier is 1, and the remote identifier is 2. The configuration is as follows:

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#interface gigabitEthernet 0/2
Ruijie(config-if-GigabitEthernet 0/2)#no switchport
Ruijie(config-if-GigabitEthernet 0/2)#bfd interval 100 min_rx 100 multiplier 3
Ruijie(config-if-GigabitEthernet 0/2)#exit
Ruijie(config)#bfd bind backward-lsp-with-ip peer-ip 10.10.10.10 interface
gigabitEthernet 0/2 source-ip 20.20.20.20 local-discriminator 1
remote-discriminator 2
```

#### Related Commands

Command	Description
<b>bfd</b>	Configures the parameters of the LDP session.

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

## 4.2 bfd bind bgp-lsp

Use this command to bind BFD to BGP LSP. Use the **no** form of this command to restore the default setting.

```
bfd bind bgp-lsp peer-ip ip-address source-ip ip-address [ local-discriminator discr-value
remote-discriminator discr-value ]
no bfd bind bgp-lsp peer-ip ip-address
```

#### Parameter Description

Parameter	Description
<b>peer-ip</b> <i>ip-address</i>	Sets the peer IP address of the BFD session.
<b>source-ip</b> <i>ip-address</i>	Sets the source IP address of the BFD session.
<b>local-discriminator</b> <i>discr-value</i>	Sets the local description of the BFD session, in the range from 1 to 8191.
<b>remote-discriminator</b> <i>discr-value</i>	Sets the remote description of the BFD session, in the range from 1 to 8191.
<b>no</b>	Disables this function.

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

**Command mode** Global configuration mode

- Usage Guide**
- This command is executed on the LSP egress node.
  - With BFD enabled, you can create the BFD session after configuring BGP LSP.
  - If BGP LSP is deleted, the BFD session bound with it is deleted as well but the BFD session configuration remains. Once BGP LSP is configured, the BFD session is created.
  - The BFD session can be configured with local and remote identification. If the local identification is not configured, the system selects one automatically. If the reverse LSP is an IP link, the LSP must be configured with local and remote identification manually.
  - Once the BFD session is created, the identification cannot be changed.
  - The system checks the submitted BFD configuration which creates no session and attempts to create BFD sessions periodically.
  - The number of BFD sessions is limited. If the number of submitted BFD sessions exceeds the maximum, log messages are produced.

---

 This function applies to BGP LSP initiated by the host routing.

 One LSP can be configured with one BFD session.

---

**Configuration Examples** The following example binds BFD with BGP LSP whose source IP address is 20.20.20.20 and destination IP address is 10.10.10.10.

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#mpls ip
Ruijie(config)#interface gigabitEthernet 0/2
Ruijie(config-if-GigabitEthernet 0/2)#no switchport
Ruijie(config-if-GigabitEthernet 0/2)#mpls ip
Ruijie(config-if-GigabitEthernet 0/2)#label-switching
Ruijie(config-if-GigabitEthernet 0/2)#bfd interval 100 min_rx 100 multiplier
3
Ruijie(config-if-GigabitEthernet 0/2)#exit
Ruijie(config)#bfd bind bgp-lsp peer-ip 10.10.10.10 source-ip 20.20.20.20
```

The following example binds BFD with BGP LSP whose source IP address is 20.20.20.20 and destination IP address is 10.10.10.10. The local identification is 1 and the remote 2.

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#mpls ip
Ruijie(config)#interface gigabitEthernet 0/2
Ruijie(config-if-GigabitEthernet 0/2)#no switchport
Ruijie(config-if-GigabitEthernet 0/2)#mpls ip
Ruijie(config-if-GigabitEthernet 0/2)#label-switching
Ruijie(config-if-GigabitEthernet 0/2)#bfd interval 100 min_rx 100 multiplier
3
```

```
Ruijie(config-if-GigabitEthernet 0/2)#exit
Ruijie(config)#bfd bind bgp-lsp peer-ip 10.10.10.10 source-ip
20.20.20.20
```

Related Commands	Command	Description
	N/A	N/A

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

### 4.3 bfd bind ldp-lsp

Use this command to configure BFD to detect LDP LSP. Use the **no** form of this command to restore the default setting.

**bfd bind ldp-lsp peer-ip** *ip-address* [**vrf** *vrf-name*] **nexthop** *ip-address* [**interface** *interface-type interface-number*] **source-ip** *ip-address* [**local-discriminator** *discr-value* **remote-discriminator** *discr-value*] [**process-state**]  
**no bfd bind ldp-lsp peer-ip** *ip-address*

Parameter Description	Parameter	Description
	<b>peer-ip</b> <i>ip-address</i>	
<b>vrf</b> <i>vrf-name</i>		Sets the name of VRF bound with the BFD session.
<b>nexthop</b> <i>ip-address</i>		Sets the next-hop IP address of LDP LSP.
<b>interface</b> <i>interface-type interface-number</i>		Configures the interface type and interface number.
<b>source-ip</b> <i>ip-address</i>		Source IP address carried by the BFD packet
<b>local-discriminator</b> <i>discr-value</i>		Configures the local identifier of the current BFD session, ranging from 1 to 8191.
<b>remote-discriminator</b> <i>discr-value</i>		Configures the remote identifier of the current BFD session, ranging from 1 to 8191.
<b>process-state</b>		Processes the state of the current BFD session. For some applications requiring BFD to detect faults such as deployments based on the cooperation BFD and LSP, this parameter is mandatory.
<b>no</b>		Disables this function.

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

**Command mode** Global configuration mode

- Usage Guide** Use this command to configure BFD to detect an LDP LSP as follows:
- This command can only be executed on ingress nodes of an LSP.
  - When BFD configuration has existed, the BFD configuration item cannot be established. After BFD is configured, a BFD session starts being established immediately if the LDP LSP exists. If the LDP LSP does not exist, a BFD session starts being established when the LDP LSP exists.
  - When the LDP LSP is deleted, the BFD session bound to it is deleted. However, the system reserves the configuration item of this BFD session. When the LDP LSP exists, the system re-creates a BFD session.
  - The local identifier and remote identifier can be configured in a BFD session. If the local identifier is not configured, the system elects the local identifier automatically. If the LSP backward link adopts an IP address, the forward LSP must be configured with the local identifier and remote identifier manually.
  - When the address of the egress of the detected LSP is borrowed or lent, the egress must be specified. Otherwise, the egress does not need to be specified.
  - After a BFD session is established successfully, the identifier cannot be modified.
  - The system queries regularly BFD configuration items that sessions have been submitted but not been established and attempts to establish BFD sessions.
  - The system has a limitation on the number of BFD sessions. If the number of requests for establishing BFD sessions submitted by a user exceeds the limitation, the system prompts the user through log information.

---

 Only LDP LSP detection established by host routes is supported.

---

---

 One LSP can be configured with only one BFD session.

---

**Configuration** The following example auto-negotiates an identifier.

**Examples** In LDP configuration mode on the switch, configure BFD to detect LDP LSP. The source IP address is 20.20.20.20, the sink IP address is 10.10.10.10, and the next-hop address is 1.1.1.2. The configuration is as follows:

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#mpls ip
Ruijie(config)#interface gigabitEthernet 0/2
Ruijie(config-if-GigabitEthernet 0/2)#no switchport
Ruijie(config-if-GigabitEthernet 0/2)#mpls ip
Ruijie(config-if-GigabitEthernet 0/2)#label-switching
Ruijie(config-if-GigabitEthernet 0/2)#bfd interval 100 min_rx 100 multiplier
3
Ruijie(config-if-GigabitEthernet 0/2)#exit
Ruijie(config)#mpls router ldp
Ruijie(config-mpls-router)#ldp router-id interface loopback 0 force
Ruijie(config-mpls-router)#bfd bind ldp-lsp peer-ip 10.10.10.10 nexthop
1.1.1.2 source-ip 20.20.20.20
```

The following example sets an identifier manually.

In LDP configuration mode on the switch, configure BFD to detect LDP LSP. The source IP address is 20.20.20.20, the sink IP address is 10.10.10.10, and the next-hop address is 1.1.1.2. The local identifier is 1, and the remote identifier is 2. The BFD session status is processed. The configuration is as follows:

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#mpls ip
Ruijie(config)#interface gigabitEthernet 0/2
Ruijie(config-if-GigabitEthernet 0/2)#no switchport
Ruijie(config-if-GigabitEthernet 0/2)#mpls ip
Ruijie(config-if-GigabitEthernet 0/2)#label-switching
Ruijie(config-if-GigabitEthernet 0/2)#bfd interval 100 min_rx 100 multiplier
3
Ruijie(config-if-GigabitEthernet 0/2)#exit
Ruijie(config)#mpls router ldp
Ruijie(config-mpls-router)#ldp router-id interface loopback 0 force
Ruijie(config-mpls-router)#bfd bind ldp-lsp peer-ip 10.10.10.10 nexthop
1.1.1.2 source-ip 20.20.20.20 local-discriminator 1 remote-discriminator 2
process-state
```

#### Related Commands

Command	Description
<b>bfd</b>	Configures the parameters for the BFD session.

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

## 4.4 bfd bind static-lsp

Use this command to configure BFD to detect a static LSP. Use the **no** form of this command to disable this function.

**bfd bind static-lsp peer-ip** *ip-address* **source-ip** *ip-address* [ **local-discriminator** *discr-value* **remote-discriminator** *discr-value* ] [ **process-state** ]

**no bfd bind static-lsp peer-ip** *ip-address*

#### Parameter Description

Parameter	Description
<b>peer-ip</b> <i>ip-address</i>	Sink IP address of the static LSP bound by the BFD session
<b>source-ip</b> <i>ip-address</i>	Source IP address carried by the BDF packet
<b>local-discriminator</b> <i>discr-value</i>	Configures the local identifier of the current BFD session, ranging from 1 to 8191.
<b>remote-discriminator</b>	Configures the remote identifier of the current BFD session, ranging

<i>discr-value</i>	from 1 to 8191.
<b>process-state</b>	Processes the state of the current BFD session. For some applications requiring BFD to detect faults such as deployments based on the cooperation BFD and LSP, this parameter is mandatory.

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

**Command mode** Global configuration mode

**Usage Guide** Use this command to configure BFD to detect a static LSP as follows:

- This command can only be executed on ingress nodes of an LSP.
- When the BFD configuration has existed, the BFD configuration item cannot be established. After BFD is configured, a BFD session starts being established immediately if the static LSP exists. If the static LSP does not exist, a BFD session starts being established when the static LSP exists.
- When the static LSP is deleted, the BFD session bound to it is deleted. However, the system reserves the configuration item of this BFD session. When the static LSP exists, the system re-creates a BFD session.
- The local identifier and remote identifier can be configured in a BFD session. If the local identifier is not configured, the system elects the local identifier automatically. If the LSP backward link adopts an IP address, the forward LSP must be configured with the local identifier and remote identifier manually.
- After a BFD session is established successfully, the identifier cannot be modified.
- The system queries regularly BFD configuration items that sessions have been submitted but not been established and attempts to establish BFD sessions.
- The system has a limitation on the number of BFD sessions. If the number of requests for establishing BFD sessions submitted by a user exceeds the limitation, the system prompts the user through log information.

 Only static LSP detection established by host routes is supported.

 One LSP can be configured with only one BFD session.

**Configuration** The following example autonegotiates an identifier.

**Examples** In global configuration mode on the switch, configure BFD to detect static LSP. The source IP address is 20.20.20.20, the sink IP address is 10.10.10.10. The configuration is as follows:

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#mpls ip
Ruijie(config)#interface GigabitEthernet 0/2
Ruijie(config-if-GigabitEthernet 0/2)#no switchport
Ruijie(config-if-GigabitEthernet 0/2)#label-switching
```



```
Ruijie(config-if-GigabitEthernet 0/2)#bfd interval 100 min_rx 100 multiplier
3
Ruijie(config-if-GigabitEthernet 0/2)#exit
Ruijie(config)#bfd bind static-lsp peer-ip 10.10.10.10 source-ip 20.20.20.20
```

The following example sets an identifier manually.

In global configuration mode on the switch, configure BFD to detect static LSP. The source IP address is 20.20.20.20, the sink IP address is 10.10.10.10. The local identifier is 1, and the remote identifier is 2. The BFD session state is processed. The configuration is as follows:

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#mpls ip
Ruijie(config)#interface GigabitEthernet 0/2
Ruijie(config-if-GigabitEthernet 0/2)#no switchport
Ruijie(config-if-GigabitEthernet 0/2)#label-switching
Ruijie(config-if-GigabitEthernet 0/2)#bfd interval 100 min_rx 100 multiplier
3
Ruijie(config-if-GigabitEthernet 0/2)#exit
Ruijie(config)#bfd bind static-lsp peer-ip 10.10.10.10 source-ip 20.20.20.20
local-discriminator 1 remote-discriminator 2 process-state
```

**Related Commands**

Command	Description
<b>bfd</b>	Configures the parameters for the BFD session.

**Platform** N/A

**Description**

### 4.5 graceful-restart

Use this command to enable the graceful restart (GR) capability of LDP. Use the **no** form of this command to disable the GR capability of LDP.

- graceful-restart**
- no graceful-restart**


**Parameter Description**

Parameter	Description
N/A	N/A

**Defaults** The GR capability of LDP is enabled by default.

**Command mode** config-mpls-router mode

- Usage Guide** Use this command to enable the GR capability of LDP as follows:
- If a dual-engine device is enabled with the GR capability of LDP, traffic can be forwarded uninterruptedly and MPLS forwarding state can be consistent before and after restart when the master management board of the device becomes faulty or master/slave switchover is performed manually.
  - By default, the GR capability is disabled on either of devices acting as GR-Restarter and GR-Helper.

 The LDP session must be restarted to make the GR capability of LDP take effect.

**Configuration** The following example enables the GR capability of LDP:

**Examples**

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#mpls router ldp
Ruijie(config-mpls-router)#graceful-restart
```

**Related  
Commands**

Command	Description
<b>show mpls ldp graceful-restart</b>	Displays the LDP GR session and its parameters.

**Platform** N/A

**Description**

## 4.6 graceful-restart timer neighbor-liveness

Use this command to configure the survival time for an LDP neighbor. Use the **no** form of this command to restore the default setting.

**graceful-restart timer neighbor-liveness** *seconds*

**no graceful-restart timer neighbor-liveness**

**Parameter  
Description**

Parameter	Description
<i>seconds</i>	Configures the survival time for an LDP neighbor, ranging from 5 to 3600 in the unit of seconds.


**Defaults** The default is 120.

**Command  
mode** config-mpls-router mode

**Usage Guide** Use this command to configure the survival time for an LDP neighbor as follows:

- The device uses this value only when it acts as a GR-Helper.

- When a device acts as a GR-Helper, it selects the smaller value of the configured neighbor-liveness time and the received reconnect time to enable the survival timer and keeps "old" entries before the survival timer times out.

 The LDP session must be restarted to make the survival time for an LDP neighbor take effect.

**Configuration** The following example configures the survival time for an LDP neighbor as 200 seconds:

**Examples**

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#mpls router ldp
Ruijie(config-mpls-router)#graceful-restart
Ruijie(config-mpls-router)#graceful-restart timer neighbor-liveness 200
```

**Related  
Commands**

Command	Description
<b>show mpls ldp graceful-restart</b>	Displays the LDP GR session and its parameters.

**Platform** N/A

**Description**

## 4.7 graceful-restart timer reconnect

Use this command to configure the LDP session reconnect time. Use the **no** form of this command to restore the default setting.

**graceful-restart timer reconnect** *seconds*

**no graceful-restart timer reconnect**

**Parameter  
Description**

Parameter	Description
<i>seconds</i>	Configures the LDP session reconnect time, ranging from 30 to 3600 in the unit of seconds.

**Defaults** The default is 300.

**Command  
mode** config-mpls-router mode

**Usage Guide** Use this command to configure the LDP session reconnect time as follows:

- During GR, both of devices acting as GR-Restarter and GR-Helper use the LDP session reconnect time.
- For the GR-Restarter, the LDP session reconnect time is used to keep "old" entries time.
- The GR-Helper selects the smaller value of the configured neighbor-liveness time and the received reconnect time to enable the survival timer and keeps "old" entries before the survival

timer times out.

 The LDP session must be restarted to make the LDP session reconnect time take effect.

**Configuration** The following example configures the LDP neighbor reconnect time as 400 seconds:

**Examples**

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#mpls router ldp
Ruijie(config-mpls-router)#graceful-restart
Ruijie(config-mpls-router)#graceful-restart timer reconnect 400
```

**Related  
Commands**

Command	Description
<b>show mpls ldp graceful-restart</b>	Displays the LDP GR session and its parameters.

**Platform** N/A

**Description**

## 4.8 graceful-restart timer recovery

Use this command to configure the LDP session recovery time. Use the **no** form of this command to restore the default setting.

**graceful-restart timer recovery** *seconds*

**no graceful-restart timer recovery**

**Parameter  
Description**

Parameter	Description
<i>seconds</i>	Configures the LDP session recovery time, ranging from 15 to 600 seconds.

**Defaults** The default is 120.

**Command  
mode** config-mpls-router mode

**Usage Guide** Use this command to configure the LDP session recovery time as follows:

- The device uses this value only when it acts as a GR-Helper.
- When a device acts as a GR-Helper, it selects the smaller value of the configured recovery time and the received recovery time to enable the recovery timer and keeps "old" entries before the recovery timer times out.

 The LDP session must be restarted to make the LDP session recovery time take effect.

**Configuration** The following example configures the LDP session recovery time as 200 seconds:

**Examples**

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#mpls router ldp
Ruijie(config-mpls-router)#graceful-restart
Ruijie(config-mpls-router)#graceful-restart timer recovery 200
```

**Related  
Commands**

Command	Description
<b>show mpls ldp graceful-restart</b>	Displays the LDP GR session and its parameters.

**Platform** N/A

**Description**

## 4.9 show mpls ldp graceful-restart

Use this command to display the LDP GR session and its parameters.

**show mpls ldp graceful-restart [ all | vrf vrf-name ]**

**Parameter  
Description**

Parameter	Description
<b>all</b>	Displays LDP GR sessions and session parameters of all VRFs (including VRF).
<b>vrf vrf-name</b>	Displays LDP GR sessions and session parameters of specified VRFs.

**Defaults** N/A

**Command  
mode** Privileged EXEC mode

**Usage Guide** Use this command to display the LDP GR session and session parameter as follows:  
If there is no parameter in this command, it indicates that the LDP GR sessions and session parameters of the global VRF are displayed.

**Configuration** The following example displays the LDP GR sessions and session parameters:

**Examples**

```
Ruijie# show mpls ldp graceful-restart
Default VRF:
  LDP Graceful Restart is enabled
  Neighbor Liveness Timer: 120 seconds
  Max Recovery Time: 120 seconds
  Forwarding State Holding Time: 300 seconds
  Down Neighbor Database (1 records):
```

```

Peer LDP Ident: 20.20.20.20:0; Local LDP Ident: 10.10.10.10:0
  Status: recovering (86 seconds left)
  Address list contains 3 addresses:
    192.168.202.3  20.20.20.20  192.168.201.37
Graceful Restart-enabled Sessions:
Peer LDP Ident: 20.20.20.20:0, State: estab

```

Field	Description
Default VRF	Global VRF information
LDP Graceful Restart is enabled	The GR capability of LDP is enabled for a VRF.
Neighbor Liveness Timer	Survival time of the neighbor timer in the unit of second
Max Recovery Time	Maximum recovery time in the unit of second
Forwarding State Holding Time	Forwarding state holding time (reconnect time) in the unit of second
Down Neighbor Database	Down database information of an LDP neighbor
Graceful Restart-enabled Sessions	Enable LDP session information of LDP GR.
Peer LDP Ident	Peer LDP ID
State	LDP session state of an LDP neighbor

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



## Security Configuration Commands

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- 1 AAA Commands
- 2 RADIUS Commands
- 3 TACACS+ Commands
- 4 802.1X Commands
- 5 Web Authentication Commands
- 6 SCC Commands
- 7 Global IP-MAC Binding Commands
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# 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
<b>Description</b>	<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
<b>Commands</b>	<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	Parameter	Description
<b>Description</b>	<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	Command	Description
<b>Commands</b>	<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  
Description**

N/A

**Defaults**

This function is disabled by default.

**Command  
Mode**

Global configuration mode

**Usage Guide**

If the AAA security service is not enabled, the accounting update function cannot be used. This command is used to set the accounting interval if the AAA security service has been enabled.

**Configuration**

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  
Description**

N/A

## 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 dot1x

Use this command to enable AAA authentication 802.1x and configure the 802.1x user authentication method list.

Use the **no** form of this command to delete the 802.1x user authentication method list.

**aaa authentication dot1x** { **default** | *list-name* } *method1* [ *method2...* ]

**no aaa authentication dot1x** { **default** | *list-name* }

**Parameter****Description**

Parameter	Description
<b>default</b>	When this parameter is used, the following defined 802.1x user authentication method list is used as the default method for user authentication.
<i>list-name</i>	Name of the 802.1x user authentication method list, which could be any character string
<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 server group is supported.

**Defaults** N/A

**Command** Global configuration mode

**Mode**

**Usage Guide** If the AAA 802.1x security service is enabled on the device, users must use AAA for 802.1x user authentication negotiation. You must use the **aaa authentication dot1x** command to configure a default or optional method list for 802.1x 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\_D1X**. 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 dot1x rds_d1x group radius local
```

Related Commands	Command	Description
	<b>aaa new-model</b>	Enables the AAA security service.
	<b>dot1x authentication</b>	Associates a specific method list with the 802.1x user.
	<b>username</b>	Defines a local user database.

**Platform** N/A

**Description**

## 1.7 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 Mode** Global configuration mode

**Usage Guide** If the AAA Enable authentication service is enabled on the device, users must use AAA for Enable

authentication negotiation. You must use the **aaa authentication enable** command to configure a default or optional method list for Enable authentication.

The next method can be used for authentication only when the current method does not work.

The Enable authentication function automatically takes effect after configuring the Enable authentication method list.

**Configuration Examples** The following example defines an AAA Enable authentication method list. In the authentication method list, first the RADIUS security server is used for authentication. If the RADIUS security server does not respond, the local user database is used for authentication.

```
Ruijie(config)# aaa authentication enable default group radius local
```

Related Commands	Command	Description
	<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**

## 1.8 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> , <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 and TACACS+ server groups are supported.
	<b>subs</b>	Uses the subs database for authentication.

**Defaults** N/A

**Command** Global configuration mode

**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**

## 1.9 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 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 Mode** Global configuration mode

**Usage Guide** If the AAA PPP security service is enabled on the device, users must use AAA authentication for PPP negotiation. You must use the **aaa authentication ppp** command to configure a default or optional method list for PPP user authentication.  
The next method can be used for authentication only when the current method does not work.

**Configuration Examples** The following example defines an AAA authentication method list named `rds_ppp` for PPP session. In the authentication method list, first the RADIUS security server is used for authentication. If the RADIUS security server does not respond, the local user database is used for authentication.

```
Ruijie(config)# aaa authentication ppp rds_ppp group radius local
```

Related Commands	Command	Description
	<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 Description** N/A

## 1.10 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

## 1.11 aaa authentication web-auth

Use this command to enable AAA second-generation Web authentication and configure the second-generation Web authentication method list in global configuration mode.

Use the **no** form of this command to delete the authentication method list.

**aaa authentication web-auth** { **default** | *list-name* } *method1* [ *method2...* ]

**no aaa authentication web-auth** { **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 the second-generation Web authentication.
	<i>list-name</i>	Name of second-generation Web 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>	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 Mode** Global configuration mode

**Usage Guide** If the AAA second-generation Web security service is enabled on the device, users must use AAA for the second-generation Web authentication negotiation. You must use the **aaa authentication web-auth** 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\_web**. 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 web-auth rds_web group radius none
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 1.12 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 Mode** Global configuration mode

**Usage Guide** RGOS supports authorization of the commands executed by the users. When the users input and attempt to execute a command, AAA sends this command to the security server. This command is to be executed if the security server allows to. Otherwise, it will prompt command deny.  
It is necessary to specify the command level when configuring the command authorization, and this specified command level is the default command level.  
The configured command authorization method must be applied to terminal line which requires the command authorization. Otherwise, the configured command authorization method is ineffective.

**Configuration** 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
	<b>aaa new-model</b>	Enables the AAA security service.
	<b>authorization commands</b>	Applies the command authorization for the terminal line.

**Platform Description** N/A

## 1.13 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 Description	Parameter	Description
	N/A	N/A

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

**Command Mode** Global configuration mode

**Usage Guide** If you only authorize the commands in the non-configuration mode (for example, privileged EXEC mode), you can use the **no** form of this command to disable the authorization function in the configuration mode, and execute the commands in the configuration mode and its sub-mode without command authorization.

**Configuration** 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**

## 1.14 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	Parameter	Description
<b>Description</b>	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**

## 1.15 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	Parameter	Description
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** Global configuration mode

**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** The following example uses the RADIUS server to authorize Exec.

**Examples**

```
Ruijie(config)# aaa authorization exec default group radius
```

Related	Command	Description
Commands	<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** N/A

**Description**

## 1.16 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	Parameter	Description
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** Global configuration mode

**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	Command	Description
Commands	<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**

## 1.17 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** Global configuration mode

**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	Command	Description
Commands	<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**

## 1.18 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	Command	Description
<b>Commands</b>	<b>aaa new-model</b>	Enables the AAA security service.
	<b>show aaa doomain</b>	Displays the domain configuration.

**Platform** N/A

**Description**

## 1.19 aaa local authentication attempts

Use this command to set login attempt times.

**aaa local authentication attempts** *max-attempts*

Parameter	Parameter	Description
<b>Description</b>	<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	Command	Description
<b>Commands</b>	<b>show running-config</b>	Displays the current configuration of the switch.
	<b>show aaa lockout</b>	Displays the lockout configuration parameter of current login.

**Platform** N/A

**Description**

## 1.20 aaa local authentication lockout-time

Use this command to configure the lockout-time period when the login user has attempted for more than the limited times.

**aaa local authentication lockout-time** *lockout-time*

Parameter	Parameter	Description
Description	<i>lockout-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 lockout-time when the login user has attempted for more than the limited times.

**Configuration Examples** The following example sets the lockout-time period to 5 minutes.

```
Ruijie#configure terminal
Ruijie(config)#aaa local authentication lockout-time 5
```

Related Commands	Command	Description
	<b>show running-config</b>	Displays the current configuration of the switch.
	<b>show aaa lockout</b>	Displays the lockout configuration parameter of current login.

**Platform Description** N/A

## 1.21 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** The following example disables the system to print the syslog informing aaa authentication success.

**Examples**

```
Ruijie(config)# no aaa log enable
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 1.22 aaa new-model

Use this command to enable the RGOS AAA security service.

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

**aaa new-model**

**no aaa new-model**

Parameter	Parameter	Description
<b>Description</b>	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** The following example enables the AAA security service.

**Examples**

```
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** N/A

**Description**

## 1.23 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**

## 1.24 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	Parameter	Description
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** The following example sets the Network accounting method list for the specified domain.

**Examples**

```
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**

## 1.25 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  
Description**

Parameter	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 IEEE802.1x authentication method list for the domain.

**Configuration** The following example sets an IEEE802.1x authentication method list for the specified domain.

**Examples**

```
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**

## 1.26 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
<b>Description</b>	<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	Command	Description
<b>Commands</b>	<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**

## 1.27 clear aaa local user lockout

Use this command to clear the lockout user list.

**clear aaa local user lockout** { **all** | **user-name** *word* }

Parameter	Parameter	Description
<b>Description</b>	<b>all</b>	Indicates all locked users.
	<b>user-name</b> <i>word</i>	Indicates the ID of the locked User.

<b>Defaults</b>	N/A
<b>Command Mode</b>	Privileged EXEC mode
<b>Usage Guide</b>	Use this command to clear all the user lists or a specified user list.
<b>Configuration</b>	The following example clears the lockout user list.
<b>Examples</b>	<pre>Ruijie(config)# clear aaa local user lockout all</pre>

<b>Related Commands</b>	Command	Description
	<b>show running-config</b>	Displays the current configuration of the switch.
	<b>show aaa lockout</b>	Displays the lockout configuration parameter of current login.

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

## 1.28 show aaa accounting update

Use this command to display the accounting update information.

**show aaa accounting update**

<b>Parameter Description</b>	Parameter	Description
	N/A	N/A

<b>Defaults</b>	N/A
-----------------	-----

<b>Command Mode</b>	Privileged EXEC mode/Global configuration mode/Interface configuration mode
---------------------	---

<b>Usage Guide</b>	Use this command to display the accounting update interval and whether the accounting update is enabled.
--------------------	--

**Configuration** The following example displays the accounting update information.

**Examples**

```
Ruijie# show aaa accounting update
```

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

## 1.29 show aaa domain

Use this command to display all current domain information.

**show aaa domain** [ **default** | *domain-name* ]

	Parameter	Description
Parameter	<b>default</b>	Displays the default domain.
Description	<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
```

	Command	Description
Related Commands	<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**

## 1.30 group

Use this command to display all the server groups configured for AAA.

**show aaa group**

	Parameter	Description
Parameter	N/A	N/A
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**

**Commands**

Command	Description
aaa group server	Configures the AAA server group.

**Platform** N/A

**Description**

## 1.31 show aaa lockout

Use this command to display the lockout configuration.

**show aaa lockout**

**Parameter**

**Description**

Parameter	Description
N/A	N/A

**Defaults** N/A

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

**Usage Guide** Use this command to display the lockout configuration.

**Configuration** The following example displays the lockout configuration.

**Examples**

```
Ruijie# show aaa lockout
Lock tries:    3
Lock timeout: 15 minutes
```

**Related**

**Commands**

Command	Description
N/A	N/A

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

## 1.32 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	Command	Description
Commands	<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**

## 1.33 show aaa user

Use this command to display AAA user information.

**show aaa user { all | lockout | by-id *session-id* | by-name *user-name* }**

Parameter	Parameter	Description
<b>Description</b>	<b>all</b>	Displays all AAA user information.
	<b>lockout</b>	Displays the locked AAA user information.
	<b>by-id <i>session-id</i></b>	Displays the information of the AAA user that with a specified session ID.
	<b>by-name <i>user-name</i></b>	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 lockout

Name                               Tries      Lock      Timeout (min)
-----
Ruijie#
```

Related	Command	Description
Commands	N/A	N/A

Platform N/A

Description

## 1.34 state

Use this command to set whether the configured domain is valid.

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

**state { block | active }**

**no state**

Parameter	Parameter	Description
Description	<b>block</b>	The configured domain is invalid.
	<b>active</b>	The configured domain is valid.

Defaults The default is active.

Command Domain configuration mode

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	Command	Description
Commands	<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

## 1.35 username-format

Use this command to configure the user name whether to be with the domain information when the NAS interacts with the servers.

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

**username-format { without-domain | with-domain }**

**no username-format**

Parameter	Parameter	Description
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 Description** N/A

## 2 RADIUS Commands

### 2.1 aaa group server radius

Use this command to enter AAA server group configuration mode.

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

**aaa group server radius** *name*

**no aaa group server radius** *name*

Parameter Description	Parameter	Description
	<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 Examples** The following example configures a RADIUS AAA server group named ss.

```
Ruijie(config)# aaa group server radius ss
Ruijie(config-gs-radius)# end
Ruijie# show aaa group
Type      Reference Name
-----
radius    1          radius
tacacs+   1          tacacs+
radius    1          ss
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 2.2 ip 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** 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** N/A

**Description**

## 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*.

**Examples**

```
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 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**

N/A

**Description**

## 2.6 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

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

**Command Mode** Global configuration mode

**Usage Guide** This command is used to enable RADIUS to support the cui function.

**Configuration Examples** The following example enables RADIUS to support the cui function.

```
Ruijie(config)# radius support cui
```

Related Commands	Command	Description
		N/A

**Platform Description** N/A

## 2.7 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

**Defaults** Only the private vendor IDs of Ruijie are recognized.

**Command Mode** Global configuration mode

**Usage Guide** This command is used to identify the attributes of all vendor IDs by type.

**Configuration** 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
		<code>radius attribute</code>
	<code>radius set qos cos</code>	Sets the QoS value sent by the RADIUS server as the cos value of the interface.

**Platform** N/A

**Description**

## 2.8 radius-server account update retransmit

Use this command to configure accounting update packet retransmission for the 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

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

**Command** Global configuration mode

**Mode**

**Usage Guide** This command is used to configure accounting update packet retransmission for the Web authentication user exclusively.

**Configuration Examples** The following example configures accounting update packet retransmission for the Web authentication user.

`Ruijie(config)#radius-server account update retransmit`

Related Commands	Command	Description
		N/A

**Platform** N/A

**Description**

## 2.9 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 Examples** The following example defines the RADIUS Calling-Station-ID attribute as IETF format.

```
Ruijie(config)# radius-server attribute 31 mac format ietf
```

### Related Commands

Command	Description
<b>radius-server host</b>	Defines the RADIUS server.

**Platform Description** N/A

## 2.10 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

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

Description	
<b>time</b> <i>seconds</i>	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</b> <i>number</i>	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** Global configuration mode

**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**

## 2.11 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 Mode** Global configuration mode

**Usage Guide** If active Radius server detection is enabled on the device, the time parameter of this command does not take effect on the Radius server. Otherwise, the Radius server becomes reachable when the duration set by this command is shorter than the unreachable time.

**Configuration** 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 Description** N/A

## 2.12 radius-server host

Use this command to specify a RADIUS security server host.

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

```
radius-server host [ oob [ via mgmt-name ] ] { ipv4-address | 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 [via mgmt-name]</b>	Specifies an MGMT port as the source port for TACACS+ communication. The default is MGMT Port 0.
<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</b> [ 0   7 ] <i>text-string</i>	Configure a shared key for the server. The type of encryption can be specified. 0 is no encryption and 7 is simple encryption. The default is 0.

**Defaults** No RADIUS host is specified by default.

**Command Mode** Global configuration mode

**Usage Guide** In order to implement the AAA security service using RADIUS, you must define a RADIUS security server. You can define one or more RADIUS security servers using the **radius-server host** command.

**Configuration Examples** The following example defines a RADIUS security server host:

```
Ruijie(config)# radius-server host 192.168.12.1
```

The following example defines a RADIUS security server host in the IPv4 environment, enable the active detection with the detection interval 60 minutes and disable the accounting UDP port detection:

```
Ruijie(config)# radius-server host 192.168.100.1 test username viven idle-time 60 ignore-acct-port
```

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**

## 2.13 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**



## 2.14 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 1 to 100

**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
```

Related Commands	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**

## 2.15 radius-server source-port

Use this command to configure the source port to send RADIUS packets.

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

**radius-server source-port** *port*

**no radius-server source-port**

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

<b>Description</b>		
	<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

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

**Platform** N/A

**Description**

## 2.16 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**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<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

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

<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**

## 2.17 server auth-port acct-port

Use this command to add the server of the AAA server group.

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

**server** { *ipv4-addr* | *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 Examples** The following example adds server 192.168.4.12 to server group ss and sets the accounting port and authentication port to 5 and 6 respectively.

```
Ruijie(config)# aaa group server radius ss
Ruijie(config-gs-radius)# server 192.168.4.12 acct-port 5 auth-port 6
Ruijie(config-gs-radius)# end
Ruijie# show aaa group
Type      Reference Name
-----
radius    1          radius
tacacs+   1          tacacs+
radius    1          ss
```

Related	Command	Description
---------	---------	-------------

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

**Platform** N/A

**Description**

## 2.18 show radius acct statistics

Use this command to display RADIUS accounting statistics.

**show radius acct statistics**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	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.....

```

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

**Platform** N/A

**Description**

## 2.19 show radius auth statistics

Use this command to display RADIUS authentication statistics.

**show radius auth statistics**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

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

**Usage Guide** N/A

**Configuration** 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 Description** N/A

## 2.20 show radius group

Use this command to display RADIUS server group configuration.

**show radius group**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

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

**Usage Guide** N/A

**Configuration** The following example displays RADIUS server group configuration.

**Examples**

```
Ruijie#show radius group
=====Radius group radius=====
Vrf:not-set
Server:192.168.1.1
  Server key:ruijie
  Authentication port:1812
  Accounting port:1813
  State:Active
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 2.21 show radius parameter

Use this command to display global RADIUS server parameters.

**show radius parameter**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

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

**Usage Guide** N/A

**Configuration** The following example displays global RADIUS server parameters.

**Examples** Ruijie# show radius parameter

```
Server Timeout: 5 Seconds
Server Deadtime: 0 Minutes
Server Retries: 3
Server Dead Criteria:
Time: 10 Seconds
Tries: 10
```

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 2.22 show radius server

Use this command to display the configuration of the RADIUS server.

**show radius server**

**Parameter Description**

Parameter	Description
N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** 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**

## 2.23 show radius vendor-specific

Use this command to display the configuration of the private vendors.

**show radius vendor-specific**

**Parameter  
Description**

Parameter	Description
N/A	N/A



**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** 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-addr 79
        ss
27      ipv4-multicast-addr 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 [ via mgmt\_name ]**

**no ip oob**

Parameter Description	Parameter	Description
	<i>mgmt_name</i>	MGMT port name

**Defaults** N/A

**Command** TACACS+ server group configuration mode

**Mode**

**Usage Guide** Use the **aaa group server tacacs+** command to enter TACACS+ server group configuration mode. No MGMT port is specified by default.

**Configuration** The following example specifies MGMT port 1 used in the TACACS+ server group.

**Examples**

```
Ruijie(config)# aaa group server tacacs+ ss
Ruijie(config-gs-tacacs)# server 1.1.1.1
Ruijie(config-gs-tacacs)# ip oob via mgmt 1
```

**Platform** N/A

**Description**

### 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*

Parameter Description	Parameter	Description
	<i>interface-name</i>	Interface for the outgoing TACACS+ packets

**Defaults** The source IP address of TACACS+ packets is set on the network layer.

**Command** Global configuration mode

**Mode**

**Usage Guide** To decrease the work of maintaining massive NAS messages in TACACS+ server, use this command to use the IP address of a specified interface for all outgoing TACACS+ packets. This command specifies the primary IP address of the specified interface as the source address of TACACS+ packets on Layer 3 devices. If the specified interface is in a VRF instance, the route of this VRF instance is used for packet transmission.

**Configuration** The following example specifies the IP address of GigabitEthernet 0/0 for the outgoing TACACS+ packets.

**Examples**

```
Ruijie(config)# ip tacacs source-interface gigabitEthernet 0/0
```

**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	Parameter	Description
Description	<i>ipv4-address</i>	IPv4 address of the TACACS+ server

**Defaults** No TACACS+ server is configured by default.

**Command** TACACS+ server group configuration mode  
**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** N/A  
**Description**

### 3.6 show tacacs

Use this command to display the TACACS+ server configuration.  
**show tacacs**

Parameter	Parameter	Description
Description		

N/A	N/A
-----	-----

**Defaults** N/A

**Command Mode** Privileged EXEC mode/Global configuration/Interface configuration 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** [ **via** *mgmt-name* ] ] { *ip4-address* } [ **port** *integer* ] [ **timeout** *integer* ] [ **key** [ **0** | **7** ] *text-string* ]

**no tacacs-server host** { *ip-address* }

**Parameter Description**

Parameter	Description
<i>ip-address</i>	IPv4 address of the TACACS+ host
<b>oob</b> [ <b>via</b> <i>mgmt-name</i> ]	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 Mode** Global configuration mode

**Usage Guide** The TACACS+ host must be configured to implement AAA security service. You can use this command to configure one or multiple TACACS+ hosts.

**Configuration** 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 Description** N/A

### 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>	
<b>0   7</b>		Encryption type of key 0 indicates no encryption; 7 indicate simple encryption.

**Defaults** No authentication encryption key is configured by default.

**Command Mode** Global configuration mode

**Usage Guide** Use command to configure a global authentication and encryption key for TACACS+ communication. Use the **key** parameter in the **tacacs-server host** command to configure a server-based key.

**Configuration** The following example defines the authentication encryption key of TACACS+ server as aaa:



**Examples** `Ruijie(config)# tacacs-server key aaa`

Related Commands	Command	Description
	<code>tacacs-server host</code>	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 Mode** Global configuration mode

**Usage Guide** Use command to configure a global timeout interval. Use the **timeout** parameter in the **tacacs-server host** command to configure a server-based interval.

**Configuration** The following example configures the timeout interval to 10 seconds.

**Examples** `Ruijie(config)# tacacs-server timeout 10`

Related Commands	Command	Description
	<code>tacacs-server host</code>	Defines a TACACS+ secure server host.

**Platform** N/A

**Description**

## 4 802.1X Commands

### 4.1 aaa authorization ip-auth-mode

Use this command to set the IP authorization mode.

**aaa authorization ip-auth-mode { disable | supplicant | radius-server | dhcp-server | mixed }**

Parameter	Parameter	Description
Description	<b>disable</b>	Disables IP authorization mode.
	<b>supplicant</b>	Enables supplicant authorization mode.
	<b>radius-server</b>	Enables Radius server authorization mode.
	<b>dhcp-server</b>	Enables DHCP server authorization mode.
	<b>mixed</b>	Enables mixed authorization mode.

**Defaults** IP authorization mode is disabled by default.

**Command mode** Global configuration mode

#### Usage Guide

Supplicant authorization mode supports only Ruijie supplicant.

Radius-server authorization mode requires the server to allocate IP addresses by framed-ip.

DHCP-server authorization mode requires the server to enable DHCP snooping or DHCP relay.

Mixed authorization mode supports multiple authorization methods.

**Configuration** The following example enables supplicant authentication mode.

**Examples**

```
Ruijie(config)# aaa authorization ip-auth-mode supplicant
```

Related Commands	Command	Description
	<b>show running-config</b>	Displays the IP authentication mode.

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

### 4.2 clear dot1x user all

Use this command to clear all the 802.1X authentication users.

**clear dot1x user all**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** Use this command to clear all the 802.1X authentication users.

**Configuration** The following example clears all the 802.1X authentication users.

**Examples**

```
Ruijie#clear dot1x user all
```

Related	Command	Description
Commands	N/A	N/A

**Platform Description** N/A

### 4.3 clear dot1x user id

Use this command to clear 802.1X authentication users according to session IDs.

**clear dot1x user id** *session-id*

Parameter	Parameter	Description
Description	<i>session-id</i>	Session ID

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** Use this command to clear 802.1X authentication users according to session IDs.

**Configuration** The following example clears an 802.1X authentication user whose session ID is 12345678.

**Examples**

```
Ruijie#clear dot1x user id 12345678
```

Related	Command	Description
Commands	N/A	N/A

**Platform Description** N/A

## 4.4 clear dot1x user mac

Use this command to clear 802.1X authentication users according to MAC addresses.

**clear dot1x user mac** *mac-addr*

Parameter	Parameter	Description
Description	<i>mac-addr</i>	MAC address

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** Use this command to clear 802.1X authentication users according to MAC addresses.

**Configuration** The following example clears an 802.1X authentication user whose MAC address is 0012.3456.789A.

**Examples** Ruijie#clear dot1x user mac 0012.3456.789A

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 4.5 clear dot1x user name

Use this command to clear the 802.1 X authentication users according to the username.

**clear dot1x user name** *name-str*

Parameter	Parameter	Description
Description	<i>name-str</i>	The username of the 802.1X authentication user

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** Use this command to clear the 802.1 X authentication users according to the username.

**Configuration** The following example clears the 802.1X authentication user named 802.1X-user.

**Examples** Ruijie#clear dot1x user name dot1x-user

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 4.6 dot1x accounting

Use this command to configure the accounting list.

**dot1x accounting** *list-name*

Parameter	Parameter	Description
<b>Description</b>	<i>list-name</i>	The name of the accounting list

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** If AAA does not adopt 802.1X accounting as the default accounting method. Use this command to configure the 802.1X accounting method.

**Configuration Examples** The following example configures the accounting list.

```
Ruijie(config)# dot1x accounting dot1x-acct
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 4.7 dot1x auth-address-table address

Use this command to configure the authentication address table.

**dot1x auth-address-table address** *mac-addr* **interface** *interface*

Parameter	Parameter	Description
<b>Description</b>	<i>mac-addr</i>	The MAC address of the authentication host
	<i>interface</i>	The interface of the authentication host

**Defaults** N/A

**Command Mode** Global configuration mode

**Usage Guide** Only the specified interface with the specified MAC address is able to pass the 802.1x authentication.

**Configuration** The following example configures the authentication address table.

**Examples**

```
Ruijie(config)# dot1x auth-address-table 00d0.f800.0cb2 interface
fastethernet 0/1
```

Related	Command	Description
Commands	N/A	N/A

**Platform** N/A

**Description**

## 4.8 dot1x authentication

Use this command to configure the authentication method list.

**dot1x authentication** *list-name*

Parameter	Parameter	Description
Description	<i>list-name</i>	Authentication method list

**Defaults** N/A

**Command** Global configuration mode

**Mode**

**Usage Guide** If AAA does not adopt the default 802.1X authentication, use this command to configure the 802.1X authentication method.

**Configuration** The following example configures the authentication method list

**Examples**

```
Ruijie(config)# dot1x authentication dot1x-authen
```

Related	Command	Description
Commands	N/A	N/A

**Platform** N/A

**Description**

## 4.9 dot1x auth-mode

Use this command to specify the 802.1X authentication mode.

**dot1x auth-mode** { **eap** | **chap** | **pap** }

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

<b>Description</b>	<b>eap</b>	Enables EAP-MD5 authentication mode.
	<b>chap</b>	Enables CHAP authentication mode.
	<b>pap</b>	Enables PAP authentication mode.

**Defaults** The default is EAP-MD5 authentication mode.

**Command Mode** Global configuration mode

**Usage Guide** The selection of authentication mode depends on the suppliant and portal server.

**Configuration** The following example enables CHAP authentication mode.

**Examples**

```
Ruijie(config)# dot1x auth-mode chap
```

Related	Command	Description
<b>Commands</b>	<b>show dot1x</b>	Displays the 802.1X information.

**Platform** N/A

**Description**

## 4.10 dot1x auto-req

Use this command to configure auto-request 802.1X authentication.

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

**dot1x auto-req**

**no dot1x auto-req**

Parameter	Parameter	Description
<b>Description</b>	N/A	N/A

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

**Command Mode** Global configuration mode

**Usage Guide** Enable this function for MAB. If the authentication agent is already in the terminal system, enable it by clicking.

**Configuration** The following example enables auto-request 802.1X authentication.

**Examples**

```
Ruijie(config)# dot1x auto-req
```

Related	Command	Description
<b>Commands</b>	<b>show dot1x auto-req</b>	Displays the automatic authentication request information.

**Platform** N/A

**Description**

## 4.11 dot1x auto-req packet-num

Use this command to set the number of auto-request authentication packets.

**dot1x auto-req packet-num** *num*

Parameter	Parameter	Description
<b>Description</b>	<i>num</i>	The number of auto-request authentication packets in the range from 0 to 1,000,000

**Defaults** The default is 0.

**Command** N/A

**Mode**

**Usage Guide** N/A

**Configuration** The following example sets the number of auto-request authentication packets to 100.

**Examples**

```
Ruijie(config)# dot1x auto-req packet-num 100
```

Related	Command	Description
<b>Commands</b>	<b>show dot1x auto-req</b>	Displays the authentication request information.

**Platform** N/A

**Description**

## 4.12 dot1x auto-req req-interval

Use this command to set the auto-request authentication interval.

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

**dot1x auto-req req-interval** *time*

**no dot1x auto-req req-interval**

Parameter	Parameter	Description
<b>Description</b>	<i>time</i>	The auto-request authentication interval, in the range from 10 to 3,600 in the unit of seconds

**Defaults** The default is 30 seconds.

**Command** Global configuration mode

**Mode**



**Usage Guide** N/A

**Configuration** The following example sets the auto-request authentication interval to 50 seconds.

**Examples**

```
Ruijie(config)# dot1x auto-req req-interval 50
```

Related	Command	Description
<b>Commands</b>	<b>show dot1x auto-req</b>	Displays the authentication request information.

**Platform** N/A

**Description**

## 4.13 dot1x auto-req user-detect

Use this command to enable online user detection for auto-request authentication.

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

**dot1x auto-req user-detect**

**no dot1x auto-req user-detect**

Parameter	Parameter	Description
<b>Description</b>	N/A	N/A

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

**Command** Global configuration mode

**Mode**

**Usage Guide** N/A

**Configuration** The following example enables online user detection for auto-request authentication.

**Examples**

```
Ruijie(config)# dot1x auto-req user-detect
```

Related	Command	Description
<b>Commands</b>	<b>show dot1x auto-req</b>	Displays the authentication request information.

**Platform** N/A

**Description**

## 4.14 dot1x client-probe enable

Use this command to enable online user probe function.

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

**dot1x client-probe enable**  
**no do1x client-probe enable**

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

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

**Command Mode** Global configuration mode

**Usage Guide** Use this command to enable online user probe function.

**Configuration Examples** The following example enables online user probe function.

```
Ruijie(config)# dot1x client-probe enable
```

	Command	Description
Related Commands	<b>show dot1x</b>	Displays 802.1X configuration.

**Platform Description** N/A

## 4.15 dot1x critical

Use this command to enable the server IAB (Inaccessible Authentication Bypass) on the port.  
 Use the **no** form of this command to restore the default setting.

**dot1x critical**  
**no dot1x critical**

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

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

**Command Mode** Interface configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example enables the server IAB (Inaccessible Authentication Bypass) function on the port.

```
Ruijie(config-if-GigabitEthernet 0/5)#dot1x critical
```

Related Commands	Command	Description
	N/A	N/A

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

## 4.16 dot1x critical recovery action reinitialize

Use this command to allow IAB users under the port to reinitialize authentication when the server has recovered.

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

**dot1x critical recovery action reinitialize**

**no dot1x critical recovery action reinitialize**

Parameter	Parameter	Description
<b>Description</b>	N/A	N/A

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

**Command Mode** Interface configuration mode

**Usage Guide** After the port entering the inaccessible authentication bypass status, if the RADIUS server returns to normal, you need to reinitialize the authentication for all users that have accomplished the network access authorization through the inaccessible authentication bypass on ports in order to ensure the user legality.

**Configuration Examples** The following example allows IAB users under the port to reinitialize authentication when the server has recovered.

```
Ruijie(config-if-GigabitEthernet 0/5)#dot1x critical recovery action
reinitialize
```

Related Commands	Command	Description
	N/A	N/A

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

## 4.17 dot1x dbg-filter

Use this command to enable debug information print for a user with a specified MAC address.

Use the **no** form of this command to clear the debug information.

**dot1x dbg-filter H.H.H**

**no dot1x dbg-filter H.H.H**

Parameter	Parameter	Description
Description	H.H.H	The MAC address of a user

**Defaults** Debug information of all authentication users is printed by default.

**Command mode** Global configuration mode

**Usage Guide** Use this command to print the debug information of a specific user. If you want to locate the fault on the network where there are multiple users.

**Configuration Examples** The following example prints the debug information of the device with the specified MAC address.

```
Ruijie(config)# dot1x dbg-filter 00d0.f800.0001
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 4.18 dot1x default

Use this command to restore 802.1X configuration to the default setting.

**dot1x default**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** N/A

**Command Mode** Global configuration mode

**Usage Guide** This command is used to restore 802.1X configuration for quick re-configuration.

**Configuration Examples** The following example restores 802.1X configuration to the default setting.

```
Ruijie(config)# dot1x default
```

Related Commands	Command	Description
	show dot1x	Displays the 802.1X information.

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

## 4.19 dot1x mac-auth-bypass

Use this command to configure single MAB authentication.  
 Use the **no** form of this command to restore the default setting.

**dot1x mac-auth-bypass**  
**no dot1x mac-auth-bypass**

Parameter	Parameter	Description
<b>Description</b>	N/A	N/A

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

**Command Mode** Interface configuration mode

**Usage Guide** Use this command on a single dumb terminal.

**Configuration Examples** The following example configures single MAB authentication.

```
Ruijie(config-if-GigabitEthernet 0/0)# dot1x mac-auth-bypass
```

Related Commands	Command	Description
	<b>show dot1x port-control interface</b>	Displays the information about 802.1X on the interface.

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

## 4.20 dot1x mac-auth-bypass multi-user

Use this command to configure multiple MAB authentications.  
 Use the **no** form of this command to restore the default setting.

**dot1x mac-auth-bypass multi-user**  
**no dot1x mac-auth-bypass multi-user**

Parameter	Parameter	Description
<b>Description</b>	N/A	N/A

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

**Command** Interface configuration mode

**Mode**

**Usage Guide** Use this command when the interface is connected with multiple dumb terminals.

**Configuration** The following example configures multiple MAB authentications.

**Examples**

```
Ruijie(config-if-GigabitEthernet 0/0)# dot1x mac-auth-bypass multi-user
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 4.21 dot1x mac-auth-bypass timeout-activity

Use this command to set the MAB authentication timeout interval.

**dot1x mac-auth-bypass timeout-activity *time***

**no dot1x mac-auth-bypass timeout-activity**

Parameter	Parameter	Description
<b>Description</b>	<i>time</i>	The online time, in the range from 1 to 65,535 in the unit of seconds

**Defaults** The default is 0 second.

**Command** Interface configuration mode

**Mode**

**Usage Guide** Use this command to set the MAB authentication timeout interval for dumb terminals.

**Configuration** The following example sets the MAB authentication timeout interval.

**Examples**

```
Ruijie(config-if-GigabitEthernet 0/0)# dot1x mac-auth-bypass  
timeout-activity 3600
```

Related Commands	Command	Description
	<b>show dot1x port-control interface</b>	Displays the 802.1X information.
	<b>show dot1x port-control interface</b>	Displays the 802.1X information.

**Platform** N/A

**Description**

## 4.22 dot1x mac-auth-bypass violation

Use this command to configure the MAB violation.

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

**dot1x mac-auth-bypass violation**

**no dot1x mac-auth-bypass violation**

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 used to configure the MAB violation on the port with only one dumb terminal in single MAB environment.

**Configuration Examples** The following example configures the MAB violation.

```
Ruijie(config-if-GigabitEthernet 0/0)# dot1x mac-auth-bypass violation
```

Related Commands	Command	Description
	<b>show dot1x port-control interface</b>	Displays the 802.1X information.

**Platform Description** N/A

## 4.23 dot1x max-req

Use this command to set the maximum attempts of authentication requests.

**dot1x max-req num**

Parameter	Parameter	Description
Description	<i>num</i>	Maximum attempts ranging from 1 to 10.

**Defaults** The default is 3.

**Command Mode** Global configuration mode

**Usage Guide** Use the **show dot1x** command to display the 802.1X configuration.

**Configuration** The following example sets the maximum attempts of authentication requests to 2.

**Examples**

```
Ruijie(config)# dot1x max-req 2
```

Related	Command	Description
Commands	<b>show dot1x</b>	Displays the information about 802.1X.

**Platform** N/A

**Description**

## 4.24 dot1x multi-account enable

Use this command to enable the user with one single MAC address to perform authentication with multiple accounts.

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

**dot1x multi-account enable**

**no dot1x multi-account enable**

Parameter	Parameter	Description
Description	N/A	N/A

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

**Command Mode** Global configuration mode

**Usage Guide** Use the command to enable the multiple-account authentication if you want to switch the username in the authentication or re-authentication, especially in the windows domain authentication.

**Configuration** The following example enables the multiple-account authentication.

**Examples**

```
Ruijie(config)# dot1x multi-account enable
```

Related	Command	Description
Commands	N/A	N/A

**Platform** N/A

**Description**

## 4.25 dot1x multi-mab quiet-period

Use this command to set the quiet time after the multiple MAB authentication failure.

**dot1x multi-mab quiet-period** *time*



Parameter	Parameter	Description
Description	<i>time</i>	Sets the quiet period after the multiple MAB authentication failure, in the range from 0 to 65,535 in the unit of seconds.

**Defaults** The default is 0 second, indicating no quiet period.

**Command Mode** Global configuration mode

**Usage Guide** The default setting is recommended.

**Configuration Examples** The following example sets the quiet period after the multiple MAB authentication failure to 2 seconds.

```
Ruijie(config)# dot1x multi-mab quiet-period 2
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 4.26 dot1x private-supPLICANT-only

Use this command to filter non-Ruijie clients.

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

**dot1x private-supPLICANT-only**

**no dot1x private-supPLICANT-only**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** This function disabled by default.

**Command Mode** Global configuration mode

**Usage Guide** This command is used for authentication supporting only Ruijie clients.

**Configuration Examples** The following example filters non-Ruijie clients.

```
Ruijie(config)# dot1x private-supPLICANT-only
```

Related	Command	Description
---------	---------	-------------

<b>Commands</b>	<b>show dot1x private-supplicant-only</b>	Displays the information about the private supplicant.
-----------------	---	--

**Platform** N/A

**Description**

## 4.27 dot1x probe-timer alive

Use this command to set the Ruijie terminal alive interval.

**dot1x probe-timer alive** *time*

Parameter	Parameter	Description
<b>Description</b>	<i>time</i>	Terminal alive interval, in the range from 1 to 65,535 in the unit of seconds

**Defaults** The default is 250 seconds.

**Command** Global configuration mode

**Mode**

**Usage Guide** If the device does not receive the probe packet from the terminal when the terminal alive interval expires, the device is considered offline. The default setting is recommended.

**Configuration** The following example sets Ruijie terminal alive interval to 120 seconds.

**Examples**

```
Ruijie(config)# dot1x probe-timer alive 120
```

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

**Platform** N/A

**Description**

## 4.28 dot1x probe-timer interval

Use this command to set the Ruijie terminal detection interval.

**dot1x probe-timer interval** *time*

Parameter	Parameter	Description
<b>Description</b>	<i>time</i>	Terminal detection interval in the range from 1 to 65,535 in the unit of seconds

**Defaults** The default is 20 seconds.

**Command** Global configuration mode

**Mode**

**Usage Guide** The default setting is recommended.

**Configuration** The following example sets Ruijie terminal detection interval to 30 seconds.

**Examples**

```
Ruijie(config)# dot1x probe-timer interval 30
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 4.29 dot1x pseudo source-mac

Use this command to use a virtual MAC address as the source MAC address of the 802.1X packets sent by the device.

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

**dot1x pseudo source-mac**

**no dot1x pseudo source-mac**

Parameter Description	Parameter	Description
	N/A	N/A

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

**Command Mode** Global configuration mode

**Usage Guide** By default, the device uses its own MAC address as the source MAC address of the EAP packets for the 802.1X authentication. Some versions of the Ruijie supplicant judge whether the access device is a Ruijie device based on the source MAC address of the EAP packets. If the access device is a Ruijie device, the supplicant device performs some private features. Configure this command if you want to enable these features.

**Configuration Examples** The following example uses the virtual MAC address as the source MAC address of the 802.1X packets sent by the device:

```
Ruijie(config)# dot1x pseudo source-mac
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 4.30 dot1x re-authentication

Use this command to enable timed re-authentication function.

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

**dot1x re-authentication**

**no dot1x re-authentication**

Parameter	Parameter	Description
Description	N/A	N/A

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

**Command Mode** Global configuration mode

**Usage Guide** This command will re-authenticate the supplicant periodically after he passes the authentication. Use the **show dot1x** command to display 802.1X configuration. The default setting is recommended.

**Configuration Examples** The following example enables timed re-authentication function.

```
Ruijie(config)# dot1x re-authentication
```

Related Commands	Command	Description
	<b>show dot1x</b>	Displays the 802.1X information.

**Platform Description** N/A

## 4.31 dot1x reauth-max

Use this command to set the maximum re-auth attempts.

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

**dot1x reauth-max num**

**no dot1x reauth-max**

Parameter	Parameter	Description
Description	<i>num</i> ,	Maximum re-auth attempts. The range is from 1 to 10.

**Defaults** Switch: The default is 3.  
Wireless: The default is 6.

**Command Mode** Global configuration mode

**Usage Guide** Use this command to specify the maximum number of supplicant re-authentications. Use the **show dot1x** command to display 802.1X configuration.

**Configuration** The following example sets the maximum re-auth attempts to 2.

**Examples**

```
Ruijie(config)# dot1x reauth-max 2
```

Related	Command	Description
Commands	<b>show dot1x</b>	Displays the 802.1X information.

**Platform** N/A

**Description**

## 4.32 dot1x redirect

Use this command to enable the second generation SU upgrade function.

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

**dot1x redirect**

**no dot1x redirect**

Parameter	Parameter	Description
Description	N/A	N/A

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

**Command Mode** Global configuration mode

**Usage Guide** Redirect to the supplicant software download website through the browser. See *Web Authentication Configuration Guide* for details about parameters.

**Configuration** The following example enables the second generation SU upgrade function,

**Examples**

```
Ruijie(config)# dot1x redirect
```

Related	Command	Description
Commands	N/A	N/A

**Platform** N/A

**Description**

## 4.33 dot1x timeout quiet-period

Use this command to set the quiet period after authentication failure.

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

**dot1x timeout quiet-period** *time*

**no dot1x timeout quiet-period**

Parameter	Parameter	Description
Description	<i>time</i>	Sets the quiet period after authentication failure, in the range from 1 to 65,535 in the unit of seconds.

**Defaults** The default is 10 seconds.

**Command Mode** Global configuration mode

**Usage Guide** When authentication fails, the supplicant must wait for a period of time before re-authentication.

**Configuration Examples** The following example sets the quiet period after authentication failure to 60 seconds.

```
Ruijie(config)# dot1x timeout quiet-period 60
```

Related Commands	Command	Description
	<b>show dot1x</b>	Displays the 802.1X information.

**Platform Description** N/A

## 4.34 dot1x timeout re-authperiod

Use this command to set the re-authentication interval when re-authentication is enabled.

**dot1x timeout re-authperiod** *time*

Parameter	Parameter	Description
Description	<i>time</i>	Authentication interval, in the range from 1 to 65,535 in the unit of seconds.

**Defaults** The default is 3,600 seconds.

**Command Mode** Global configuration mode

**Usage Guide** Use the **show dot1x** command to display the 802.1X configuration.

**Configuration** The following example sets the re-authentication interval to 2,400 seconds.

**Examples**

```
Ruijie(config)# dot1x timeout re-authperiod 2400
```

Related Commands	Command	Description
	<code>show dot1x</code>	Displays the information about 802.1X.

**Platform** N/A

**Description**

## 4.35 dot1x timeout server-timeout

Use this command to set the server timeout interval.

**dot1x timeout server-timeout** *time*

Parameter	Parameter	Description
<b>Description</b>	<i>time</i>	The server timeout interval, in the range from 1 to 65,535 in the unit of seconds

**Defaults** The default is 5 seconds.

**Command** Global configuration mode

**Mode**

**Usage Guide** By default, the timeout of the 802.1X server is less than that of the Radius server. Use this command to raise the 802.1X timeout so as to exceed the Radius value. For details, see *Configuration Guide*.

**Configuration** The following example set the server timeout interval to 10 seconds.

**Examples**

```
Ruijie(config)# dot1x timeout server-timeout 10
```

Related Commands	Command	Description
	<code>show dot1x</code>	Displays the 802.1X information.

**Platform** N/A

**Description**

## 4.36 dot1x timeout supp-timeout

Use this command to set the authentication timeout between the device and the supplicant.

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

**dot1x timeout supp-timeout** *time*

**no dot1x timeout supp-timeout**

Parameter	Parameter	Description
Description	<i>time</i>	Authentication timeout between the device and the supplicant The range is from 1 to 65,535 seconds.

**Defaults** The default is 3 seconds.

**Command Mode** Global configuration mode

**Usage Guide** Use the **show dot1x** command to show display 802.1X configuration.

**Configuration Examples** The following example sets the authentication timeout between the device and the supplicant to 10s:

```
Ruijie(config)# dot1x timeout supp-timeout 10
```

Related Commands	Command	Description
	<b>show dot1x</b>	Displays the information about 802.1x.

**Platform Description** N/A

## 4.37 dot1x timeout tx-period

Use this command to set the request/id packet re-transmission interval.

**dot1x timeout tx-period** *time*

Parameter	Parameter	Description
Description	<i>time</i>	The request/id packet re-transmission interval, in range from 1 to 65,535 in the unit of seconds

**Defaults** Switch: The default is 3 seconds.

**Command Mode** Global configuration mode

**Usage Guide** Use the **show dot1x** command to display 802.1X configuration.

**Configuration Examples** The following example sets the request/id packet re-transmission interval to 5 seconds.

```
Ruijie(config)# dot1x timeout tx-period 5
```

Related Commands	Command	Description
	<b>show dot1x</b>	Displays the information about 802.1X.



**Platform** N/A

**Description**

## 4.38 dot1x user-name compatible

Use this command to configure the compatibility function for H3C 802.1X authentication clients and authentication servers.

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

**dot1x user-name compatible**

**no dot1x user-name compatible**

Parameter	Parameter	Description
<b>Description</b>	N/A	N/A

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

**Command Mode** Global configuration mode

**Usage Guide** Enable this function when the H3C authentication client and authentication server are used for 802.1X authentication or the H3C authentication server is used for MAB authentication.

**Configuration Examples** The following example configures the compatibility function for H3C 802.1X authentication clients and authentication servers.

```
Ruijie(config)# dot1x user-name compatible
```

**Platform** N/A

**Description**

## 4.39 dot1x valid-ip-acct enable

Use this command to enable IP address-triggered accounting.

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

**dot1x valid-ip-acct enable**

**no dot1x valid-ip-acct enable**

Parameter	Parameter	Description
<b>Description</b>	N/A	N/A

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

**Command** Global configuration mode

**Mode**

**Usage Guide** Use this command to enable accounting only when users obtain valid IP addresses.

**Configuration** The following example enables IP address-triggered accounting.

**Examples**

```
Ruijie(config)#dot1x valid-ip-acct enable
```

**Platform** N/A

**Description**

## 4.40 dot1x valid-ip-acct timeout

Use this command to configure IP address-triggered accounting timeout.

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

**dot1x valid-ip-acct timeout** *time*

**no dot1x valid-ip-acct timeout**

Parameter	Parameter	Description
<b>Description</b>	<i>time</i>	IP address-triggered accounting timeout in the unit of minutes

**Defaults** The default is 5 minutes.

**Command Mode** Global configuration mode

**Usage Guide** The SNMP server will not start accounting until users obtain IP addresses. In this case, use this command to configure the IP address-triggered accounting timeout.

**Configuration** The following example configures IP address-triggered accounting timeout.

**Examples**

```
Ruijie(config)# dot1x valid-ip-acct timeout 10
```

**Platform** N/A

**Description**

## 4.41 show dot1x

Use this command to display the 802.1X setting.

**show dot1x**

Parameter	Parameter	Description
<b>Description</b>	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 802.1X setting.

**Examples**

```
Ruijie#show dot1x

802.1X basic information:
 802.1X Status ..... enable
 Authentication Mode ..... eap
 Authorization mode ..... disable
 Total User Number ..... 0 (exclude dynamic user)
 Authenticated User Number ..... 0 (exclude dynamic user)
 Dynamic User Number ..... 0
 Re-authentication ..... disable
 Re-authentication Period ..... 3600 seconds
 Re-authentication max ..... 3 times
 Quiet Period ..... 10 seconds
 Tx Period ..... 30 seconds
 Supplicant Timeout ..... 3 seconds
 Server Timeout ..... 5 seconds
 Maximum Request ..... 3 times
 Client Online Probe ..... disable
 Eapol Tag ..... enable
 802.1x redirect ..... disable
 Private supplicant only ..... disable
```

**Related**

**Commands**

Command	Description
<b>dot1x auth-mode</b>	Sets the 802.1X authentication mode.
<b>dot1x max-req</b>	Sets the maximum number of authentication request re-transmissions.
<b>dot1x port-control auto</b>	Sets the port to participate in authentication.
<b>dot1x reauth-max</b>	Sets the maximum number of the supplicant re-authentications.
<b>dot1x re-authentication</b>	Sets the re-authentication attribute.
<b>dot1x timeout quiet-period</b>	Sets the time the device waits before re-authentication.
<b>dot1x timeout re-authperiod</b>	Sets the re-authentication period for the supplicant.
<b>dot1x timeout server-timeout</b>	Sets the authentication timeout between the device and authentication server.
<b>dot1x timeout supp-timeout</b>	Sets the authentication timeout between the device and the supplicant.
<b>dot1x timeout tx-period</b>	Sets the re-transmission interval.

**Platform** N/A

**Description**

## 4.42 show dot1x auth-address-table

Use this command to display 802.1X authentication address table.

**show dot1x auth-address-table** [ **address** *addr* | **interface** *interface* ]

Parameter	Parameter	Description
<b>Description</b>	<i>addr</i>	Physical IP address that can be authenticated
	<i>interface</i>	Interface number

**Defaults** N/A

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

**Usage Guide** N/A

**Configuration** The following example displays the 802.1X authentication address table.

**Examples**

```
Ruijie #show dot1x auth-address-table
Interface      Address
-----
Fa0/1          00d0.f800.0c0e
Fa0/2          001a.c800.0102

Ruijie #show dot1x auth-address-table interface fastEthernet 0/1
Interface      Address
-----
Fa0/1          00d0.f800.0c0e

Ruijie #show dot1x auth-address-table address 00d0.f8.00.0c0e
Interface      Address
-----
Fa0/1          00d0.f800.0c0e
```

Related Commands	Command	Description
	<b>dot1x auth-mode</b>	Sets the 802.1x authentication mode.
	<b>dot1x max-req</b>	Sets the maximum number of authentication request re-transmissions.
	<b>dot1x port-control auto</b>	Sets the port to participate in authentication.
	<b>dot1x reauth-max</b>	Sets the maximum number of the supplicant re-authentications.

<b>dot1x re-authentication</b>	Sets the re-authentication attribute.
<b>dot1x timeout quiet-period</b>	Sets the time the device waits before re-authentication.
<b>dot1x timeout re-authperiod</b>	Sets the re-authentication period for the supplicant.
<b>dot1x timeout server-timeout</b>	Sets the authentication timeout between the device and authentication server.
<b>dot1x timeout supp-timeout</b>	Sets the authentication timeout between the device and the supplicant.
<b>dot1x timeout tx-period</b>	Sets the re-transmission interval.

**Platform** N/A

**Description**

## 4.43 show dot1x auto-req

Use this command to display the auto-request authentication information.

**show dot1x auto-req**

Parameter	Parameter	Description
<b>Description</b>	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 auto-request authentication information.

**Examples**

```
Ruijie# show dot1x auto-req
Auto-Req: Enabled
User-Detect : Enabled
Packet-Num : 0
Req-Interval: 30 Seconds
```

Related Commands	Command	Description
	<b>dot1x auth-mode</b>	Sets the 802.1X authentication mode.
	<b>dot1x max-req</b>	Sets the maximum number of authentication request re-transmissions.
	<b>dot1x port-control auto</b>	Sets the port to participate in authentication.
	<b>dot1x reauth-max</b>	Sets the maximum number of the supplicant re-authentications.
	<b>dot1x re-authentication</b>	Sets the re-authentication attribute.
	<b>dot1x timeout quiet-period</b>	Sets the time the device waits before re-authentication.

<b>dot1x timeout re-authperiod</b>	Sets the re-authentication period for the supplicant.
<b>dot1x timeout server-timeout</b>	Sets the authentication timeout between the device and authentication server.
<b>dot1x timeout supp-timeout</b>	Sets the authentication timeout between the device and the supplicant.
<b>dot1x timeout tx-period</b>	Sets the re-transmission interval.

**Platform** N/A

**Description**

## 4.44 show dot1x max-req

Use this command to display the maximum number of request/challenge packet transmission.

**show dot1x max-req**

Parameter	Parameter	Description
<b>Description</b>	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 maximum number of request/challenge packet transmission.

**Examples**

```
Ruijie#show dot1x max-req
```

```
Max-Req: 3 Times
```

Related Commands	Command	Description
	<b>dot1x auth-mode</b>	Sets the 802.1X authentication mode.
	<b>dot1x max-req</b>	Sets the maximum number of authentication request re-transmissions.
	<b>dot1x port-control auto</b>	Sets the port to participate in authentication.
	<b>dot1x reauth-max</b>	Sets the maximum number of the supplicant re-authentications.
	<b>dot1x re-authentication</b>	Sets the re-authentication attribute.
	<b>dot1x timeout quiet-period</b>	Sets the time the device waits before re-authentication.
	<b>dot1x timeout re-authperiod</b>	Sets the re-authentication period for the supplicant.
	<b>dot1x timeout server-timeout</b>	Sets the authentication timeout between the device and authentication server.
	<b>dot1x timeout supp-timeout</b>	Sets the authentication timeout between the device and the

	supplicant.
<b>dot1x timeout tx-period</b>	Sets the re-transmission interval.

**Platform** N/A

**Description**

## 4.45 show dot1x port-control

Use this command to display the port-control information.

**show dot1x port-control** [ **interface** *interface-type interface-number*]

Parameter	Parameter	Description
<b>Description</b>	<i>interface-type</i>	Interface type
	<i>interface-number</i>	Interface 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 port-control information.

```

Ruijie#show dot1x port-control
Interface Mode      Dynamic-User Static-User Max-User  Authened MAB
-----
Gi0/5   mac-based  0          0          unlimited no      disable

```

Related Commands	Command	Description
	<b>dot1x auth-mode</b>	Sets the 802.1X authentication mode.
	<b>dot1x max-req</b>	Sets the maximum number of authentication request re-transmissions.
	<b>dot1x port-control auto</b>	Sets the port to participate in authentication.
	<b>dot1x reauth-max</b>	Sets the maximum number of the supplicant re-authentications.
	<b>dot1x re-authentication</b>	Sets the re-authentication attribute.
	<b>dot1x timeout quiet-period</b>	Sets the time the device waits before re-authentication.
	<b>dot1x timeout re-authperiod</b>	Sets the re-authentication period for the supplicant.
	<b>dot1x timeout server-timeout</b>	Sets the authentication timeout between the device and authentication server.
	<b>dot1x timeout supp-timeout</b>	Sets the authentication timeout between the device and the supplicant.
	<b>dot1x timeout tx-period</b>	Sets the re-transmission interval.

**Platform** N/A

**Description**

## 4.46 show dot1x private-supPLICANT-only

Use this command to display the information about the private supplicant.

**show dot1x private-supPLICANT-only**

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 information about the private supplicant:

**Examples** Ruijie#show dot1x private-supPLICANT-only

```
private-supPLICANT-only: Disabled
```

Related Commands	Command	Description
	<b>dot1x auth-mode</b>	Sets the 802.1X authentication mode.
	<b>dot1x max-req</b>	Sets the maximum number of authentication request re-transmissions.
	<b>dot1x port-control auto</b>	Sets the port to participate in authentication.
	<b>dot1x reauth-max</b>	Sets the maximum number of the supplicant re-authentications.
	<b>dot1x re-authentication</b>	Sets the re-authentication attribute.
	<b>dot1x timeout quiet-period</b>	Sets the time the device waits before re-authentication.
	<b>dot1x timeout re-authperiod</b>	Sets the re-authentication period for the supplicant.
	<b>dot1x timeout server-timeout</b>	Sets the authentication timeout between the device and authentication server.
	<b>dot1x timeout supp-timeout</b>	Sets the authentication timeout between the device and the supplicant.
	<b>dot1x timeout tx-period</b>	Sets the re-transmission interval.

**Platform** N/A

**Description**



## 4.47 show dot1x probe-timer

Use this command to display the configuration of online user probe.

**show dot1x probe-timer**

	Parameter	Description
Parameter	N/A	N/A
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 configuration of online user probe.

**Examples**

```
Ruijie#show dot1x probe-timer
Hello Interval    : 20
Hello Alive      : 60
```

Field Description

Command	Description
Hello Interval	Sets the probe period.
Hello Alive	Sets the probe alive interval.

	Command	Description
Related Commands	N/A	N/A.

**Platform** N/A

**Description**

## 4.48 show dot1x re-authentication

Use this command to display re-authentication status.

**show dot1x re-authentication**

	Parameter	Description
Parameter	N/A	N/A
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 re-authentication status.

**Examples** Ruijie#show dot1x re-authentication

```
Reauth-Enabled: Disabled
```

Command	Description
Reauth-Enabled	Whether to enable re-authentication.

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 4.49 show dot1x reauth-max

Use this command to display the maximum re-auth attempts.

**show dot1x reauth-max**

**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 maximum re-authentication attempts.

**Examples** Ruijie#show dot1x reauth-max

```
Reauth-Max: 3 Times
```

Command	Description
Reauth-Enabled	Sets the maximum re-authentication attempts.

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 4.50 show dot1x summary

Use this command to display the 802.1X authentication summary.

**show dot1x summary**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** N/A

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

**Usage Guide** It is convenient to display the 802.1X authentication summary according to the MAC address or username.

**Configuration** The following example displays the summary of 802.1X authentication.

**Examples**

```
Ruijie#show dot1x summary
ID      User      MAC          Interface VLAN INNER-VLAN Auth-State
Backend-State Port-Status User-Type Time
-----
-----
```

Related Commands	Command	Description
	<b>dot1x auth-mode</b>	Sets the 802.1X authentication mode.
	<b>dot1x max-req</b>	Sets the maximum number of authentication request re-transmissions.
	<b>dot1x port-control auto</b>	Sets the port to participate in authentication.
	<b>dot1x reauth-max</b>	Sets the maximum number of the supplicant re-authentications.
	<b>dot1x re-authentication</b>	Sets the re-authentication attribute.
	<b>dot1x timeout quiet-period</b>	Sets the time the device waits before re-authentication.
	<b>dot1x timeout re-authperiod</b>	Sets the re-authentication period for the supplicant.
	<b>dot1x timeout server-timeout</b>	Sets the authentication timeout between the device and authentication server.
	<b>dot1x timeout supp-timeout</b>	Sets the authentication timeout between the device and the supplicant.
	<b>dot1x timeout tx-period</b>	Sets the re-transmission interval.

**Platform Description** N/A

## 4.51 show dot1x timeout quiet-period

Use this command to display the time for the device to wait before re-authentication quiet period after the authentication failure.

**show dot1x timeout quiet-period**

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 time for the device to wait before re-authentication quiet period after the authentication failure.

**Configuration Examples** The following example shows how to displays the quiet period the time for the device to wait before re-authentication after the authentication failure.

```
Ruijie#show dot1x timeout quiet-period
```

```
Quiet-Period: 10 Seconds
```

Parameter Description:

Parameter	Description
Quiet-Period	The time for the device to wait before re-authentication after the authentication failure.

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 4.52 show dot1x timeout re-authperiod

Use this command to display the re-authentication interval.

**show dot1x timeout re-authperiod**

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 re-authentication interval.

**Configuration** The following example displays the re-authentication interval.:

**Examples** Ruijie#show dot1x timeout re-authperiod

```
Reauth-Period: 3600 Seconds
```

Parameter Description:

Parameter	Description
Reauth-Period	Re-authentication interval.

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 4.53 show dot1x timeout server-timeout

Use this command to display the authentication timeout period.

**show dot1x timeout server-timeout**

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 authentication timeout period.

**Configuration** Use this command to display the authentication timeout period:

**Examples** Ruijie#show dot1x timeout server-timeout

```
Server-Timeout: 5 Seconds
```

Parameter Description:

Parameter	Description
Server-Period	AuthenticationServer timeout periodinterval.

Related	Command	Description
---------	---------	-------------

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

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

## 4.54 show dot1x timeout supp-timeout

Use this command to display the request/challenge packets re-transmission interval.

**show dot1x timeout supp-timeout**

Parameter	Parameter	Description
<b>Description</b>	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 request/challenge packets re-transmission interval.

**Configuration** Use this command to display the request/challenge packets re-transmission interval:

**Examples** Ruijie#show dot1x timeout supp-timeout

```
Supp-Timeout: 3 Seconds
```

Field Description:

Field	Description
Server-Period	The request/challenge packets re-transmission interval.

Related Commands	Command	Description
	N/A	N/A

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

## 4.55 show dot1x timeout tx-period

Use this command to display the request/id packets re-transmission interval.

**show dot1x timeout tx-period**

Parameter	Parameter	Description
<b>Description</b>	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 request/id packets re-transmission interval.

**Configuration Examples** Use this command to display the request/ id packets re-transmission interval:

```
Ruijie#show dot1x timeout tx-period

Tx-Period: 30 Seconds
```

Parameter Description:

Parameter	Description
Tx-Period	Request/id packets re-transmission interval.

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 4.56 show dot1x user id

Use this command to display the information about 802.1X authentication users based on user IDs.

**show dot1x user id id**

Parameter Description	Parameter	Description
	<i>id</i>	User ID

**Defaults** N/A

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

**Usage Guide** Use the **show dot1x summary** command to display 802.1X authentication summaries. And use this command to display detailed information of a specific user based on its ID.

**Configuration Examples** The following example displays the information about the 802.1X authentication user according to the user ID.

```
Ruijie#show dot1x user id 16777225

User name: ts-user
User id: 16777225
Type: static
```

```

Mac address is 0023.aeaa.4286
Vlan id is 2
Access from port Gi0/5
Time online: 0days 0h 0m17s
User ip address is 192.168.3.21
Max user number on this port is 0
Authorization session time is 1000 seconds
Supplicant is private
Start accounting
Permit proxy user
Permit dial user
IP privilege is 0
  user acl-name ts-user_6_0_0 :
Parameter Description:

```

Parameter	Description
User name	User name
User id	User ID
Type	User type
Mac address	User's MAC address
Vlan id	User VLAN ID
Access from port	The port that user accesses from
Time online	User online time
User ip address	User IP address
Max user number on this port	The maximum number of users on the port
Authorization session time	The authorized session time
Supplicant is private	Whether the terminal is a Ruijie device
Start accounting	The accounting is enabled
Permit proxy user	The user is allowed to use the proxy.
Permit dial user	The user is allowed to dial.
IP privilege	The IP privilege level
user acl-name	The ACL information

Related	Command	Description
Commands	N/A	N/A

**Platform** N/A

**Description**

## 4.57 show dot1x user mac

Use this command to display the information about 802.1X authentication users based on MAC addresses.

**show dot1x user mac** *mac-addr*



Parameter	Parameter	Description
Description	<i>mac-addr</i>	MAC address

**Defaults** N/A

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

**Usage Guide** Use the **show dot1x summary** command to display 802.1X authentication summaries. And use this command to display detailed information of a specific user based on its MAC address.

**Configuration Examples** The following example displays the information about the 802.1X authentication user according to the user's MAC address.

```
Ruijie#show dot1x user mac 0023.aeaa.4286
```

```
User name: ts-user
```

```
User id: 16777225
```

```
Type: static
```

```
Mac address is 0023.aeaa.4286
```

```
Vlan id is 2
```

```
Access from port Gi0/5
```

```
Time online: 0days 0h 0m17s
```

```
User ip address is 192.168.3.21
```

```
Max user number on this port is 0
```

```
Authorization session time is 1000 seconds
```

```
Supplicant is private
```

```
Start accounting
```

```
Permit proxy user
```

```
Permit dial user
```

```
IP privilege is 0
```

```
user acl-name ts-user_6_0_0 :
```

Parameter Description:

Parameter	Description
User name	User name
User id	User ID
Type	User type
Mac address	User's MAC address
Vlan id	User VLAN ID
Access from port	The port that user access from
Time online	User online time
User ip address	User IP address
Max user number on this port	The maximum number of users on the port
Authorization session time	The authorized session time

Supplicant is private	Whether the terminal is a Ruijie device
Start accounting	The accounting is enabled.
Permit proxy user	The user is allowed to use the proxy.
Permit dial user	The user is allowed to dial.
IP privilege	The IP privilege level
user acl-name	The ACL information

Related	Command	Description
Commands	N/A	N/A

**Platform** N/A

**Description**

## 4.58 show dot1x user name

Use this command to display information about 802.1X authentication users based on usernames.

**show dot1x user name** *name*

Parameter	Parameter	Description
Description	<i>name</i>	User name

**Defaults** N/A

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

**Usage Guide** Use the **show dot1x summary** command to display 802.1X authentication summaries. And use this command to display detailed information of a specific user based on its username.

**Configuration Examples** The following example displays the information about the 802.1X authentication user according to the user name.

```
Ruijie#show dot1x user name ts-user

User name: ts-user
User id: 16777225
Type: static
Mac address is 0023.aeaa.4286
Vlan id is 2
Access from port Gi0/5
Time online: 0days 0h 0m17s
User ip address is 192.168.3.21
Max user number on this port is 0
Authorization session time is 1000 seconds
```

```

Supplicant is private
Start accounting
Permit proxy user
Permit dial user
IP privilege is 0
user acl-name ts-user_6_0_0 :

```

## Parameter Description:

Parameter	Description
User name	User name
User id	User ID
Type	User type
Mac address	User's MAC address
Vlan id	User VLAN ID
Access from port	The port that user access from
Time online	User online time
User ip address	User IP address
Max user number on this port	The maximum number of users on the port
Authorization session time	The authorized session time
Supplicant is private	Whether the terminal is a Ruijie device.
Start accounting	The accounting is enabled.
Permit proxy user	The user is allowed to use the proxy.
Permit dial user	The user is allowed to dial.
IP privilege	The IP privilege level.
user acl-name	The ACL information.

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 5 Web Authentication Commands

### 5.1 accounting

Use this command to set an accounting method for the template.

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

**accounting** { *method-list* }

**no accounting**

Parameter Description	Parameter	Description
	<i>method-list</i>	Name of the method list

**Defaults** N/A

**Command Mode** Template configuration mode

**Usage Guide** The *method-list* parameter in this command should be consistent with network accounting list name configured in AAA.

**Configuration Examples** The following example sets the **mlist1** accounting method for the **eportalv2** template.

```
Ruijie(config.tmplt.eportalv2)# accounting mlist1
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 5.2 authentication

Use this command to set an authentication method for the template.

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

**authentication** { *method-list* }

**no authentication**

Parameter Description	Parameter	Description
	<i>method-list</i>	Name of the method list

**Defaults** N/A

**Command Mode** Template configuration mode

**Usage Guide** The *method-list* parameter in this command should be consistent with the Web authentication method list configured in AAA.  
The first generation authentication does not support the authentication method list configuration.

**Configuration** The following example sets the **mlist1** authentication method for the **eportalv2** template.

**Examples**

```
Ruijie(config.tmplt.eportalv2)#authentication mlist1
```

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 5.3 bindmode

Use this command to set a binding mode for the template.

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

**bindmode { ip-mac-mode | ip-only-mode }**

**no bindmode**

**Parameter Description**

Parameter	Description
<b>ip-mac-mode</b>	IP+MAC mode. The device will write both the IP address information and the MAC address information into the forwarding entry.
<b>ip-only-mode</b>	IP only mode. The device writes only the IP address information into the forwarding entry. On the L3 network, it is recommended to adopt this mode in case that the MAC address is inaccurate.

**Defaults** The default is **ip-mac-mode**.

**Command Mode** Template configuration mode

**Usage Guide** N/A

**Configuration** The following example adopts the IP only mode for the **eportalv2** template.

**Examples**

```
Ruijie(config.tmplt.eportalv2)# bindmode ip-only-mode
```

Related Commands	Command	Description
		N/A

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

## 5.4 clear web-auth direct host

Use this command to clear all authentication-exempted users.

**clear web-auth direct-host**

Parameter Description	Parameter	Description
		N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration Examples** The following example clears all authentication-exempted users.

```
Ruijie# clear web-auth direct-host
```

Related Commands	Command	Description
		N/A

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

## 5.5 clear web-auth direct-site

Use this command to clear all authentication-exempted network resources.

**clear web-auth direct-site**

Parameter Description	Parameter	Description
		N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example clears all authentication-exempted network resources.

**Examples** Ruijie# clear web-auth direct-site

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 5.6 clear web-auth user

Use this command to force the user to go offline.

**clear web-auth user** { **all** | **ip** { *ip-address* } | **mac** *mac-address* | **name** *name-string* | **session-id** *num* }

**Parameter Description**

Parameter	Description
<i>ip-address</i>	Specifies the user's IPv4 address.
<i>name-string</i>	Specifies the user name.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example forces all users to go offline.

**Examples** Ruijie(config) clear web-auth user all

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 5.7 http redirect direct-arp

Use this command to set the address range of the authentication-exempted ARP.

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

**http redirect direct-arp** { *ip-address* [ *ip-mask* ] }

**no http redirect direct-arp** { *ip-address* [ *ip-mask* ] }

Parameter Description	Parameter	Description
	<i>ip-address</i>	IPv4 address
	<i>ip-mask</i>	(Optional) IPv4 mask

**Defaults** No authentication-exempted ARP resource is configured by default.

**Command Mode** Global configuration mode

**Usage Guide** The user cannot learn the ARPs of devices such as the gateway with the ARP CHECK function enabled. Use this command to enable the device to learn the ARP within a specified IP address range without authentication.

**Configuration Examples** The following example sets the IP address 172.16.0.1 as the authentication-exempted ARP resource.

```
Ruijie(config)# http redirect direct-arp 172.16.0.1
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 5.8 http redirect direct-site

Use this command to set the range of authentication-exempted network resources.

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

**http redirect direct-site** { *ipv6-address* | *ipv4-address* [ *ip-mask* ] [ **arp** ] | *mac-address* | range *startip-address* *endip-address* } [description *description-str*] [group *group-name*]

**no http redirect direct-site** { *ipv6-address* | *ipv4-address* [ *ip-mask* ] | *mac-address* | range *startip-address* *endip-address* }

Parameter Description	Parameter	Description
	<i>ipv6-address</i>	IPv6 address of the authentication-exempted network resources



<i>ip-address</i>	IPv4 address of the authentication-exempted network resources
<i>ip-mask</i>	IPv4 address mask of the authentication-exempted network resources (optional)
<b>arp</b>	If the ARP Check is enabled on the access device, the keyword arp is needed for ARP binding of the authentication-exempted network resources (optional). It is necessary for IPv4 network resources only.
<i>mac-address</i>	MAC address of the authentication-exempted user
<i>startip-address</i>	Start IP address of the range of the authentication-exempted network resources
<i>endip-address</i>	End IP address of the range of the authentication-exempted network resources
<i>group-name</i>	Group where the authentication-exempted network resources belong
<i>description-str</i>	Description of the authentication-exempted network resources

**Defaults** No authentication-exempted network resource is set.

**Command** Global configuration mode

**Mode**

**Usage Guide** When Web/802.1x authentication is enabled, all users must pass Web/client authentication to access network resources. This command is used to make certain network resources available to unauthenticated users. All users can access the authentication-exempted Web sites. Up to 50 authentication-exempted users are supported.

**Configuration Examples** The following example sets the Web site with IP address 172.16.0.1 as the authentication-exempted resource.

```
Ruijie(config)# http redirect direct-site 172.16.0.1
```

The following example sets the Web site with MAC address 0000:5e00:0101 as the authentication-exempted resource.

```
Ruijie(config)# http redirect direct-site 0000:5e00:0101
```

The following example sets the range of the authentication-exempted network resources from 10.0.0.1 to 12.0.0.1.

```
Ruijie(config)# http redirect direct-site range 10.0.0.1 12.0.0.1
```

**Related Commands**

Command	Description
<b>show http redirect</b>	Displays the HTTP redirection configuration.

**Platform Description** N/A

## 5.9 http redirect port

Use this command to redirect users' HTTP redirection request to a certain destination port.

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

**http redirect port** *port-num*

**no http redirect port** *port-num*

Parameter Description	Parameter	Description
	<i>port-num</i>	Destination port of the HTTP request

**Defaults** The default is port 80.

**Command Mode** Global configuration mode

**Usage Guide** When you access the network resource, you send HTTP packets. The access device can intercept such HTTP packets to detect your access. If the access device detects that an unauthenticated user is accessing the network resource, it stops the users with an authentication page/client download page.

By default, the access device intercepts users' HTTP packets with port 80 to check whether they are accessing network resources.

This command is used to change the destination port of HTTP packets that are intercepted by the access device.

Up to 10 ports can be configured, including port 80.

**Configuration** The following example redirects users' HTTP requests with port 8080.

**Examples**

```
Ruijie(config)# http redirect port 8080
```

The following example does not redirect users' HTTP requests with port 80.

```
Ruijie(config)# no http redirect port 80
```

Related Commands	Command	Description
	<b>show http redirect</b>	Displays the HTTP redirection configuration.

**Platform Description** N/A

## 5.10 http redirect session-limit

Use this command to set the total number of HTTP sessions that can be originated by an unauthenticated user, or the maximum number of HTTP sessions that can be originated by an unauthenticated user connected to each port.

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

**http redirect session-limit** *session-num* [ **port** *port-session-num* ]

**no http redirect session-limit**

Parameter Description	Parameter	Description
	<i>session-num</i>	Total number of HTTP sessions that can be originated by an unauthenticated user, in the range from 1 to 255.
	<i>port-session-num</i>	The maximum number of HTTP sessions that can be originated by an unauthenticated user connected to each port, in the range from 1 to 65535.

**Defaults** Totally 255 HTTP sessions can be originated by an unauthenticated user, and 300 HTTP sessions that can be originated by an unauthenticated user connected to each port.

**Command Mode** Global configuration mode

**Usage Guide** To prevent HTTP attacks caused by unauthenticated users from using up the TCP connections of the access device, the maximum number of HTTP sessions by unauthenticated users must be limited on the access device.

In addition to authentication, other programs may also occupy HTTP sessions. Therefore, it is not recommended that the maximum number of HTTP sessions by unauthenticated users be 1

**Configuration Examples** The following example sets the maximum number of HTTP sessions originated by an unauthenticated user to 4.

```
Ruijie(config)# http redirect session-limit 4
```

Related Commands	Command	Description
	<b>show http redirect</b>	Displays the HTTP redirection configuration.

**Platform Description** N/A

## 5.11 http redirect timeout

Use this command to set the timeout for the redirection connection maintenance.

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

**http redirect timeout** *seconds*

**no http redirect timeout**

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

<i>seconds</i>	Set the timeout for the redirection connection maintenance, in the range from 1 to 10 in the unit of seconds.
----------------	---

**Defaults** The default is 3 seconds.

**Command Mode** Global configuration mode

**Usage Guide** This command is used to set the timeout for the redirection connection maintenance. After the three-way handshake succeeds, the redirection connection is maintained until the user sends an HTTP GET/HEAD packet and the system returns an HTTP redirection packet. This timeout is set to prevent users from occupying TCP connections for long without sending any GET/HEAD packets.

**Configuration Examples** The following example sets the timeout for the redirection connection maintenance to 4 seconds.

```
Ruijie(config)# http redirect timeout 4
```

**Related Commands**

Command	Description
<b>show http redirect</b>	Displays the HTTP redirection configuration.

**Platform Description** N/A

## 5.12 ip

Use this command to set an IP address for the portal server.

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

**port** { *ip-address* }

**no port**

**Parameter Description**

Parameter	Description
<i>ip-address</i>	The IPv4 address of the portal server

**Defaults** No IP address is set for the portal server by default.

**Command Mode** Template configuration mode

**Usage Guide** This command takes place of the **http redirect** [*ip-address*] command, which is now hidden as a compatible command.

**Configuration Examples** The following example sets the IP address of the eportalv1 template to 172.16.0.1.

```
Ruijie(config.tmplt.eportalv1)#ip 172.16.0.1
```

```
Ruijie(config.tmplt.eportalv1)#
```

**Related  
Commands**

Command	Description
N/A	N/A

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

## 5.13 ip portal source-interface

Use this command to specify a communication port for the portal server.

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

**ip portal source-interface** *interface-type interface-num*

**no ip portal source-interface**

**Parameter  
Description**

Parameter	Description
<i>interface-type</i>	Port type
<i>interface-num</i>	Port No.

**Defaults** No communication interface is specified by default.

**Command  
Mode** Global configuration mode

**Usage Guide** N/A

**Configuration** The following example specifies an aggregate port as the communication port.

**Examples**

```
Ruijie (config)# ip portal source-interface Aggregateport 1
```

**Platform  
Description** N/A

## 5.14 port

Use this command to set a surveillance port for the portal server.

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

**port** { *port-num* }

**no port**

**Parameter  
Description**

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

<i>port</i>	The surveillance port of the portal server, which is on only the 2nd generation portal server,
-------------	--

**Defaults** The default is 50100 based on the UDP protocol.

**Command Mode** Template configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example sets the surveillance port number of the eportalv2 server to 10000.

```
Ruijie(config.tmplt.eportalv2)#port 10000
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 5.15 redirect

Use this command to set the redirect packet protocol.

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

**redirect** { *http* | *js* }

**no redirect**

Parameter Description	Parameter	Description
	<i>http</i>	HTTP 302
	<i>js</i>	HTTP 200

**Defaults** The default is HTTP 200.

**Command Mode** Template configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example sets the redirect packet protocol to HTTP 200.

```
Ruijie(config.tmplt.eportalv2)#redirect http
```

Related Commands	Command	Description
------------------	---------	-------------

N/A	N/A
-----	-----

**Platform** N/A

**Description**

## 5.16 show web-auth control

Use this command to display the authentication configuration.

**show web-auth control**

Parameter	Parameter	Description
Description	N/A	N/A

**Defaults** N/A

**Command** Privileged EXEC mode

**Mode**

**Usage Guide** N/A

**Configuration Examples** The following example displays the authentication configuration and statistics information on the interface.

```
Ruijie(config)#show web-auth control
Port                Control  Server Name          Online User Count
-----
GigabitEthernet 0/1  On      <not configured>    0
Ruijie(config)#
```

Field	Description
Port	Name of the authentication port.
Control	Displays whether the Web authentication is enabled on the port or not.
Server Name	The customized server name on the port. <b>&lt;not configured&gt;</b> indicates the server name has not been configured.
Online User Count	The number of online users on this port.

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 5.17 show web-auth direct-arp

Use this command to display the address range of the authentication-exempted ARP.

**show web-auth direct-arp**

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 address range of the authentication-exempted ARP.

**Examples**

```
Ruijie(config)#show web-auth direct-arp
Direct arps:
  Address      Mask
  -----
  1.1.1.1      255.255.255.255
  2.2.2.2      255.255.255.255
Ruijie(config)#
```

Field	Description
Address	IPv4 address.
Mask	IPv4 mask.

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 5.18 show web-auth direct-host

This command is used to display the Web authentication-exempted users.

**show web-auth direct-host**

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



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

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration Examples** The following example displays the Web authentication-exempted users.

```
Ruijie# show web-auth direct-host
Direct hosts:
  Address           Mask             Port             ARP Binding
  -----
  192.168.0.1      255.255.255.255 Fa0/2            On
  192.168.4.11    255.255.255.255 Fa0/10           On
  192.168.5.0     255.255.255.0   Fa0/16           Off
```

Field	Description
Address	IP address of the user free of authentication
Mask	IP address mask of the user free of authentication
Port	Access device port that is bound with the user's IP address
ARP Binding	Enable/Disable ARP binding

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

**Platform Description** N/A

### 5.19 show web-auth direct site

Use this command to display the range of the Web authentication-exempted network resources.

**show web-auth direct-site**

<b>Parameter Description</b>	Parameter	Description
	N/A	N/A

**Defaults** No network resource without authentication is set.

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration Examples** The following example displays the range of the Web authentication-exempted network resources without authentication.

```
Ruijie(config)#show web-auth direct-site
Direct sites:
  Address      Mask          ARP Binding Group  Description
  -----
  1.1.1.1      255.255.255.255 Off                N/A          N/A
  2.2.2.2      255.255.255.255 On                 N/A          N/A
Ruijie(config)#
```

Field	Description
Address	IP address.
Mask	IP mask.
ARP Binding	Displays whether the ARP binding function is enabled.

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 5.20 show web-auth parameter

Use this command to display the HTTP redirect configuration.

**show web-auth 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 displays the HTTP redirect configuration

**Examples**

```
Ruijie# show web-auth parameter
  session-limit: 10
  timeout:      5
```

Field	Description
session-limit	Total number of HTTP sessions that are created by an unauthenticated user.
timeout	Timeout interval of the redirection connection.

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 5.21 show web-auth portal-check

Use this command to display the portal-check configuration.

**show web-auth portal-check**

**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 portal-check configuration.

**Examples**

```
Ruijie#sh web portal-check
Check:      Enable
  Interval:  3s
  Timeout:   5s
  Retransmit: 3
Escape:     Enable
Nokick:     Disable
```

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

## 5.22 show web-auth rdport

Use this command to display the TCP interception port.

**show web-auth rdport**

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 TCP interception port.

```
Ruijie#show web-auth rdport
Rd-Port:
80 443
Ruijie#
```

Related Commands	Command	Description
	N/A	N/A

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

## 5.23 show web-auth syslog ip

Use this command to display online and offline records about users.

**show web-auth syslog ip ip-address**

Parameter Description	Parameter	Description
	<i>ip-address</i>	A user's IP address.

**Defaults** N/A

**Command** Privileged EXEC mode

**Mode**

**Usage Guide** This command cannot be used to save original data after hot backup.

**Configuration** The following example displays online and offline records of users.

**Examples**

```
Ruijie#show web-auth syslog ip 192.168.197.35
Address: 192.168.197.35 Core-index 0 Current index 2
Index:          0
Time:           2015-10-16 20:37:34
Behavior:       ONLINE
Mac:            00d0.f822.33e7
Vid:            101
Port:           Gi3/1
Timeused:       0d 00:00:00
Flow_up:        0
Flow_down:      0

Index:          1
Time:           2015-10-16 20:42:08
Behavior:       OFFLINE
Mac:            00d0.f822.33e7
Vid:            101
Port:           Gi3/1
Timeused:       0d 00:04:27
Flow_up:        2107872
Flow_down:      2108224
```

Field	Description
Index	The number of the record.
Time	Time when the record is made.
Behavior	Online or offline behavior.
MAC	The Mac address of a user.
Vid	The VLAN ID of a user.
Port	The user port.
Timeused	The time when a user gets online.
Flow UP	The uplink traffic of a user.
Flow down	The downlink traffic of a user.

**Related  
Commands**

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

N/A	N/A
-----	-----

**Platform** N/A

**Description**

## 5.24 show web-auth template

Use this command to display the portal server configuration.

**show web-auth template**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command** Privileged EXEC mode

**Mode**

**Usage Guide** Use this command to display the portal server configuration.

**Configuration** The following example displays the port server configuration.

**Examples**

```
Ruijie#show web-auth template
Webauth Template Settings:
-----
Name:      eportalv1
Url:       http://17.17.1.21:8080/eportal/index.jsp
Ip:        17.17.1.21
BindMode:  ip-mac-mode
Type:      v1
-----
Name:      eportalv2
Url:       http://17.17.1.21:8080/eportal/index.jsp
Ip:        17.17.1.21
BindMode:  ip-only-mode
Type:      v2
Port:      50100
Acctmlist:
Authmlist:
Ruijie#
```

Field	Description
Name	Template name.
Url	Server homepage address.

Ip	Server IP address.
Type	Server type, including the first generation portal server v1, the second generation portal server v2
Port	The protocol packet communication port of the server, which is on only the second generation portal server.
Acctmlist	Accounting method list name
Authmlist	Authentication method list name

#### Related Commands

Command	Description
N/A	N/A

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

## 5.25 show web-auth user

Use this comma to display the online information, including IP address, interface, and online duration, of all users or the specified users.

**show web-auth user** { **all** | **ip** *ip-address* | **name** *name-strin* }

#### Parameter Description

Parameter	Description
<i>ip-address</i>	IPv4 address of the user.
<i>name-string</i>	User name.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the global Web authentication configuration and statistics.

#### Examples

```
Ruijie# show web-auth user all
Current user num : 4, online 2
```

```
Address          Online   Time Limit   Time Used   Status   Name
-----
192.168.0.11    On      0d 01:00:00  0d 00:15:10 Active
192.168.0.13    On      0d 01:00:00  0d 00:00:59 Active   111
192.168.0.25    Off     0d 01:00:00  0d 00:00:59 Create
```

```
192.168.0.46 Off 0d 01:00:00 0d 01:00:00 Destroy 222
```

```
Ruijie# show web-auth user ip 192.168.0.11
```

```
Address      : 192.168.0.11
Mac          : 00d0.f800.2233
Port         : Gi0/2
Online       : On
Time Limit   : 0d 01:00:00
Time Used    : 0d 00:15:10
Time Start   : 2009-02-22 20:05:10
Status       : Active
```

Field	Description
Address	IP address of the user
Mac	MAC address of the user
Port	Access device port connected to the user
Online	Whether the user is online
Time Limit	Available duration of the user. 0 means unlimited.
Time Used	Online duration of the user
Time Start	Time when the user passes authentication and gets online
Status	User status. Active means the user is normally online, Create means the user is created without any settings, Destroy means the user is deleted with its settings not cleared.

#### Related Commands

Command	Description
N/A	N/A

#### Platform Description

N/A

## 5.26 url

Use this command to set the portal server URL.

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

**url** *url-string*

**no url**

#### Parameter Description

Parameter	Description
<i>url-string</i>	Portal server URL, starting with <b>http://</b> or <b>https://</b> . The maximum length of this address is 255 bytes.



**Defaults** No portal server URL is set by default.

**Command** Template configuration mode

**Mode**

**Usage Guide** This command takes place of the **http redirect homepage [ url-string ]** command, which is now hidden as a compatible command.,  
If no URL is specified, the default URL in the **http://[ ip-address ]** format will be adopted, among which **ip-address** is the IP address of the server.

**Configuration** The following example sets the eportalv1 template URL to **http://www.web-auth.net/login**.

**Examples** Ruijie(config.tmplt.eportalv1)#url http://www.web-auth.net/login

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 5.27 web-auth direct-host

Use this command to set the authentication-exempted IP/MAC address range.

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

**web-auth direct-host** { *ip-address* [ *ip-mask* ] [ **arp** ] | *mac-address* } [ **port** *interface-name* ]

**no web-auth direct-host** { *ip-address* [ *ip-mask* ] | *mac-address* }

**Parameter Description**

Parameter	Description
<i>ip-address</i>	IPv4 address of authentication-exempted user
<i>ip-mask</i>	Mask of the IPv4 address free of authentication (optional).
<b>port</b> <i>interface-name</i>	Binds user's IP address with a port of the access device (optional).
<b>arp</b>	If ARP CHECK is enabled on the access device, keyword arp is needed for ARP binding of the IP address used by users free of authentication (optional). It is necessary for IPv4 addresses only.
<i>mac-address</i>	MAC address of authentication-exempted user
<i>mac-address</i>	MAC address of the authentication-exempted user
<i>startip-address</i>	Start IP address of the range of the authentication-exempted network resources
<i>endip-address</i>	End IP address of the range of the authentication-exempted network resources
<i>group-name</i>	Group where the authentication-exempted network resources belong

**Defaults** No user is exempted from authentication. All users must pass the Web authentication to access the restricted network resources.

**Command Mode** Global configuration mode

**Usage Guide** When a user is set to be exempted from authentication, it can access all reachable network resources without Web authentication.  
Up to 50 users can be set to be exempted from authentication.

**Configuration Examples** The following example sets the user with the IP address 172.16.0.1 to be exempted from authentication.

```
Ruijie(config)# web-auth direct-host 172.16.0.1
```

The following example sets the user with the MAC address 0000:5e00:0101 to be exempted from authentication.

```
Ruijie(config)# web-auth direct-host 0000:5e00:0101
```

**Related Commands**

Command	Description
<b>show web-auth direct-host</b>	Displays the users free of Web authentication.

**Platform Description** N/A

## 5.28 web-auth enable

Use this command to enable the Web authentication function on a port. This command is compatible with the **web-auth port-control** command.

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

**web-auth enable**

**no web-auth enable**

**Parameter Description**

Parameter	Description
N/A	N/A

**Defaults** The Web authentication function is disabled on the port by default.  
The **default** template is eportalv1.

**Command Mode** Interface configuration mode

**Usage Guide** To ensure the Web authentication function, the authentication page URL should be configured.  
Because template applications are integrated into the controlled switch, the template or the server

applications of the interface where the Web authentication function is disabled will be automatically cleared. This command is compatible with the original command that used to apply the template or server application in the global configuration mode.

**Configuration** The following example enables the Web authentication function on gigabitEthernet 0/14.

**Examples**

```
Ruijie(config)# interface GigabitEthernet 0/14
Ruijie(config-if-GigabitEthernet 0/14)# web-auth enable
```

**Related  
Commands**

Command	Description
N/A	N/A

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

## 5.29 web-auth logging enable

Use this command to enable the Web authentication syslog function.

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

**web-auth logging enable** { *num* }

**no web-auth logging enable**

**Parameter  
Description**

Parameter	Description
<i>num</i>	The syslog printing rate, indicating how many syslog entries can be printed in a second. The value is in the range from 0 to 65535. 0 indicates no limit.

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

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

**Usage Guide** This command is used to limit the syslog printing rate for only the functional module.

**Configuration** The following example enables the syslog printing with no rate limit.

**Examples**

```
Ruijie(config)# web-auth logging enable 0
```

**Related  
Commands**

Command	Description
N/A	N/A

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

## 5.30 web-auth portal key

Use this command to set the communication key between the access device and the authentication server.

Use the **no** form of this command to clear the communication key between the redirected Web request of a user and the authentication server.

**web-auth portal key** *key-string*

**no web-auth portal key**

Parameter Description	Parameter	Description
	<i>key-string</i>	Communication key between the access device and the authentication server. The maximum length of the key is 255 bytes.

**Defaults** No key is set by default.

**Command** Global configuration mode

**Mode**

**Usage Guide** To use the Web authentication function, the communication key between the access device and the authentication server must be set.

**Configuration Examples** The following example sets the communication key between the access device and the authentication server to web-auth.

```
Ruijie(config)# web-auth portal key web-auth
```

Related Commands	Command	Description
	<b>http redirect</b>	Sets the IP address of the authentication server.
	<b>http redirect homepage</b>	Sets the address of the authentication homepage.
	<b>web-auth port-control</b>	Enables the Web authentication on the port.

**Platform** N/A

**Description**

## 5.31 web-auth portal-check

Use this command to enable portal server check.

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

**web-auth portal-check** [ *interval intsec* ] [ *timeout tosec* ] [ *retransmit retries* ]

**no web-auth porta-check**

Parameter Description	Parameter	Description
	<i>Intsec</i>	Check interval in the range from 1 to 1,000 in the unit of seconds. The default is 10 seconds.
	<i>tosec</i>	Timeout interval in the range from 1 to 1,000 in the unit of seconds. The default is 5 seconds.
	<i>retries</i>	Retry count in the range from 1 to 100. The default is 3.

**Defaults** Portal server check is disabled by default.

**Command Mode** Global configuration mode

**Usage Guide** It is recommended to use this command when there are multiple servers.

**Configuration** The following example enables portal server check.

**Examples** Ruijie (config)# web-auth portal-check interval 20 timeout 2 retransmit 2

Platform N/A  
Description

## 5.32 web-auth portal-escape

Use this command to enable portal-escape function.

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

**web-auth portal-escape**

**no web-auth portal-escape**

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 together with **web-auth portal-check** command to sustain key services when the portal server is abnormal.

**Configuration** The following example enables portal-escape function.

**Examples** Ruijie (config)# web-auth portal-escape

**Platform**  
**Description**

N/A

### 5.33 web-auth station-move arp-detect

Use this command to disable STA-move ARP detection.

**no web-auth station-move arp-detect**

Use this command to restore the default setting.

**default web-auth station-move arp-detect**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** The STA-move ARP detection is enabled by default.

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

**Usage Guide** N/A

**Configuration Examples** The following example disables STA-move ARP detection.

```
Ruijie (config)# no web-auth station-move arp-detect
```

**Platform**  
**Description**

N/A

### 5.34 web-auth station-move auto

Use this command to enable smart station-move function.

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

**web-auth station-move auto**

**no web-auth station-move auto**

Parameter Description	Parameter	Description
	N/A	N/A

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

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

**Usage Guide** N/A

**Configuration** The following example enables smart station-move function.

**Examples** Ruijie (config)# web-auth station-move auto

**Platform** N/A

**Description**

## 5.35 web-auth template

Use this command to create the first generation authentication template and enter its configuration mode.

**web-auth template eportalv1**

Use this command to create the customized second generation authentication template and enter its configuration mode.

**web-auth template { template-name } v1**

Use this command to create the second generation authentication template and enter its configuration mode.

**web-auth template eportalv2**

Use this command to create the customized second generation authentication template and enter its configuration mode.

**web-auth template { template-name } v2**

Use this command to remove the template.

**no web-auth template { template-name }**

Parameter Description	Parameter	Description
	<b>eportalv1</b>	Applies the first generation authentication template.
	<b>eportalv2</b>	Applies the second generation authentication template.
	<i>template-name</i>	Sets the name of the customized authentication template.

**Defaults** No template is configured by default.

**Command Mode** Global configuration mode

**Usage Guide** You can enter the **eportalv1** template mode to configure the IP address and URL instead of executing the **http redirect** and **http redirect homepage** commands. The **http redirect** and **http redirect homepage** commands are compatible on the device, which will be converted to this

command.

The original command **portal-server** is compatible on the device, which will be converted to this command.

To ensure the Web authentication function, configure and apply a functional portal server. The **eportalv1** template is applied by default. The IP address, the URL and the communication secret key of the **eportalv1** template should be configured. If no URL format is specified, the default **http://[ ip-address ]** format will be adopted. The IP address of the portal server is the network resource exempted from authentication, so the unauthenticated user can access it. The device limits the uplink traffic that accesses the IP address to prevent attacks. The upper limit is proportionate to the number of the physical ports.

**Configuration** The following example configures the **eportalv1** template.

**Examples**

```
Ruijie(config)# web-auth template eportalv1
Ruijie(config.tmplt.eportalv1) #
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform**

N/A

**Description**

## 5.36 web-auth update-interval

Use this command to set the interval at which the online user information is updated.

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

**web-auth update-interval** {seconds}

**no web-auth update-interval**

**Parameter  
Description**

Parameter	Description
seconds	Update interval in seconds, in the range from 30 to 3,600 in the unit of seconds.

**Defaults**

The default is 180 seconds.

**Command  
Mode**

Global configuration mode

**Usage Guide**

N/A

**Configuration**

The following example sets the interval at which the online user information is updated to 60 seconds.

**Examples**

```
Ruijie(config)# web-auth update-interval 60
```



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

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

## 5.37 web-auth vlan-control

Use this command to configure the authenticable VLAN list.

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

**web-auth vlan-control** *vlan-list*

**no web-auth vlan-control**

<b>Parameter Description</b>	Parameter	Description
	<i>vlan-list</i>	Authenticable VLAN list

**Defaults** The default is port-control authentication.

**Command Mode** Interface configuration mode

**Usage Guide** N/A

**Configuration** Use this command to configure the authenticable VLAN list.

**Examples**

```
Ruijie (config-if-GigabitEthernet 0/1)# web-auth vlan-control 1
```

**Platform Description** N/A

## 6 SCC Commands

### 6.1 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

### 6.2 auth-mode gateway

Use this command to change the authentication mode configured on the device from access authentication to gateway authentication.

**auth-mode gateway**

Use this command to change the authentication mode configured on the device from gateway authentication to access authentication.

**no auth-mode gateway**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** Access authentication mode

**Command Mode** Global configuration mode

**Default Level** 14

**Usage Guide** The core device that performs access control needs to be enabled with the gateway authentication mode.

**Configuration Examples** The following example changes the authentication mode configured on the device to gateway authentication.

```
Ruijie(config)# auth-mode gateway
Please save config and reload system.
```

**Defaults** Use the **show running** command to display the authentication mode configured on a device.

**Prompt Messages** N/A

**Common Errors** Forget to save the authentication mode configuration change before restarting the device. This error causes that the newly configured authentication mode does not take effect.

**Platforms**

## 6.3 direct-vlan

Use this command to configure authentication-exemption VLANs.

**direct-vlan** *vlanlist*

Use this command to delete the authentication-exemption VLAN configuration.

**no direct-vlan** *vlanlist*

Parameter Description	Parameter	Description
	<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**

## 6.4 nac-author-user maximum

Use this command to configure the limit on IPv4 user capacity on a port.

**nac-author-user maximum** *max-user-num*

Use this command to remove the limit on the IPv4 user capacity on a port.

**no nac-author-user maximum**

Parameter Description	Parameter	Description
	<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**

## 6.5 offline-detect interval threshold

Use this command to configure user online-status detection, so that a user is disconnected when its traffic is lower than a specified threshold or is zero in a specified interval.

**offline-detect interval** *interval* **threshold** *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 range is from 0 to 4,294,967,294 in bytes. The value of 0 indicates that the user is disconnected when no traffic of the user is detected.

**Defaults** By default, the detection interval is 8 hours and the traffic threshold is 0.

**Command Mode** Global configuration mode

**Default Level** 14

**Usage Guide** You can use this command to configure user online-status detection to enable the device to disconnect the authenticated user whose traffic is lower than a specified value and end accounting process.

**Configuration Examples** The following example directly disconnects a user for the user's traffic is lower than 5 Kbytes within 5 minutes.

```
Ruijie(config)#offline-detect interval 5 threshold 5120
```

**Verification** Use the **show running** command to display the configuration of online-status detection for authenticated users.

**Prompt Messages** N/A

**Common Errors** N/A

**Platforms** N/A

## 6.6 show direct-vlan

Use this command to display the authentication-exemption VLAN configuration.

**show direct-vlan**

Parameter Description	Parameter	Description

**Command Mode** Privileged EXEC mode

**Level** 14

**Usage Guide** N/A

**Configuration Examples** The following example displays the authentication-exemption VLAN configuration.

```
Ruijie #show direct-vlan
direct-vlan 5,7,100
```

**Prompt Messages** N/A

**Platforms** This command is supported only on switches.

## 6.7 show nac-author-user interface

Use this command to display the capacity limit and current number of IPv4 users on all interfaces or a specified interface.

**show nac-author-user [ interface interface-name ]**

Parameter Description	Parameter	Description
	<i>interface-name</i>	Interface name

**Command Mode** Privileged EXEC mode

**Level** 14

**Usage Guide** N/A

**Configuration Examples** The following example displays the current number and capacity limit of IPv4 users on interface Gi 0/1.

```
Ruijie#show nac-author-user interface gi 0/1
Port      Cur_num  Max_num
-----  -
Gi0/1     0        100
```

**Prompt Messages** N/A

**Platforms**

## 6.8 station-move permit

Use this command to enable authenticated-user migration.

**station-move permit**

Use this command to disable authenticated-user migration.

**no station-move permit**

Parameter Description	Parameter	Description
		N/A

**Defaults** Authenticated-user migration is not permitted by default.

**Command Mode** Global configuration mode

**Level** 14

**Usage Guide** You can enable the authenticated-user migration function to allow the online users to be authenticated again and get online from different physical locations (different ports or VLANs).

**Configuration Examples** The following examples enables authenticated-user migration.

```
Ruijie(config)#station-move permit
```

**Verification** Use the **show running** command to check whether the authenticated-user migration function is enabled.

**Prompt Messages** N/A

**Common Errors** N/A

**Platforms**

## 7 Global IP-MAC Binding Commands

### 7.1 address-bind

Use this command to configure global IP-MAC address binding. Use the **no** form of this command to restore the default setting.

**address-bind** { *ip-address* | *ipv6-address* } *mac-address*

**no address-bind** { *ip-address* | *ipv6-address* } *mac-address*

Parameter	Parameter	Description
Description	<i>ip-address</i>	IPv4 address to be bound
	<i>ipv6-address</i>	IPv6 address to be bound
	<i>mac-address</i>	MAC address to be bound

**Defaults** N/A

**Command Mode** Global configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example configures global IP-MAC address binding.

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# address-bind 192.168.5.1 00d0.f800.0001
```

Related Commands	Command	Description
	<b>show address-bind</b>	Displays the IP address-MAC address binding table.

**Platform** N/A

**Description**

### 7.2 address-bind install

Use this command to enable a binding policy globally. Use the **no** form of this command to restore the default setting.

**address-bind install**

**no address-bind install**

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



<b>Description</b>	N/A	N/A				
<b>Defaults</b>	N/A					
<b>Command Mode</b>	Global configuration mode					
<b>Usage Guide</b>	If you bind an IP address to a MAC address, run this command to make the installation policy take effect.					
<b>Configuration Examples</b>	The following example enables a binding policy.					
<b>Examples</b>	<pre>Ruijie# configure terminal Enter configuration commands, one per line. End with CNTL/Z. Ruijie(config)# address-bind 192.168.5.1 00d0.f800.0001 Ruijie(config)# address-bind install</pre>					
<b>Related Commands</b>	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>	Command	Description	N/A	N/A	
Command	Description					
N/A	N/A					
<b>Platform Description</b>	N/A					

### 7.3 address-bind ipv6-mode

This command is used to set the IPv6 address binding mode. Use the **no** form of this command to restore the default setting.

This command is also used to set the compatible mode.

**address-bind ipv6-mode { compatible | loose | strict }**

**no address-bind ipv6-mode**

<b>Parameter Description</b>	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><b>compatible</b></td> <td>Compatible mode</td> </tr> <tr> <td><b>loose</b></td> <td>Loose mode</td> </tr> <tr> <td><b>strict</b></td> <td>Strict mode</td> </tr> </tbody> </table>	Parameter	Description	<b>compatible</b>	Compatible mode	<b>loose</b>	Loose mode	<b>strict</b>	Strict mode
Parameter	Description								
<b>compatible</b>	Compatible mode								
<b>loose</b>	Loose mode								
<b>strict</b>	Strict mode								
<b>Defaults</b>	The default is strict mode.								
<b>Command Mode</b>	Global configuration mode.								
<b>Usage Guide</b>	N/A								
<b>Configuration Examples</b>	The following example configures the IPv6 address binding mode.								
<b>Examples</b>	<pre>Ruijie# configure terminal</pre>								

```
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# address-bind ipv6-mode compatible
```

Related Commands	Command	Description
	<b>show address-bind uplink</b>	Displays the exceptional port of the address binding.

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

## 7.4 address-bind uplink

This command is used to configure the exception port. Use the **no** form of this command to restore the default setting.

**address-bind uplink** *interface-id*  
**no address-bind uplink** *interface-id*

Parameter	Parameter	Description
<b>Description</b>	<i>interface-id</i>	Switching port or layer 2 aggregate port.

**Defaults** All ports are non-exception ports by default.

**Command Mode** Global configuration mode.

**Usage Guide** If you have bound an IP address and a MAC address, the switch will discard the packets that have the same source IP address but different source MAC address.  
 If the port is an exceptional port and is installed (see address-bind install), this binding policy does not take effect.

**Configuration** The following example configures the exception port.

**Examples**

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# address-bind uplink GigabitEthernet 0/1
```

Related Commands	Command	Description
	<b>show address-bind uplink</b>	Displays the exceptional port of address binding.

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

## 7.5 show address-bind

Use this command to display global IP address-MAC address binding.

**show address-bind**

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 global IPv4 address-MAC address binding.	
	<pre>Ruijie#show address-bind Total Bind Addresses in System : 1 IP Address          Binding MAC Addr ----- 192.168.5.1        00d0.f800.0001</pre>	
	<b>Field</b>	<b>Description</b>
	Total Bind Addresses in System	IPv4 address-MAC address binding count
	IP Address	Bound IP address
	Binding MAC Addr	Bound MAC address
Related Commands	<b>Command</b>	<b>Description</b>
	<b>address-bind</b>	Enables IP address-MAC address binding.
Platform Description	N/A	

## 7.6 show address-bind uplink

Use this command to display the exception port.

**show address-bind uplink**

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 exception port.

**Examples**

```
Ruijie#show address-bind uplink
Port      State
-----  -
Gi0/1     Enabled
Default   Disabled
```

Field	Description
Port	Short for exception ports. All ports are non-exception ports by default.
State	Indicates whether the port is exception port. State Enabled indicates that it is an exception port while state Disabled indicates that it is not.

**Related**

**Commands**

Command	Description
address-bind uplink	Sets the exception port.

**Platform**

N/A

**Description**

## 8 Password-Policy Commands

### 8.1 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

### 8.2 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>

**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

**Platform Description** N/A

### 8.3 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>


**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

## 8.4 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

## 8.5 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

## 8.6 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

**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.

**Examples**

```
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

**Platform Description** N/A

## 9 Port Security Commands

### 9.1 show port-security

Use this command to display the port security configuration and the secure address.

**show port-security** [ **address** [ **interface** *interface-id* ] | **binding** [ **interface** *interface-id* ] | **interface** *interface-id* | **all** ]

Parameter Description	Parameter	Description
	<b>address</b>	Displays all secure addresses, or the secure address of the specified port.
	<b>binding</b>	Displays all port security bindings, or the port security bindings of the specified port.
	<b>interface</b> <i>interface-id</i>	Displays the port security configuration of the specified port.
	<b>all</b>	Displays all valid secure addresses and valid port security bindings.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** To display all port security configuration and violation management, execute the command without any parameter. To display the security configuration, the secure address, or the port security binding of the specified interface, execute the command with the corresponding parameter.

**Configuration Examples** The following example displays the port security statistics.

```
Ruijie#show port-security
NO. SecurePort MaxSecureAddr CurrentAddr CurrentIpBind CurrentIpMacBind
SecurityAction
(Count) (Count) (Count) (Count)
-----
1 Gi0/1 128 2 2 1 protect
-----
Total secure addresses in System : 2
Total secure bindings in System : 3
```

Field	Description
NO.	Serial number.

Secure Port	Port name
MaxSecureAddr(count)	The maximum number of secure addresses on the port.
CurrentAddr(count)	The current number of secure addresses on the port.
CurrentIpBind (count)	The current number of IP addresses bindings on the port.
CurrentIpMacBind (count)	The current number of IP-MAC address bindings on the port.
Security Action	Violation management.
Total secure addresses in System	The total number of secure addresses on the device.
Total secure bindings in System	The total number of port security bindings on the device,

The following example displays the port security configuration on interface GigabitEthernet 0/1.

```
Ruijie#show port-security interface gigabitEthernet 0/1
Interface           : GigabitEthernet 0/1
Port status         : down
Port Security       : enabled
SecureStatic address aging : disabled
Sticky dynamic address : disabled
Violation mode      : protect
Maximum MAC Addresses : 128
Total MAC Addresses : 2
Configured MAC Addresses : 2
Dynamic MAC Addresses : 0
Sticky MAC Addresses : 0
Total security binding : 3
IPv4-ONLY Binding Addresses : 1
IPv6-ONLY Binding Addresses : 1
IPv4-MAC Binding Addresses : 1
IPv6-MAC Binding Addresses : 0
Aging time (min)    : 0
```

Field	Description
Interface	Port name.
Port status	Port status.
Port Security	Displays whether the port security is enabled.
SecureStatic address aging	Displays whether the static secure address aging is enabled.
Sticky dynamic address	Displays whether the dynamic secure address is converted to the sticky secure address,
Violation mode	Port violation management.

Maximum MAC Addresses	The maximum number of secure addresses on the port.
Total MAC Addresses	The number of valid secure addresses on the port.
Configured MAC Addresses	The number of static secure addresses.
Dynamic MAC Addresses	The number of dynamic secure addresses.
Sticky MAC Addresses	The number of sticky secure addresses.
Total security binding	The number of valid port security bindings.
IPv4-ONLY Binding Addresses	The number of IPv4 addresses bindings.
IPv6-ONLY Binding Addresses	The number of IPv6 addresses bindings.
IPv4-MAC Binding Addresses	The number of IPv4-MAC address bindings.
IPv6-MAC Binding Addresses	The number of IPv6-MAC address bindings.
Aging time(min)	The aging time of the secure address.

The following example displays all secure addresses on the device.

```
Ruijie#show port-security address
NO.  VLAN  MacAddress      PORT                TYPE                RemainingAge (mins)
STATUS
-----
-----
1    1      00d0.f800.073c  GigabitEthernet 0/1    Configured          --
active
2    1      00d0.f800.073d  GigabitEthernet 0/1    Configured          --
active
```

Field	Description
NO.	Serial number.
Vlan	VLAN ID.
Mac Address	MAC address.
Port	Port name.
Type	Secure address type.
Remaining Age(mins)	The aging time of the secure address.
STATUS	The secure address status.

The following example displays all port security bindings on the device.

```
Ruijie#show port-security binding
NO.  VLAN  MacAddress      PORT      IpAddress
FilterType FilterStatus
-----
-----
1    1      00d0.f800.073c  Gi0/1     192.168.12.202      ipv4-mac
active
2    --      --              Gi0/1     192.168.0.1         ipv4-only
active
```

```
3 -- -- Gi0/1 ffaa:ddcc::1 ipv6-only
activ
```

Field	Description
NO.	Serial number.
Vlan	VLAN ID.
Mac Address	MAC address.
Port	Port name.
IpAddress	IP address.
FilterType	The filtering type of the port security binding.
FilterStatus	The status of the port security binding.

#### Related Commands

Command	Description
N/A	N/A

**Platform** N/A

#### Description

## 9.2 switchport port-security

Use this command to configure port security and the way to deal with violation.

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

**switchport port-security [ violation { protect | restrict | shutdown } ]**

**no switchport port-security [ violation ]**

#### Parameter Description


Parameter	Description
<b>protect</b>	Discards the packets breaching security.
<b>restrict</b>	Discards the packets breaching security and sends the Trap message.
<b>shutdown</b>	Discards the packets breaching the security, sends the Trap message and disables the interface.

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

**Command Mode** Interface configuration mode

**Usage Guide** With port security, you can strictly control the input on a specific port by restricting access to the MAC address and IP address (optional) of the port on the switch. After you configure some secure addresses for the port security-enabled port, only the packets from these addresses can be forwarded. In addition, you can also restrict the maximum number of secure addresses on a port. If you set the maximum value to 1 and configure one secure address for this port, the workstation (whose address is the configured secure Mac address) connected to this port will occupy all the

bandwidth of this port exclusively.

 If the violation handling mode is changed after violation occurs, the new mode takes effect only after the violation mode is restarted.

**Configuration Examples** The following example enables port security on interface gigabitethernet 1/1, and the way to deal with violation is **shutdown**:

```
Ruijie(config)#interface gigabitethernet 1/1
Ruijie(config-if)# switchport port-security
Ruijie(config-if)# switchport port-security violation shutdown
```

**Related Commands**

Command	Description
<b>show port-security</b>	Displays port security settings.

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

## 9.3 switchport port-security aging

Use this command to set the aging time for all secure addresses on an interface.

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

**switchport port-security aging {static | time *time* }**

**no switchport port-security aging {static | time }**

**Parameter Description**


Parameter	Description
<b>static</b>	Applies the aging time to both manually configured secure addresses and automatically learned addresses. Otherwise, apply it to only the automatically learned secure addresses.
<b>time <i>time</i></b>	Specifies the aging time for the secure address on this port. Its range is 0-1,440 in minutes. If you set it to 0, the aging function is disabled actually.

**Defaults** No secure address is aged by default.

**Command Mode** Interface configuration mode

**Usage Guide** In interface configuration mode, use the **no switchport port-security aging time** command to disable the aging for security addresses on the port. Use the **no switchport port-security aging static** command to apply the aging time to only the dynamically learned security address. Use the **show port-security** command to display configuration. When both port security and 802.1X authentication functions are enabled, 802.1X clients must get

re-authenticated for network access once the secure addresses are aged.

 To enable this function, you need to set the maximum number of secure addresses. In this way, you can make the switch automatically add or delete the secure addresses on the interface.

**Configuration Examples** The following example sets the aging time for all secure addresses on interface gigabitethernet 1/1 to eight minutes.

```
Ruijie# configure terminal
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# switchport port-security aging time 8
Ruijie(config-if)# switchport port-security aging static
Ruijie(config-if)# end
```

**Related Commands**

Command	Description
<b>show port-security</b>	Displays port security settings.

**Platform Description** N/A

## 9.4 switchport port-security binding

Use these commands to configure secure address binding manually in the interface configuration mode through performing the source IP address plus source MAC address binding or only the source IP address binding. With this binding configured, only the packets match the binding secure address could enter the switch, others will be discarded.

Use the **no** form of these commands to remove the binding addresses.

**switchport port-security binding** [ *mac-address* **vlan** *vlan\_id* ] { *ipv4-address* | *ipv6-address* }

**switchport port-security binding** { *ipv4-address* | *ipv6-address* }

**no switchport port-security binding** [ *mac-address* **vlan** *vlan\_id* ] { *ipv4-address* | *ipv6-address* }

**no switchport port-security binding** { *ipv4-address* | *ipv6-address* }

**Parameter Description**

Parameter	Description
<i>mac-address</i>	The source MAC addresses to be bound
<i>vlan_id</i>	VLAN ID of the binding source MAC address
<i>ipv4-address</i>	Binds IPv4 addresses.
<i>ipv6-address</i>	Binds IPv6 addresses.

**Defaults** N/A

**Command Mode** Interface configuration mode

- Usage Guide**
1. For packets complying with IP/IP-MAC binding, they can be forwarded only if MAC addresses are secure addresses.
  2. For dynamic secure addresses, packets cannot be forwarded before bound even if their addresses comply with the binding list.
- Network is often accessible to static users with secure addresses without authorization. If authorization is configured, these users must comply with it.

**Configuration** The following example binds the IP address 192.168.1.100 on interface g 0/10:

**Examples**

```
Ruijie# configure terminal
Ruijie(config)#interface gigabitethernet 0/10
Ruijie(config-if)# switchport port-security binding 192.168.1.100
Ruijie(config-if)# end
```

The following example binds the IP address 192.168.1.100 and MAC address 00d0.f800.5555 with VLAN ID 1 on interface g 0/10.

```
Ruijie# configure terminal
Ruijie(config)#interface gigabitethernet 0/10
Ruijie(config-if)# switchport port-security binding 00d0.f800.5555 vlan 1
192.168.1.100
Ruijie(config-if)# end
```

**Related Commands**

Command	Description
<b>show port-security</b>	Displays port security settings.
<b>switchport port-security</b>	Enables the port-security.
<b>switchport port-security binding interface</b>	Configures the secure address binding in privileged EXEC mode.
<b>switchport port-security mac-address</b>	Sets the static secure address.
<b>switchport port-security aging</b>	Sets the aging time for secure address.

**Platform** N/A

**Description**

## 9.5 switchport port-security interface binding

Use these commands to configure secure address binding manually in the privileged EXEC mode through performing the source IP address plus source MAC address binding or only the source IP address binding. With this binding configured, only the packets match the binding secure address could enter the switch, others will be discarded.

Use the **no** form of these commands to remove the binding addresses.

**switchport port-security interface** *interface-id* **binding** [ *mac-address* **vlan** *vlan\_id* ] { *ipv4-address* | *ipv6-address* }

**switchport port-security interface** *interface-id* **binding** { *ipv4-address* | *ipv6-address* }



```
no switchport port-security interface interface-id binding [ mac-address vlan vlan_id ]
  { ipv4-address | ipv6-address }
no switchport port-security interface interface-id binding { ipv4-address | ipv6-address }
```

Parameter Description	Parameter	Description
	<i>interface-id</i>	Binds interface ID.
	<i>mac-address</i>	Binds source MAC address.
	<i>vlan_id</i>	VLAN ID of the binding source MAC address
	<i>ipv4-address</i>	Binds IPv4 address.
	<i>ipv6-address</i>	Binds IPv6 address .

**Defaults** N/A

**Command Mode** Global configuration mode

**Usage Guide**

1. For packets complying with IP/IP-MAC binding, they can be forwarded only if MAC addresses are secure addresses.
2. For dynamic secure addresses, packets cannot be forwarded before bound even if their addresses comply with the binding list.

**Configuration Examples** The following example binds the IP address 192.168.1.100 on the interface g 0/10.

```
Ruijie# configure terminal
Ruijie(config)# switchport port-security binding interface g0/10 binding
192.168.1.100
Ruijie(config)# end
```

The following example binds the IP address 192.168.1.100 and MAC address 00d0.f800.5555 with VLAN ID 1 on the interface g 0/10.

```
Ruijie# configure terminal
Ruijie(config)# switchport port-security binding interface g0/10 binding
00d0.f800.5555 vlan 1 192.168.1.100
Ruijie(config)# end
```

Related Commands	Command	Description
	<b>show port-security</b>	Displays port security settings.
	<b>switchport port-security</b>	Enables the port-security.
	<b>switchport port-security binding</b>	Configures the secure address binding in interface configuration mode.
	<b>switchport port-security mac-address</b>	Sets the static secure address.
	<b>switchport port-security aging</b>	Sets the aging time for secure address.

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

## 9.6 switchport port-security interface mac-address


Use this command to configure the static secure address.

Use the **no** form of this command to remove the configuration.

**switchport port-security interface** *interface-id* **mac-address** *mac-address*  
 [ **vlan** *vlan-id* ]

**no switchport port-security interface** *interface-id* **mac-address**  
*mac-address* [ **vlan** *vlan-id* ]

### Parameter Description

Parameter	Description
<i>interface-id</i>	Interface ID
<i>mac-address</i>	Static secure address
<i>vlan-id</i>	VLAN ID of the MAC address
	 The configuration of <i>vlan-id</i> is only supported on the TRUNK port.

### Defaults

N/A

### Command Mode

Global configuration mode

### Usage Guide

N/A

### Configuration Examples

The following example sets the static secure address and VLAN ID of TRUNK port 10 to 00d0.f800.5555 and 2 respectively.

```
Ruijie# configure terminal
Ruijie(config)# switchport port-security interface g0/10
mac-address 00d0.f800.5555 vlan 2
Ruijie(config)# end
```

### Related Commands

Command	Description
<b>show port-security</b>	Displays port security settings.
<b>switchport port-security</b>	Enables the port-security.
<b>switchport port-security binding</b>	Configures the secure address binding.
<b>switchport port-security mac-address</b>	Sets the static secure address in interface configuration mode.
<b>switchport port-security aging</b>	Sets the aging time for the secure address.

### Platform Description

N/A


## 9.7 switchport port-security mac-address

Use this command to configure the static secure address.

Use the **no** form of this command to remove the configuration.

**switchport port-security interface** *interface-id* **mac-address** *mac-address* [ **vlan** *vlan-id* ]

**no switchport port-security interface** *interface-id* **mac-address** *mac-address* [ **vlan** *vlan-id* ]

Parameter Description	Parameter	Description
	<i>mac-address</i>	Static secure MAC address
	<i>vlan-id</i>	VLAN ID of the MAC address   The configuration of <i>vlan-id</i> is only supported on the TRUNK port.

**Defaults** N/A

**Command Mode** Interface configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example sets the static secure address and VLAN ID of TRUNK port 10 to 00d0.f800.5555 and 2 respectively.

```
Ruijie# configure terminal
Ruijie(config)#interface gigabitethernet 0/10
Ruijie(config-if)# switchport port-security mac-address 00d0.f800.5555 vlan
2
Ruijie(config-if)# end
```

Related Commands	Command	Description
	<b>show port-security</b>	Displays port security settings.
	<b>switchport port-security</b>	Enables the port-security.
	<b>switchport port-security binding</b>	Configures the secure address binding.
	<b>switchport port-security mac-address interface</b>	Sets the static secure address in privileged EXEC mode.
	<b>switchport port-security aging</b>	Sets the aging time for the secure address.

**Platform Description** N/A

## 9.8 switchport port-security mac-address sticky

Use this command to configure the Sticky MAC secure address.

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

**switchport port-security mac-address sticky** *mac-address* [ **vlan** *vlan-id* ]


**no switchport port-security mac-address sticky** *mac-address* [ **vlan** *vlan-id* ]

Use the command without parameters to enable the Sticky MAC address learning.

Use the **no** form of this command to disable the Sticky MAC address learning.

**switchport port-security mac-address sticky**

**no switchport port-security mac-address sticky**

Parameter Description	Parameter	Description
	<i>mac-address</i>	Static secure address
	<i>vlan-id</i>	Vlan ID of the MAC address
		 The configuration of <i>vlan-id</i> is only supported on the TRUNK port.

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

**Command Mode** Interface configuration mode

**Usage Guide** Sticky MAC addresses, either static or dynamic, are special addresses free from aging.

**Configuration Examples** The following example sets the MAC address and VLAN ID of TRUNK port 10 to 00d0.f800.5555 to 2 respectively.

```
Ruijie# configure terminal
Ruijie(config)#interface gigabitethernet 0/10
Ruijie(config-if)# switchport port-security mac-address 00d0.f800.5555 vlan
2
Ruijie(config-if)# end
```

The following example enables the Sticky MAC address learning on interface g0/10.

```
Ruijie# configure terminal
Ruijie(config)#interface gigabitethernet 0/10
Ruijie(config-if)# switchport port-security sticky mac-address
Ruijie(config-if)# end
```

Related Commands	Command	Description
	<b>show port-security</b>	Displays port security settings.
	<b>switchport port-security</b>	Enables the port-security.

<b>switchport port-security binding</b>	Configures the secure address binding.
<b>switchport port-security mac-address interface</b>	Sets the static secure address in privileged EXEC mode.
<b>switchport port-security mac-address</b>	Sets the static secure address in interface configuration mode.
<b>switchport port-security aging</b>	Sets the aging time for the secure address.

**Platform** N/A

**Description**

## 9.9 switchport port-security maximum

Use this command to set the maximum number of port secure addresses.

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

**switchport port-security maximum** *value*

**no switchport port-security maximum**

Parameter	Parameter	Description
Description	<i>value</i>	Maximum number of the secure address, in the range from 1 to 128.

**Defaults** The default is 128.

**Command** Interface configuration mode

**Mode**

**Usage Guide** The number of the secure address contains the sum of static secure address and dynamically learnt secure address, 128 by default.

If the number of the secure address you set is less than current number, it will prompt this setting failure.

**Configuration** The following example sets the maximum number of the secure address to 2 for interface g 0/10.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)#interface gigabitethernet 0/10
Ruijie(config-if)# switchport port-security maximum 2
Ruijie(config-if)# end
```

**Related  
Commands**

Command	Description
<b>show port-security</b>	Displays port security settings.
<b>switchport port-security</b>	Enables the port-security.
<b>switchport port-security binding</b>	Configures the secure address binding.
<b>Switchport port-security mac-address</b>	Sets the static secure address in the interface

---

	configuration mode.
<b>switchport port-security aging</b>	Sets the aging time for the port secure address.

**Platform** N/A

**Description**

## 10 Storm Control Commands

### 10.1 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**

### 10.2 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** Interface configuration mode

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



# 11 SSH Commands

## 11.1 crypto key generate

Use this command to generate a public key to the SSH server.

**crypto key generate { rsa | dsa }**


Parameter	Parameter	Description
Description	rsa	Generates an RSA key.
	dsa	Generates a DSA key.


**Defaults** By default, the SSH server does not generate a public key.

**Command** Global configuration mode

**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
	show ip ssh	Displays the current status of the SSH server.
	crypto key zeroize { rsa   dsa }	Deletes DSA and RSA keys and disables the SSH server function.

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

## 11.2 crypto key zeroize

Use this command to delete a public key to the SSH server.

**crypto key zeroize { rsa | dsa }**

Parameter	Parameter	Description
<b>Description</b>	<b>rsa</b>	Deletes the RSA key.
	<b>dsa</b>	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
	<b>show ip ssh</b>	Displays the current status of the SSH server.
	<b>crypto key generate { rsa   dsa }</b>	Generates DSA and RSA keys.

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

## 11.3 disconnect ssh

Use this command to disconnect the established SSH connection.

**disconnect ssh [ vty ] session-id**

Parameter	Parameter	Description
<b>Description</b>	<b>vtty</b>	Established VTY connection
	<i>session-id</i>	ID of the established SSH connection, in the range from 0 to 35

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** You can disconnect a SSH connection by entering the ID of the SSH connection or disconnect a SSH connection by entering the specified VTY connection ID. Only connections of the SSH type can be disconnected.

**Configuration Examples** The following example disconnects the established SSH connection by specifying the SSH session ID.

```
Ruijie# disconnect ssh 1
```

The following example disconnects the established SSH connection by specifying the VTY session ID.

```
Ruijie# disconnect ssh vty 1
```

Related Commands	Command	Description
	<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 Description** N/A

## 11.4 disconnect ssh session

Use this command to disconnect the suspended SSH client session.

**disconnect ssh-session *session-id***

Parameter Description	Parameter	Description
		<i>session-id</i>

**Defaults** N/A

**Command Mode** User EXEC mode

**Usage Guide** This command is used to disconnect the suspended SSH client session by specifying its session ID.

**Configuration Examples** The following example disconnects a SSH client session by specifying its session ID.

```
Ruijie# disconnect ssh-session 1
```

Related Commands	Command	Description
		N/A

**Platform** N/A

**Description**

## 11.5 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 Examples** The following example enables the SCP server function.

```
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 Description** N/A

## 11.6 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
Description	<i>retry times</i>	Authentication retry times, ranging from 0 to 5

**Defaults** The default is 3.

**Command** Global configuration mode

**Mode**

**Usage Guide** User authentication is considered failed if authentication is not successful when the configured authentication retry times on the SSH server is exceeded. Use the **show ip ssh** command to display the configuration of the SSH server

**Configuration** The following example sets the authentication retry times to 2.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# ip ssh authentication-retries 2
```

Related Commands	Command	Description
	<b>show ip ssh</b>	Displays the current status of the SSH server.

**Platform** N/A

**Description**

## 11.7 ip ssh cipher-mode

Use this command to set the SSH server encryption mode.

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

**ip ssh cipher-mode { cbc | ctr | others }**

**no ip ssh cipher-mode**

Parameter	Parameter	Description
<b>Description</b>	<b>cbc</b>	Encryption mode: CBC (Cipher Block Chaining) Encryption algorithm: DES-CBC, 3DES-CBC, AES-128-CBC, AES-192-CBC, AES-256-CBC, Blow fish-CBC
	<b>ctr</b>	Encryption mode: CTR (Counter) Encryption algorithm: AES128-CTR, AES192-CTR, AES256-CTR
	<b>others</b>	Encryption mode: Others Encryption algorithm: RC4

**Defaults** All encryption modes are supported by default.

**Command** Global configuration mode

**Mode**

**Usage Guide** This command is used to set the SSH server encryption mode.

For Ruijie Networks, the SSHv1 server supports DES-CBC, 3DES-CBC, and Blowfish-CBC; the SSHv2 server supports AES128-CTR, AES192-CTR, AES256-CTR, DES-CBC, 3DES-CBC, AES-128-CBC, AES-192-CBC, AES-256-CBC, Blowfish-CBC, and RC4. All these algorithms can be grouped into CBC, CTR and Other as shown above.

With the advancement of cryptography study, CBC and Others encryption modes are proved to easily decipher. It is recommended to enable the CTR mode to raise assurance for organizations and enterprises demanding high security.

**Configuration** The following example enables CTR encryption mode.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# ip ssh cipher-mode ctr
```

**Platform** N/A

**Description**

## 11.8 ip ssh hmac-algorithm

Use this command to set the algorithm for message authentication.

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

**ip ssh hmac-algorithm { md5 | md5-96 | sha1 | sha1-96 }**

**no ip ssh hmac-algorithm**

Parameter	Parameter	Description
<b>Description</b>	<b>md5</b>	MD5 algorithm
	<b>md5-96</b>	MD5-96 algorithm
	<b>sha1</b>	SHA1 algorithm
	<b>sha1-96</b>	SHA1-96 algorithm

**Defaults** SSHv1: all the algorithms are not supported.

SSHv2: all the algorithms are supported.

**Command** Global configuration mode

**Mode**

**Usage Guide** Ruijie SSHv1 servers do not support algorithms for message authentication.

For Ruijie Networks, the SSHv1 server does not support message authentication algorithms; the SSHv2 server supports MD5, MD5-96, SHA1, and SHA1-96 algorithms. Set the algorithm on your demand.

**Configuration** The following example sets the algorithm for message authentication to SHA1.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# ip ssh hmac-algorithm sha1
```

**Platform** N/A

**Description**

## 11.9 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** Global configuration mode

**Mode**

**Usage Guide** N/A

**Configuration** The following example sets RSA and DSA key files associated with user **test**.

**Examples**

```
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	Command	Description
Commands	<b>show ip ssh</b>	Displays the current status of the SSH server.

**Platform** N/A

**Description**

## 11.10 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 Description** N/A

## 11.11 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 Mode** Global configuration mode

**Usage Guide** The authentication is considered timeout and failed if the authentication is not successful within 120 seconds starting from receiving a connection request. Use the **show ip ssh** command to display the configuration of the SSH server.

**Configuration Examples** The following example sets the timeout value to 100 seconds.

```
Ruijie# configure terminal
Ruijie(config)# ip ssh time-out 100
```

Related Commands	Command	Description
	<b>show ip ssh</b>	Displays the current status of the SSH server.

**Platform Description** N/A



## 11.12 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 Commands	Command	Description
	<b>show ip ssh</b>	Displays the current status of the SSH server.

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

## 11.13 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 }**

Parameter	Parameter	Description
Description	<b>rsa</b>	Displays the RSA key.
	<b>dsa</b>	Displays the DSA key.

**Defaults** N/A

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

**Usage Guide** This command is used to show the information about the public key part of the generated public key on the SSH server, including key generation time, key name, contents in the public key part, etc.

**Configuration Examples** The following example displays the information about the public key part of the public key to the SSH server.

```
Ruijie(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
Key is not exportable.
Key Data:
      AAAAAwEA AQAAAEAA 2m6H/J+2 xOMLW5MR 8tOmpW1I 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:
      AAAAAwEA AQAAAEAA 0E5w2H0k v744uTIR yZBd/7AM 8pLItNw3 XH3LhEEi
BbZGZvn3
      LEYYfQ9s pgYL0ZQf S0s/GY0X gJOMsc6z i8OakQ==
```

Related Commands	Command	Description
	<code>crypto key generate { rsa   dsa }</code>	Generates DSA and RSA keys.

**Platform** N/A

**Description**

## 11.14 show ip ssh

Use this command to display the information of the SSH server.

**show ip ssh**


Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command** Privileged EXEC mode/Global configuration mode

**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**

## 11.15 show ssh

Use this command to display the information about the established SSH connection.

**show ssh**

**Parameter****Description**

Parameter	Description
N/A	N/A

**Defaults**

N/A

**Command**

Privileged EXEC mode/Global configuration mode

**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** The following example displays the information about the established SSH connection:

```

Examples 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**

### 11.16 show ssh session

Use this command to display the SSH Client session.

**show ssh-session**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** User EXEC mode

**Usage Guide** Use this command to display the established SSH client session information, including the VTY number, SSH version, encryption algorithm, message authentication algorithm, connection state, and username.

**Configuration** 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  
Description**

N/A

## 11.17 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 } [ via mgmt-name ] [ /source { ip A.B.C.D | ipv6 X:X:X:X::X | interface interface-name } ] [ /vrf vrf-name ]
```

**Parameter  
Description**

Parameter	Description
<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</b> { <b>hmac-md5-96</b>   <b>hmac-md5-128</b>   <b>hmac-sha1-96</b>   <b>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</b> <i>port-num</i>	(Optional) Specifies the port number that is used to connect to the SSH server. The port number is 22 by default.
<i>ip-addr</i>   <i>hostname</i>	(Mandatory) Specifies the IPv4/IPv6 address or host name for the SSH server,
<b>via</b> <i>mgmt-name</i>	Specifies the MGMT interface for the <b>oob</b> parameter.
<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

## 11.18 ssh session

Use this command to restore the suspended SSH client session.

**ssh-session** *session-id*

Parameter	Parameter	Description
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 Examples** The following example restores the suspended SSH client session:

```
Ruijie# ssh-session 1
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 12 URPF Commands

### 12.1 clear ip urpf

Use this command to clear IPv4 URPF packet drop statistics.

**clear ip urpf** [ **interface** *interface-name* ]

Parameter Description	Parameter	Description
	<b>interface</b> <i>interface-name</i>	Clears statistics on the specified interface.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** If no interface is specified, IPv4 URPF packet drop statistics on all interfaces are cleared by default.

**Configuration Examples** The following example clears IPv4 URPF packet drop statistics on port GigabitEthernet 0/1.

```
Ruijie# clear ip urpf interface gigabitEthernet0/1
```

The following example clears IPv4 URPF packet drop statistics on all interfaces.

```
Ruijie# clear ip urpf
```

Related Commands	Command	Description
	<b>show ip urpf</b>	Displays the URPF configuration and statistics.

**Platform Description** N/A

### 12.2 ip verify unicast source reachable-via (Interface Configuration Mode)

Use this command to enable the IPv4 URPF feature in the interface configuration mode.

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

**ip verify unicast source reachable-via** { **rx** | **any** } [ **allow-default** ]

**no ip verify unicast**

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



<b>rx</b>	URPF check in the strict mode. In the strict mode, the egress port for the forwarding entry in the forwarding list found through the source address for the IP packet shall be matched with the ingress port.
<b>any</b>	URPF check in the loose mode. In the loose mode, the forwarding entry for the source address for the IP packet can be found in the forwarding list.
<b>allow-default</b>	(Optional) Allows using the default route to check URPF.

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


**Command Mode** Interface configuration mode

**Usage Guide** To determine whether the route for the source address is in the forwarding list or not and the packet validity, enable the URPF feature to check the source address for the received IP packets. If no forwarding entry is matched, the packets are illegal.


Enabling URPF feature in the interface configuration mode enables URPF check for the received packets on the interface.

By default, the default route is not used for URPF check. Use the keyword `allow-default` to enable the URPF check.

 After this command is used, URPF check on IPv4 packets will be enabled.

 This function is supported only on routed and Layer 3 interfaces, and have the following restrictions:

- Not support to use the IPv6 route with prefix in 65 to 127 bits for the URPF check;
- After enabling the URPF feature, the range of packets received on the interface will be expanded, that is, the URPF feature is enabled for all packets received on the physical ports.
- After enabling the URPF feature, it halves the route forwarding capacity.
- After enabling the URPF feature in the strict mode, the user can match the equivalent route when URPF check is enabled for the packets received on the interface.

 URPF feature cannot be configured in the global configuration mode and in the interface configuration mode at the same time.

**Configuration Examples** The following example checks the URPF feature of the received packets in the strict mode on the interface GigabitEthernet 0/1.

```
Ruijie(config)# interface gigabitEthernet0/1
Ruijie(config-if-GigabitEthernet 0/1)# ip verify unicast source reachable-via rx
```

**Related Commands**

Command	Description
<code>show ip urpf</code>	Displays the URPF information.

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

## 12.3 ip verify urpf drop-rate compute interval

Use this command to set the URPF drop-rate compute interval.

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

**ip verify urpf drop-rate compute interval** *seconds*

**no ip verify urpf drop-rate compute interval**

Parameter Description	Parameter	Description
	<i>seconds</i>	Sets the URPF drop-rate compute interval, in the range from 30 to 300 in the unit of seconds.

**Defaults** The default is 30 seconds.

**Command Mode** Global configuration mode

**Usage Guide** The URPF drop-rate is computed globally for both IPv4 and IPv6 packets on interfaces enabled with URPF.

**Configuration Examples** The following example sets the URPF drop-rate compute interval as 60 seconds.

```
Ruijie(config)# ip verify urpf drop-rate compute interval 60
```

Related Commands	Command	Description
	<b>ip verify urpf drop-rate notify</b>	Sets the URPF drop-rate information monitoring.
	<b>ip verify urpf drop-rate notify hold-down</b>	Sets the URPF drop-rate warning interval.
	<b>ip verify urpf notification threshold</b>	Sets the URPF drop-rate threshold.

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

## 12.4 ip verify urpf drop-rate notify

Use this command to enable the URPF drop-rate monitoring.

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

**ip verify urpf drop-rate notify**

**no ip verify urpf drop-rate notify**

**default ip verify urpf drop-rate notify**

Parameter Description	Parameter	Description
	N/A	N/A

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

**Command Mode** Interface configuration mode

**Usage Guide** This command is used to enable the URPF drop-rate monitoring, notifying the user of the URPF packet drop information by means of Syslog or Trap for the convenience of the user network monitoring.

**Configuration Examples** The following example enables the URPF drop-rate monitoring on port GigabitEthernet 0/1.

```
Ruijie(config)# interface gigabitEthernet0/1
Ruijie(config-if-GigabitEthernet 0/1)# ip verify urpf drop-rate notify
```

Related Commands	Command	Description
	<b>ip verify urpf drop-rate compute interval</b>	Sets the URPF drop-rate compute interval.
	<b>ip verify urpf drop-rate notify hold-down</b>	Sets the URPF drop-rate warning interval.
	<b>ip verify urpf notification threshold</b>	Sets the URPF drop-rate threshold.

**Platform Description** N/A

## 12.5 ip verify urpf drop-rate notify hold-down

Use this command to set the URPF drop-rate notification interval.

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

**ip verify urpf drop-rate notify hold-down** *seconds*

**no ip verify urpf drop-rate notify hold-down**

Parameter Description	Parameter	Description
	<i>seconds</i>	Sets the URPF drop-rate notification interval, in the range from 30 to 300 in the unit of seconds.

**Defaults** The default is 300 seconds.

**Command Mode** Global configuration mode

**Usage Guide** N/A

**Configuration** The following example sets the URPF drop-rate notification interval as 60 seconds.

**Examples**

```
Ruijie(config)# ip verify urpf drop-rate notify hold-down 60
```

Related Commands	Command	Description
		<b>ip verify urpf drop-rate compute interval</b>
	<b>ip verify urpf drop-rate notify</b>	Sets the URPF drop-rate monitoring.
	<b>ip verify urpf notification threshold</b>	Sets the URPF drop-rate threshold.

**Platform** N/A

**Description**

## 12.6 ip verify urpf notification threshold

Use this command to set the URPF drop-rate threshold.

Use the **no** form of this command to restore the default setting.

**ip verify urpf notification threshold** *rate-value*

**no ip verify urpf notification threshold**

Parameter Description	Parameter	Description
		<b>threshold</b> <i>rate-value</i>

**Defaults** The default is 1,000 pps.

**Command** Interface configuration mode

**Mode**

**Usage Guide** The threshold 0 indicates that once the device detects a dropped packet due to the IPv4 URPF check, the notification is sent.

The user can adjust the drop-rate threshold value according to the actual network performance.

**Configuration** The following example sets the URPF drop-rate threshold 10pps on the interface GigabitEthernet 0/1.

**Examples**

```
Ruijie(config)# interface gigabitEthernet0/1
Ruijie(config-if-GigabitEthernet 0/1)# ipv6 verify urpf drop-rate notify
Ruijie(config-if-GigabitEthernet 0/1)# ipv6 verify urpf notification
threshold 10
```

Related Commands	Command	Description
		<b>ip verify urpf drop-rate compute interval</b>

<b>ip verify urpf drop-rate notify</b>	Sets the URPF drop-rate information monitoring.
<b>ip verify urpf drop-rate notify hold-down</b>	Sets the URPF drop-rate notification interval.

**Platform** N/A

**Description**

## 12.7 show ip urpf

Use this command to display the IPv4 URPF configuration and statistics.

**show ip urpf [ interface *interface-name* ]**

Parameter	Parameter	Description
<b>Description</b>	<b>interface <i>interface-name</i></b>	Displays the configuration and statistics on the specified interface.

**Defaults** N/A

**Command Mode** Privileged EXEC mode/Global configuration mode/Interface configuration mode

**Mode**

**Usage Guide** The global configuration and statistics of all interfaces are displayed by default.

**Configuration** The following example displays IPv4 URPF configuration and statistics on port GigabitEthernet 0/1.

**Examples**

```
Ruijie# show ip urpf interface gigabitEthernet0/21
IP verify source reachable-via RX
IP verify URPF drop-rate notify disabled
IP verify URPF notification threshold is 1000pps
Number of drop packets in this interface is 124
Number of drop-rate notification counts in this interface is 0
```

Field	Description
IP verify source reachable-via xx	xx in strict mode is displayed as RX and in loose mode as ANY.
IP verify URPF drop-rate notify xx	If drop rate notification is enabled, xx is displayed as enabled. Otherwise, it is displayed as disabled.
IP verify URPF notification threshold is xxpps	The threshold of URPF drop rate, in the range from 0 to 4294967295 in the unit of packets per second (pps). The default is 1000.
Number of drop packets in this interface is x	The number of drop packets
Number of drop-rate notification counts in this interface is x	The URPF drop-rate notification counts

The following example displays IPv4 URPF configuration and statistics.

```
Ruijie# show ip urpf
IP verify URPF drop-rate compute interval is 30s
IP verify URPF drop-rate notify hold-down is 300s

Interface GigabitEthernet 0/1
IP verify source reachable-via RX
IP verify URPF drop-rate notify disabled
IP verify URPF notification threshold is 1000pps
Number of drop packets in this interface is 124
Number of drop-rate notification counts in this interface is 2
```

Field	Description
IP verify URPF drop-rate compute interval is x	Drop-rate computing interval
IP verify URPF drop-rate notify hold-down is x	Drop-rate notification interval
Interface interface-name	interface-name is the name of the interface on which URPF is applied. Configuration and statistics on this interface are displayed.

**Related Commands**

Command	Description
<b>ip verify unicast source reachable-via</b>	Enables the URPF features.
<b>ip verify urpf drop-rate compute interval</b>	Sets the URPF drop-rate compute interval.
<b>ip verify urpf drop-rate notify hold-down</b>	Sets the URPF drop-rate warning interval.
<b>ip verify urpf notification threshold</b>	Sets the URPF drop-rate threshold.
<b>clear ip urpf</b>	Clears the URPF statistical information.

**Platform** N/A  
**Description**

## 13 CPU Protection Commands

### 13.1 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**

## 13.2 clear cpu-protect-counters mboard

Use this command to clear the CPP statistics on the supervisor module.

**clear cpu-protect counters mboard**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration Examples** The following example clears the CPP statistics on the supervisor module.

```
Ruijie(config)#show cpu-protect type bpdu
Packet Type      Traffic-class  Bandwidth(pps)  Rate(pps)  Drop(pps)
Total    Total Drop
-----
-----
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**



## 13.3 cpu-protect 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** Global configuration mode

**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           0           0
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 13.4 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**

<b>Parameter Description</b>	Parameter	Description
	<i>bandwidth_value</i>	An integer number ranges from 0 to 100,000 (PPS). Indicates the bandwidth value of the CPU port.
<b>Defaults</b>	The default CPU port bandwidth varies with products.	
<b>Command Mode</b>	Global configuration mode	
<b>Usage Guide</b>	N/A	
<b>Configuration Examples</b>	The following example sets the CPU port bandwidth to 32,000pps.	
	<pre>Ruijie# configure terminal Ruijie(config)# cpu-protect cpu bandwidth 32000 Ruijie#show cpu-protect cpu %cpu port bandwidth: 32000(pps)</pre>	
<b>Related Commands</b>	Command	Description
	N/A	N/A
<b>Platform Description</b>	N/A	

## 13.5 cpu-protect traffic-class bandwidth

Use this command to configure the bandwidth for each priority queue. Use the **no** form of this command to restore the default setting.

**cpu-protect traffic-class** *traffic-class-num* **bandwidth** *bandwidth\_value*

**no cpu-protect traffic-class** *traffic-class-num* **bandwidth**

<b>Parameter Description</b>	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.
<b>Defaults</b>	The default bandwidth of each priority queue varies with products.	
<b>Command Mode</b>	Global configuration mode	

**Usage Guide** N/A

**Configuration** The following example s sets the priority queue 5 to 3500 pps.

**Examples**

```
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** N/A

**Description**

## 13.6 cpu-protect type traffic-class

Use this command to set the priority queue (PQ) of the packet.

Use the **no** form of this command to restore the default setting.

**cpu-protect type** *packet-type* **traffic-class** *traffic-class-num*

**no cpu-protect type** *packet-type* **traffic-class**

**Parameter  
Description**

Parameter	Description
<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** Global configuration mode

**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
```

```

-----
-----
bpd          5          200          0          0          0          0

```

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A**Description**

## 13.7 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** All configuraiton mode**Mode****Usage Guide** N/A**Configuration** The following example displays all CPP configuration and statistics of a line card.**Examples**

```

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
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
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

## 13.8 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

## 13.9 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
larp                  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
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**

## 13.10 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 Mode** All configuration modes

**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
	Drop					Total
	-----	-----	-----	-----	-----	-----
	-----					
	bpdu	6	128	0	0	0
	arp	3	10000	0	0	0
	arp-dai	3	10000	0	0	0
	arp-proxy	3	10000	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
larp	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
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**

## 13.11 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** All configuration modes

**Mode**

**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** N/A

**Description**

## 13.12 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  
Description**

Parameter	Description
<i>packt-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** All configuration modes

**Mode**

**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
```

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 14 DHCP Snooping Commands

### 14.1 clear ip dhcp snooping binding

Use this command to delete the dynamic user information from the DHCP Snooping binding database.


**clear ip dhcp snooping binding** [ *ip* ] [ *mac* ] [ **vlan** *vlan-id* ] [ **interface** *interface-id* ]

Parameter Description	Parameter	Description
	<i>mac</i>	Specifies the user MAC address to be cleared.
	<i>vlan-id</i>	Specifies the ID of the VLAN to be cleared.
	<i>ip</i>	Specifies the IP address to be cleared.
	<i>interface-id</i>	Specifies the ID of the interface to be cleared.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** Use this command to clear the current dynamic user information from the DHCP Snooping binding database.

 After this command is used, all the DHCP clients connecting interfaces with IP Source Guard function enabled should request IP addresses again, or they cannot access network.

**Configuration Examples** The following example clears the dynamic database information from the DHCP Snooping binding database.

```
Ruijie# clear ip dhcp snooping binding
Ruijie# show ip dhcp snooping binding
Total number of bindings: 0
MACAddress IPAddress Lease(sec) Type VLAN Interface
-----
```

Related Commands	Command	Description
	<b>show ip dhcp snooping binding</b>	Displays the information of the DHCP Snooping binding database.

**Platform Description** N/A

## 14.2 ip dhcp snooping

Use this command to enable the DHCP Snooping function globally.

Use the **no** form of this command to restore the default setting.

**ip dhcp snooping**

**no ip dhcp snooping**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** This function is disabled by default.

**Command** Global configuration mode

**Mode**

**Usage Guide** The **show ip dhcp snooping** command is used to display whether the DHCP Snooping function is enabled.

**Configuration** The following example enables the DHCP Snooping function.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping
Ruijie(config)# end
```

Related Commands	Command	Description
	<b>show ip dhcp snooping</b>	Displays the configuration information of DHCP Snooping.
	<b>ip dhcp snooping vlan</b>	Configures DHCP Snooping enabled VLAN.

**Platform** N/A

**Description**

## 14.3 ip dhcp snooping bootp-bind

Use this command to enable DHCP Snooping BOOTP-bind function.

Use the **no** form of this command to restore the default setting.

**ip dhcp snooping bootp-bind**

**no ip dhcp snooping bootp-bind**

Parameter Description	Parameter	Description
	N/A	N/A



**Defaults** This function is disabled by default.

**Command Mode** Global configuration mode

**Usage Guide** By default, the DHCP Snooping only forwards BOOTP packets. With this function enabled, it can Snoop BOOTP packets. After the BOOTP client requests an address successfully, the DHCP Snooping adds the BOOTP user to the static binding database.

**Configuration Examples** The following example enables the DHCP Snooping BOOTP-bind function.

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping bootp-bind
Ruijie(config)# end
```

**Related Commands**

Command	Description
<b>show ip dhcp snooping</b>	Displays the DHCP Snooping configuration.

**Platform Description** N/A

## 14.4 ip dhcp snooping check-giaddr

Use this command to enable DHCP Snooping to support the function of processing Relay requests. Use the **no** form of this command to restore the default setting.

**ip dhcp snooping check-giaddr**  
**no ip dhcp snooping check-giaddr**

**Parameter Description**

Parameter	Description
N/A	N/A

**Defaults** This function is disabled by default.

**Command Mode** Global configuration mode

**Usage Guide** After the feature is enabled, services using DHCP Snooping binding entries generated based on Relay requests, such as IP Source Guard/802.1x authentication, cannot be deployed. Otherwise, users fail to access the Internet.

After the feature is enabled, the **ip dhcp snooping verify mac-address** command cannot be used. Otherwise, DHCP Relay requests will be discarded and as a result, users fail to obtain addresses.

**Configuration** The following example enables DHCP Snooping to support the function of processing Relay requests.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping check-giaddr
Ruijie(config)# end
```

**Related Commands**

Command	Description
<b>show ip dhcp snooping</b>	Displays the configuration information of the DHCP Snooping.

**Platform** N/A

**Description**

## 14.5 ip dhcp snooping database write-delay

Use this command to configure the switch to write the dynamic user information of the DHCP Snooping binding database into the flash periodically.

Use the **no** form of this command to restore the default setting.

**ip dhcp snooping database write-delay** *time*

**no ip dhcp snooping database write-delay**

**Parameter Description**

Parameter	Description
<i>time</i>	The interval at which the system writes the dynamic user information of the DHCP Snooping database into the flash, in the range from 600 to 86,400 in the unit of seconds

**Defaults** This function is disabled by default.

**Command Mode** Global configuration mode

**Usage Guide** This function writes user information into flash in case of loss after restart. In that case, users need to obtain IP addresses again for normal communication.

 Too fast writing will reduce flash durability.

**Configuration Examples** The following example sets the interval at which the switch writes the user information into the flash to 3,600 seconds.

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping database write-delay 3600
```

```
Ruijie(config)# end
```

**Related  
Commands**

Command	Description
<b>show ip dhcp snooping</b>	Displays the configuration information of the DHCP Snooping.

**Platform** N/A**Description**

## 14.6 ip dhcp snooping database write-to-flash

Use this command to write the dynamic user information of the DHCP binding database into flash in real time.

**ip dhcp snooping database write-to-flash**

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults** N/A**Command  
Mode** Global configuration mode**Usage Guide** This command is used to write the dynamic user information of the DHCP binding database into flash in real time.**Configuration** The following example writes the dynamic user information of the DHCP binding database into flash.**Examples**

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping database write-to-flash
Ruijie(config)# end
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A**Description**

## 14.7 ip dhcp snooping information option

Use this command to add option82 to the DHCP request message.

Use the **no** form of this command to restore the default setting.

**ip dhcp snooping information option [ standard-format ]**

**no ip dhcp snooping information option [ standard-format ]**


Parameter Description	Parameter	Description
	<b>standard-format</b>	The option82 uses the standard format.

**Defaults** This function is disabled by default,

**Command Mode** Global configuration mode

**Usage Guide** This command adds option82 to the DHCP request messages based on which the DHCP server assigns IP addresses.

By default, this function is in extended mode.

 DHCP Relay function adds option82 by default. Therefore, it is unnecessary to enable functions of DHCP Snooping option82 and DHCP Relay at the same time.

**Configuration** The following example adds option82 to the DHCP request message.

### Examples

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping information option
Ruijie(config)# end
```

Related Commands	Command	Description
	<b>show ip dhcp snooping</b>	Displays the DHCP Snooping configuration.

**Platform** N/A

**Description**

## 14.8 ip dhcp snooping information option format remote-id

Use this command to set the option82 sub-option remote-id as the customized character string.

Use the **no** form of this command to restore the default setting.

**ip dhcp snooping information option format remote-id { string *ascii-string* | hostname }**

**no ip dhcp snooping information option format remote-id { string *ascii-string* | hostname }**

Parameter	Parameter	Description
-----------	-----------	-------------

Description	
<b>string</b> <i>ascii-string</i>	The content of the option82 remote-id extension format is customized character string.
<b>hostname</b>	The content of the option82 remote-id extension format hostname

**Defaults** This function is disabled by default.

**Command** Global configuration mode

**Mode**

**Usage Guide** This command sets the remote-id in the option82 to be added to the DHCP request message as the customized character string. The DHCP server will assign the IP address according to the option82 information.

**Configuration Examples** The following example adds the option82 into the DHCP request packets with the content of remote-id as hostname.

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping information option format remote-id hostname
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 14.9 ip dhcp snooping suppression

Use this command to set the port to be the suppression status.

Use the **no** form of this command to restore the default setting.

**ip dhcp snooping suppression**

**no ip dhcp snooping suppression**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** This function is disabled by default.

**Command** Interface configuration mode

**Mode**

**Usage Guide** This command denies all DHCP request messages under the port, that is, all the users under the port are prohibited to request IP addresses through DHCP.

This command is only supported on Layer 2 switch interfaces and aggregate ports (APs).

**Configuration** The following example sets **fastEthernet 0/2** to be in the suppression status.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/2
Ruijie(config-if)# ip dhcp snooping suppression
Ruijie(config-if)# end
```

**Related Commands**

Command	Description
<b>show ip dhcp snooping</b>	Displays the DHCP Snooping configuration.

**Platform** N/A

**Description**

## 14.10 ip dhcp snooping trust

Use this command to set the trusted ports for DHCP Snooping.

Use the **no** form of this command to restore the default setting.

**ip dhcp snooping trust**

**no ip dhcp snooping trust**

**Parameter Description**

Parameter	Description
N/A	N/A

**Defaults** All ports are untrusted by default.

**Command** Interface configuration mode

**Mode**

**Usage Guide** Use this command to set a port as a trusted port. The DHCP response messages received under the trust port are forwarded normally, but the response messages received under the untrusted port will be discarded. This command is only supported on Layer 2 switch interfaces and aggregate ports (APs).

**Configuration** The following example sets fastEthernet 0/1 as a trusted port:

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip dhcp snooping trust
Ruijie(config-if)# end
```

**Related**

Command	Description
---------	-------------

Commands	
<b>show ip dhcp snooping</b>	Displays the DHCP Snooping configuration.

**Platform** N/A

**Description**

## 14.11 ip dhcp snooping verify mac-address

Use this command to check whether the source MAC address of the DHCP request message matches against the **client addr** field of the DHCP message.

Use the **no** form of this command to restore the default setting.

**ip dhcp snooping verify mac-address**

**no ip dhcp snooping verify mac-address**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** This function is disabled by default.

**Command** Global configuration mode

**Mode**

**Usage Guide** Use this command to check the source MAC address of the DHCP request message. If the MAC address in the link-layer header is different from the CHADDR (Client MAC Address), the check fails ,and the packets will be discarded.

**Configuration** The following example enables the check of the source MAC address of the DHCP request message.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping verify mac-address
Ruijie(config)# end
```

Related Commands	Command	Description
	<b>show ip dhcp snooping</b>	Displays the DHCP Snooping configuration.

**Platform** N/A

**Description**

## 14.12 ip dhcp snooping vlan

Use this command to enable DHCP Snooping for the specific VLAN.

Use the **no** form of this command to restore the default setting.

```
ip dhcp snooping vlan {vlan-rng | { vlan-min [ vlan-max ] }}
no ip dhcp snooping vlan {vlan-rng | { vlan-min [ vlan-max ] }}
```

Parameter Description	Parameter	Description
	<i>vlan-rng</i>	VLAN range of effective DHCP Snooping
	<i>vlan-min</i>	Minimum VLAN of effective DHCP Snooping
	<i>vlan-max</i>	Maximum VLAN of effective DHCP Snooping

**Defaults** By default, once the DHCP Snooping is enabled globally, it takes effect for all VLANs.

**Command Mode** Global configuration mode

**Usage Guide** Use this command to enable DHCP Snooping for specified VLANs globally.

**Configuration Examples** The following example enables the DHCP Snooping function in VLAN 1000.

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping vlan 1000
Ruijie(config)# end
```

Related Commands	Command	Description
	<b>ip dhcp snooping</b>	Enables DHCP Snooping globally.

**Platform Description** N/A

## 14.13 ip dhcp snooping vlan max-user

Use this command to set the maximum number of users bound with the VLAN.

Use the **no** form of this command to restore the default setting.

```
ip dhcp snooping vlan vlan-word max-user user-number
```

```
no ip dhcp snooping vlan vlan-word max-user user-number
```

Parameter Description	Parameter	Description
	<i>vlan-word</i>	The VLAN range
	<i>user-number</i>	The maximum number of users bound with the VLAN

**Defaults** This function is disabled by default.

**Command Mode** Interface configuration mode

**Usage Guide** Use this command to set the maximum number of users bound with the VLAN. This function combined with the corresponding topology can prevent illegal DHCP packet attacks.



**Configuration** The following example sets the maximum number of users bound with VLAN 1 to 10 and VLAN 20 to 30 respectively.

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# ip dhcp snooping vlan 1-10,20 max-user
30
Ruijie(config-if-GigabitEthernet 0/1)# end
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

## 14.14 ip dhcp snooping vlan information option change-vlan-to vlan

Use this command to enable the option82 sub-option circuit-id and change the VLAN in the circuit-id into the specified VLAN.

Use the **no** form of this command to restore the default setting.

**ip dhcp snooping vlan** *vlan-id* **information option change-vlan-to vlan** *vlan-id*

**no ip dhcp snooping vlan** *vlan-id* **information option change-vlan-to vlan** *vlan-id*

**Parameter  
Description**

Parameter	Description
<i>vlan-id</i>	The ID of the VLAN to be replaced

**Defaults** This function is disabled by default.

**Command** Interface configuration mode  
**Mode**

**Usage Guide** With this command configured, the option82 is added to the DHCP request packets, the circuit-id in the option82 information is the specified VLAN and the DHCP server will assign the addresses according to the option82 information.

**Configuration** The following adds the option82 to the DHCP request packets and changes the VLAN 4094 in the option82 sub-option circuit-id to VLAN93:

**Examples**

```
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip dhcp snooping vlan 4094 information option
change-vlan-to vlan 4093
Ruijie(config-if)# end
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 14.15 ip dhcp snooping vlan information option format-type circuit-id string

Use this command to configure the option82 sub-option circuit-id as user-defined (the storage format is ASCII) and to perform the packet forwarding.

Use the **no** form of this command to restore the default setting.

**ip dhcp snooping vlan** *vlan-id* **information option format-type circuit-id string** *ascii-string*

**no ip dhcp snooping vlan** *vlan-id* **information option format-type circuit-id string** *ascii-string*

Parameter Description	Parameter	Description
	<i>vlan-id</i>	
<i>ascii-string</i>		The user-defined content to fill to the Circuit ID

**Defaults** This function is disabled by default.

**Command Mode** Interface configuration mode

**Usage Guide** This command is used to add the option82 to the DHCP request packets. The content of the sub-option circuit-id is customized with 3 to 63 bytes, and the DHCP server will assign the addresses according the option82 information.

**Configuration Examples** The following example adds the option82 to the DHCP request packets with the content of the sub-option circuit-id as *port-name*.

```
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip dhcp snooping vlan 4094 information option format-type
circuit-id string port-name
Ruijie(config-if)# end
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 14.16 renew ip dhcp snooping database

Use this command to import the information in current flash to the DHCP Snooping binding database manually as needed.


**renew ip dhcp snooping database**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** This command is used to import the flash file information to the DHCP Snooping database in real time.

 Records out of lease time and repeated will be neglected.

**Configuration** The following example imports the flash file information to the DHCP Snooping database.

**Examples** Ruijie# renew ip dhcp snooping database

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 14.17 show ip dhcp snooping

Use this command to display the DHCP Snooping configuration.

**show ip dhcp snooping**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command** Privileged EXEC mode  
**Mode**

**Usage Guide** N/A

**Configuration** The following example displays the DHCP Snooping configuration.

**Examples**

```
Ruijie# show ip dhcp snooping
Switch DHCP snooping status :ENABLE
Verification of hwaddr field status :DISABLE
DHCP snooping database write-delay time: 0 seconds
DHCP snooping option 82 status: ENABLE
DHCP snooping Support Bootp bind status: ENABLE
Interface                                     Trusted                                     Rate
limit(pps)
-----
-----
GigabitEthernet 0/4                          YES                                     unlimited
Default                                       No
```

**Related  
Commands**

Command	Description
<b>ip dhcp snooping</b>	Enables the DHCP Snooping globally.
<b>ip dhcp snooping verify mac-address</b>	Enables the check of source MAC address of DHCP Snooping packets.
<b>ip dhcp snooping write-delay</b>	Sets the interval of writing user information to FLASH periodically.
<b>ip dhcp snooping information option</b>	Adds option82 to the DHCP request message.
<b>ip dhcp snooping bootp-bind</b>	Enables the DHCP Snooping bootp bind function.
<b>ip dhcp snooping trust</b>	Sets the port as a trust port.

**Platform** N/A

**Description**

## 14.18 show ip dhcp snooping binding

Use this command to display the information of the DHCP Snooping binding database.

**show ip dhcp snooping binding**

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** This command is used to display all the information of the DHCP Snooping binding database.

**Configuration** 1: The following example displays the information of the DHCP Snooping binding database.

**Examples**

```
Ruijie# show ip dhcp snooping binding
Total number of bindings: 1
NO.    MACADDRESS          IPADDRESS      LEASE (SEC)   TYPE          VLAN
INTERFACE
-----
-----
1      0000.0000.0001      1.1.1.1       78128        DHCP-Snooping 1
GigabitEthernet 0/1
```

Parameter	Description
Total number of bindings	The total number of bindings in the DHCP Snooping database.
NO.	The record order.
MacAddress	The MAC address of the user.
IpAddress	The IP address of the user.
Lease(sec)	The lease time of the record.
Type	The record type.
VLAN	The VLAN where the user belongs.
Interface	The user's connection interface. It can be a either a wired access interface.

**Related Commands**

Command	Description
<b>ip dhcp snooping binding</b>	Adds the static user information to the DHCP Snooping database.
<b>clear ip dhcp snooping binding</b>	Clears the dynamic user information from the DHCP Snooping binding database.

**Platform Description** N/A

## 15 ARP-Check Commands

### 15.1 arp-check

Use this command to enable the ARP check function on the Layer 2 interface.

Use the **no** form of this command to restore the default setting.

**arp-check**

**no arp-check**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** This function is disabled by default.

**Command mode** Interface configuration mode

**Usage Guide** The ARP check function generates the ARP filtering information according to legal user information, implementing the illegal ARP packet filtering on the network.

**Configuration Examples** This following example enables the APR check function on interface GigabitEthernet 0/1.

```
Ruijie# configure terminal
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# arp-check
Ruijie(config-if-GigabitEthernet 0/1)# end
```

Related Commands	Command	Description
	<b>show interfaces arp-check list</b>	Displays the ARP check entries.

**Platform Description** N/A

### 15.2 show interfaces arp-check list

Use this command to display the ARP check entries on the Layer 2 interface.

**show { interface [ interface-type interface-number ] } arp-check list**

Parameter Description	Parameter	Description
-----------------------	-----------	-------------

<i>interface-type</i>	Wired interface type
<i>interface-number</i>	Wired interface number

**Command mode** Privileged EXEC mode

**Usage Guide** Use this command to display the ARP check entries.

**Configuration** The following example displays the ARP check entries.

**Examples**

```
Ruijie(config)#show interfaces arp-check list
```

INTERFACE	SENDER MAC	SENDER IP	POLICY SOURCE
GigabitEthernet 0/1	00D0.F800.0003	192.168.1.3	address-bind
GigabitEthernet 0/1	00D0.F800.0001	192.168.1.1	port-security
GigabitEthernet 0/4		192.168.1.3	port-security
GigabitEthernet 0/5	00D0.F800.0003	192.168.1.3	address-bind
GigabitEthernet 0/7	00D0.F800.0006	192.168.1.6	AAA ip-auth-mode
GigabitEthernet 0/8	00D0.F800.0007	192.168.1.7	GSN

Field	Description
INTERFACE	Interface name
SENDER MAC	Source MAC address
SENDER IP	Source IP address
POLICY SOURCE	Source of the entry

**Related Commands**

Command	Description
N/A	N/A

**Platform Description** N/A

## 16 DAI Commands

### 16.1 ip arp inspection trust

Use this command to configure the L2 port to a trusted port.

Use the **no** form of this command to restore the L2 port to an untrusted port.

**ip arp inspection trust**

**no ip arp inspection trust**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** The L2 port is untrusted.

**Command Mode** Interface configuration mode

**Usage Guide** If it is necessary to make the ARP message received by some interface pass the DAI inspection unconditionally, you can set the interface to a trusted port, indicating that you do not need to check whether the ARP message received by this interface is legal.

**Configuration Examples** The following example sets the gigabitEthernet 0/19 interface as the trusted port.

```
Ruijie# configure terminal
Ruijie(config)# interface gigabitEthernet 0/19
Ruijie(config-if-GigabitEthernet 0/19)# ip arp inspection trust
Ruijie(config-if-GigabitEthernet 0/19)# end
```

Related Commands	Command	Description
	<b>show ip arp inspection interface</b>	Displays related DAI information on the interface, including the trust state and rate limit of the interface.

**Platform Description** N/A

### 16.2 ip arp inspection vlan

Use this command to configure the DAI function on the VLAN.

Use the **no** form of this command to disable this function.



```
ip arp inspection vlan { vlan-id | word }
no ip arp inspection vlan { vlan-id | word }
```

**Parameter  
Description**

Parameter	Description
<i>vlan-id</i>	VLAN ID, ranging from 1 to 4094
<i>word</i>	String of the VLAN range, such as 1,3-5,7,9-11

**Defaults** The DAI function on all VLANs is disabled by default.

**Command Mode** Global configuration mode

**Usage Guide** To make this command take effect, you need to enable the ARP Check function first,



Not all ports of the VLAN support the ARP packet detection function. For example, the DHCP Snooping Trust port does not support any security detection, including this function.

**Configuration Examples** The following example detects the received ARP packets on the VLAN1 interfaces:

```
Ruijie# configure terminal
Ruijie(config)# ip arp inspection
Ruijie(config)# ip arp inspection vlan 1
Ruijie(config)# end
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description** N/A

## 16.3 interface

Use this command to verify whether the interface is a DAI trust interface.

```
show ip arp inspection interface
```

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults** N/A

**Command  
Mode** Privileged EXEC mode

**Usage Guide** Use this command to verify whether the interface is a DAI trust interface.

**Configuration** The following example verifies the DAI trust state of all :

**Examples**

```
Ruijie#show ip arp inspection interface
Interface          Trust State
-----
GigabitEthernet 0/1    Trusted
Default              Untrusted
```

Parameter Description:

Parameter	Description
Interface	Interface name.
Trust State	DAI trust state.

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 16.4 show ip arp inspection vlan

Use this command to verify whether the DAI function on the VLAN is enabled.

**show ip arp inspection vlan** [ *vlan-id* | *word* ]

**Parameter Description**

Parameter	Description
<i>vlan-id</i>	VLAN ID, ranging from 1 to 4094
<i>word</i>	String of the VLAN range, such as 1,3-5,7,9-11

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** Use this command to verify whether the DAI function on the VLAN is enabled.

**Configuration** The following example verifies whether the DAI function on the VLAN is enabled:

**Examples**

```
Ruijie# show ip arp inspection vlan
Vlan    Configuration
-----
1                               Active
```

Parameter Description:

---

Parameter	Description
Vlan	VLAN number.
Configuration	DAI status (active / inactive)

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 17 IP Source Guard Commands

### 17.1 ip source binding

Use this command to add static user information to IP source address binding database.

Use the **no** form of this command to delete static user information from IP source address binding database.

**ip source binding** *mac-address* { **vlan** *vlan-id* } *ip-address* { **interface** *interface-id* | **ip-mac** | **ip-only** }

**no ip source binding** *mac-address* { **vlan** *vlan-id* } *ip-address* { **interface** *interface-id* | **ip-mac** | **ip-only** }

#### Parameter Description


Parameter	Description
<i>mac-address</i>	Adds user MAC address statically.
<i>vlan-id</i>	Adds user VLAN ID statically.
<i>ip-address</i>	Adds user IP address statically.
<i>interface-id</i>	Adds user interface ID statically.
<b>ip-mac</b>	The global binding type is IP+MAC
<b>ip-only</b>	The global binding type is IP only.

**Defaults** No static address is added by default.

**Command Mode** Global configuration mode

**Usage Guide** This command allows specific clients to go through IP source guard detection instead of DHCP. This command is supported on the wired L2 switching port, AP port, and sub interface. This command enables global binding for IP source guard so that specific clients will get detected on all interfaces.

 A static IPv6 source binding is valid either on wired or in global configuration mode.

 A new binding will overwrite the old one sharing the same configuration.

#### Configuration

The following example adds the interface ID of static users.

#### Examples

```
Ruijie# configure terminal
Ruijie(config)# ip source binding 0000.0000.0001 vlan 1 1.1.1.1 interface
GigabitEthernet 0/1
Ruijie(config)# end
```

The following example adds static user information based on IP-MAC binding.

```
Ruijie# configure terminal
Ruijie(config)# ip source binding 0000.0000.0001 vlan 1 1.1.1.1 ip-mac
```

```
Ruijie(config)# end
```

The following example adds static user information based on IP binding.

```
Ruijie# configure terminal
Ruijie(config)# ip source binding 0000.0000.0001 vlan 1 1.1.1.1 ip-only
Ruijie(config)# end
```

**Related Commands**

Command	Description
<b>show ip source binding</b>	Displays the binding information of IP source address and database.

**Platform Description** N/A

## 17.2 ip verify source

Use this command to enable IP Source Guard function on the interface.

Use the **no** form of this command to restore the default setting.

**ip verify source [ port-security ]**

**no ip verify source**

**Parameter Description**


Parameter	Description
<b>port-security</b>	Configures IP Source Guard to do IP+MAC-based detection.

**Defaults** This function is disabled by default.

**Command Mode** Interface configuration mode

**Usage Guide** This command enables IP Source Guard function on the interface to do IP-based or IP+MAC-based detection.

This command is supported on the wired L2 switching port, AP port, and sub interface.

 IP Source Guard takes effect only on DHCP Snooping untrusted port. In other words, IP Source Guard does not take effect when configuring it on Trust port or the port which is not controlled by DHCP Snooping.

**Configuration Examples** The following example enables IP-based IP Source Guard function.

```
Ruijie# configure terminal
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# ip verify source
Ruijie(config-if)# end
```

The following example enables IP+MAC-based IP Source Guard function.

```
Ruijie# configure terminal
Ruijie(config)# interface GigabitEthernet 0/2
Ruijie(config-if-GigabitEthernet 0/2)# ip verify source port-security
Ruijie(config-if)# end
```

#### Related Commands

Command	Description
<b>show ip verify source</b>	Displays user filtering entry of IP Source Guard.

**Platform** N/A  
**Description**

## 17.3 ip verify source exclude-vlan

Use this command to exclude a VLAN from the IP source guard configuration on the port.

Use the **no** form of this command to restore the function.

**ip verify source exclude-vlan** *vlan-id*

**no ip verify source exclude-vlan** *vlan-id*

#### Parameter Description

Parameter	Description
<i>vlan-id</i>	The ID of VLAN excluded from the IP source guard configuration.

**Defaults** This function is disabled by default.

**Command Mode** Interface configuration mode

#### Usage Guide

- ✔ This command is used to exclude a VLAN from the IP source guard configuration. IP packets in this VLAN are forwarded without being checked and filtered.
  - ✔ Once the IP source guard function is disabled, the excluded VLAN is cleared automatically.
  - ✔ This command is supported on the wired L2 switching port, AP port, and sub interface.
- 
- i** Only when the IP source guard configuration is enabled on the port can a VLAN be excluded.

**Configuration Examples** The following example configuration configures the IP source guard configuration for the port and excludes a VLAN.

```
Ruijie# configure terminal
Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# ip verify source
```

```
Ruijie(config-if-GigabitEthernet 0/1)# ip verify exclude-vlan 1
Ruijie(config-if)# end
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform** N/A**Description**

## 17.4 show ip source binding

Use this command to display the binding information of IP source addresses and database.

```
show ip source binding [ ip-address ] [ mac-address ] [ dhcp-snooping ] [ static ] [ vlan vlan-id ]
[ interface interface-id ]
```

**Parameter  
Description**

Parameter	Description
<i>ip-address</i>	Displays user binding information of corresponding IP.
<i>mac-address</i>	Displays user binding information of corresponding MAC.
<b>dhcp-snooping</b>	Displays binding information of dynamic user.
<b>static</b>	Displays binding information of static user.
<i>vlan-id</i>	Displays user binding information of corresponding VLAN.
<i>interface-id</i>	Displays user binding information of corresponding interface.

**Defaults** N/A**Command  
Mode** Privileged EXEC mode**Usage Guide** N/A

**Configuration  
Examples** The following example displays the binding information of IP source guard addresses and database.

```
Ruijie# show ip source binding static
Ruijie#show ip source binding static
Total number of bindings: 5
NO.    MACADDRESS          IPADDRESS          LEASE (SEC)    TYPE          VLAN    INTERFACE
-----
1      0001.0002.0001     1.2.3.2           Infinite       Static        1      Global
2      0001.0002.0002     1.2.3.3           Infinite       Static        1      GigabitEthernet
0/5
3      0001.0002.0003     1.2.3.4           Infinite       Static        1      Global
```

4	0001.0002.0004	1.2.3.5	Infinite	Static	1	Global
---	----------------	---------	----------	--------	---	--------

**Related Commands**

Command	Description
<b>ip source binding</b>	Sets the binding static user.

**Platform** N/A

**Description**

## 17.5 show ip verify source

Use this command to display user filtering entry of IP Source Guard.

**show ip verify source [ interface *interface-id* ]**

**Parameter Description**

Parameter	Description
<i>interface-id</i>	Displays user filtering entry of corresponding interface.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** If IP Source Guard is not enabled on the corresponding interface, the printing information will be shown on the terminal as: "IP source guard is not configured on the interface FastEthernet 0/10"  
 Now, IP Source Guard supports the following filtering modes:

- **inactive-restrict-off**: the IP Source Guard is disabled on bound interfaces.
- **inactive--not-apply**: the IP Source Guard cannot adds bound entries into filtering entries for system errors.
- **active**: the IP Source Guard is active.

**Configuration Examples** The following example displays user filtering entry of IP Source Guard.

```
Ruijie # show ip verify source
Total number of bindings: 7
NO.   INTERFACE          FILTERTYPE  FILTERSTATUS      IPADDRESS
MACADDRESS  VLAN  TYPE
-----
-----
1     Global              IP+MAC     Inactive-not-apply 192.168.0.127
0001.0002.0003 1 Static
2     GigabitEthernet 0/5 IP-ONLY     Active             1.2.3.4
0001.0002.0004 1 DHCP-Snooping
3     Global              IP-ONLY     Active             1.2.3.7
0001.0002.0007 1 Static
```



```

4      Global          IP+MAC      Active          1.2.3.6
0001.0002.0006 1 Static
5      GigabitEthernet 0/1 UNSET      Inactive-restrict-off 1.2.3.9
0001.0002.0009 1 DHCP-Snooping
6      GigabitEthernet 0/5 IP-ONLY    Active          Deny-All

```

**Related  
Commands**

Command	Description
<code>ip verify source</code>	Sets IP Source Guard on the interface.

**Platform  
Description**

N/A

## 18 NFPP Commands

### 18.1 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 Mode** NFPP configuration mode.

**Usage Guide** The attack threshold shall be equal to or greater than the rate-limit threshold.

**Configuration Examples** The following example sets the global attack threshold.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard attack-threshold per-src-ip 2
Ruijie(config-nfpp)# arp-guard attack-threshold per-src-mac 3
Ruijie(config-nfpp)# arp-guard attack-threshold per-port 50
```

Related Commands	Command	Description
	<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 Description** N/A

## 18.2 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** N/A

**Description**

## 18.3 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**

## 18.4 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>	
<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**

## 18.5 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>	

**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**

## 18.6 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** 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 arp guard monitor time to 180 seconds.

**Examples**

```
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**

## 18.7 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

## 18.8 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**

## 18.9 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**

## 18.10 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

## 18.11 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
	<b>arp-guard attack-threshold</b>	Sets the global attack threshold.
	<b>nfpp arp-guard policy</b>	Sets the attack threshold.
	<b>show nfpp arp-guard scan</b>	Displays the ARP scanning table.

**Platform** N/A

**Description**

## 18.12 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>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
		<b>show nfpp define hosts</b>

**Platform** N/A

**Description**

## 18.13 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>
	<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
		<b>dhcp-guard attack-threshold</b>
	<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**

## 18.14 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** Privileged EXEC mode

**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**

## 18.15 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
<b>icmp-guard attack-threshold</b>	Sets the global attack threshold.
<b>nfpp icmp-guard policy</b>	Sets the limit threshold and attack threshold.
<b>show nfpp icmp-guard hosts</b>	Displays the monitored host.

**Platform** N/A

**Description**

## 18.16 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
	<code>ip-guard attack-threshold</code>	Sets the global attack threshold.
	<code>nfpp ip-guard policy</code>	Sets the limit threshold and attack threshold.
	<code>show nfpp ip-guard hosts</code>	Displays the monitored host.

Platform N/A

Description

## 18.17 clear nfpp log

Use this command to clear the NFPP log buffer area.

**clear nfpp log**

Parameter Description	Parameter	Description
	N/A	N/A

Defaults N/A

Command Privileged EXEC mode  
Mode

Usage Guide N/A

Configuration The following example clears the NFPP log buffer area.

Examples 

```
Ruijie# clear nfpp log
```

Related Commands	Command	Description
	<code>show nfpp log</code>	Displays the NFPP log configuration or the log buffer area.

Platform N/A

Description

## 18.18 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**

## 18.19 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**

Parameter Description	Parameter	Description
	<i>percent_value</i>	The percent value, in the range from 1 to 100.

**Defaults** The default percent values of each type of packets occupied in the buffer area are:

Manage packets: 30;

Route packets: 25;

Protocol packets: 45.

**Command Mode** Global configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example sets the percent value of management packets in the buffer area to 60.

```
Ruijie(config)# cpu-protect sub-interface manage percent 60
```

Related Commands	Command	Description
	<b>cpu-protect sub-interface { manage   protocol   route } pps</b>	Configures the traffic bandwidth of each type of packets.

Platform N/A

Description

## 18.20 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 Examples** The following example sets the traffic bandwidth of management packets to 2,000 pps.

```
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

## 18.21 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** NFPP configuration mode

**Mode**

**Usage Guide** Use this command to define the anti-attack type.

**Configuration** The following example creates the user-defined anti-attack type.

**Examples**

```
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** N/A

**Description**

## 18.22 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** NFPP configuration mode

**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**

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)#define tcp enable
```

**Related  
Commands**

Command	Description
<b>show nfpp define summary</b>	Displays the user-defined anti-attack configuration

**Platform** N/A

**Description**

## 18.23 dhcp-guard attack-threshold

Use this command to set the global attack threshold. When the packet rate exceeds the attack threshold, the attack occurs.

Use the **no** or **default** form of this command to restore the default setting.

**dhcp-guard attack-threshold { per-src-mac | per-port } pps**

**no dhcp-guard attack-threshold { per-src-mac | per-port }**

**default dhcp-guard attack-threshold { per-src-mac | per-port }**

**Parameter  
Description**

Parameter	Description
<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.

**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)# dhcp-guard attack-threshold per-src-mac 15
Ruijie(config-nfpp)# dhcp-guard attack-threshold per-port 200
```

**Related**

Command	Description
---------	-------------

Commands	
<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**

## 18.24 dhcp-guard enable

Use this command to enable the DHCP anti-attack function.

Use the **no** or **default** form of this command to restore the default setting.

**dhcp-guard enable**

**no dhcp-guard enable**

**default dhcp-guard enable**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** This function is disabled by default.

**Command Mode** NFPP configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example enables the DHCP anti-attack function.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard enable
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 18.25 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** NFPP configuration mode

**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)# 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**

## 18.26 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**

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 20000 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)# dhcp-guard monitored-host-limit 200
```

**Related Commands**

Command	Description
<b>show nfpp dhcp-guard summary</b>	Displays the configuration.

**Platform Description** N/A

## 18.27 dhcp-guard monitor-period

Use this command to configure the monitor time.

Use the **no** or **default** form of this command to restore the default setting.

**dhcp-guard monitor-period** *seconds*

**no dhcp-guard monitor-period**

**default dhcp-guard monitor-period**

**Parameter Description**

Parameter	Description
<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)# 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**

## 18.28 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**

## 18.29 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**

## 18.30 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** NFPP configuration mode

**Mode**

**Usage Guide** N/A

**Configuration** The following example enables the DHCPv6 anti-attack function globally.

**Examples**

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcpv6-guard enable
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

## 18.31 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** The following example sets the maximum monitored host number to 200.

**Examples**

```
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** N/A

**Description**

## 18.32 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** 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)# 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**

## 18.33 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**

## 18.34 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 policy</i>	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**

## 18.35 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**

### 18.36 icmp-guard enable

Use this command to enable the ICMP anti-attack function.

Use the **no** or **default** form of this command to restore the default setting.

**icmp-guard enable**

**no icmp-guard enable**

**default icmp-guard enable**

**Parameter Description**

Parameter	Description
N/A	N/A

**Defaults** This function is enabled by default.

**Command Mode** NFPP configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example enables the ICMP anti-attack function globally.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard enable
```

**Related Commands**

Command	Description
<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**

## 18.37 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** NFPP configuration mode

**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**

## 18.38 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 Examples** The following example sets the maximum monitored host number to 200.

```
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 Description** N/A

## 18.39 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** The following example sets the monitor time to 180 seconds.

**Examples**

```
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**

## 18.40 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** The following example sets the rate-limit threshold globally.

**Examples**

```
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** N/A

**Description**

## 18.41 icmp-guard trusted-host

Use this command to set the trusted hosts free form monitoring.

Use the **no** or **default** form of this command to restore the default setting.

**icmp-guard trusted-host** *ip mask*

**no icmp-guard trusted-host** { **all** | *ip mask* }

**default icmp-guard trusted-host**

**Parameter  
Description**

Parameter	Description
<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** NFPP 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 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
		<code>show nfpp icmp-guard trusted-host</code>

Platform N/A

Description

## 18.42 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>
	<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** NFPP configuration mode

**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 Commands	Command	Description
		<b>nfpp ip-guard policy</b>
	<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**

## 18.43 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	Parameter	Description
Description	N/A	N/A

**Defaults** This function is enabled by default.

**Command** NFPP configuration mode.

**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** The following example enables the IP guard globally.

**Examples**

```
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**

## 18.44 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	Parameter	Description
-----------	-----------	-------------

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** NFPP configuration mode

**Mode**

**Usage Guide** N/A.

**Configuration** The following example sets the isolate time globally to 180 seconds.

**Examples**

```
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** N/A

**Description**

## 18.45 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** 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)# 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**

## 18.46 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

## 18.47 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>	

**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 global scan threshold to 20 pps.

```
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

## 18.48 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** NFPP 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 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** N/A

**Description**

## 18.49 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**

Parameter Description	Parameter	Description
		N/A

**Defaults** Logs are stored in the cache by default.

**Command Mode** NFPP configuration mode

**Usage Guide** N/A

**Configuration** The following example displays logs on the screen.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# log-buffer enable
```

Related Commands	Command	Description
		N/A

**Platform Description** N/A

### 18.50 log-buffer entries

Use this command to set the NFPP log buffer area size.

Use the **no** or **default** form of this command to restore the default setting.

**log-buffer entries** *number*

**no log-buffer entries**

**default log-buffer entries**

Parameter Description	Parameter	Description
		<i>number</i>

**Defaults** The default is 256.

**Command Mode** NFPP configuration mode

**Usage Guide** N/A

**Configuration** The following example sets the NFPP log buffer area size.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# log-buffer entries 50
```



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**

## 18.51 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** NFPP configuration mode

**Mode**

**Usage Guide** N/A

**Configuration** The following example sets the rate of syslog generated from the NFPP log buffer area.

**Examples**

```
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

## 18.52 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** NFPP configuration mode

**Mode**

**Usage Guide** Use this command to filter the logs and records the logs within the specified VLAN range or the specified port

**Configuration** The following example records the logs in VLAN 1, VLAN 2, VLAN 3 and VLAN 5 only.

**Examples**

```
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**

## 18.53 match

Use this command to specify the message matching filed for the user-defined anti-attack.

```
match [ etype type ] [ src-mac smac [ src-mac-mask smac_mask ] ] [ dst-mac dmac
[ dst-mac-mask dst_mask ] ] [ protocol protocol ] [ src-ip sip [ src-ip-mask sip-mask ] ] [ src-ipv6
sipv6 [ src-ipv6-masklen sipv6-masklen ] ] [ dst-ip dip [ dst-ip-mask dip-mask ] ] [ dst-ipv6 dipv6
[ dst-ipv6-masklen dipv6-masklen ] ] [ src-port sport ] [ dst-port dport ]
```

**Parameter  
Description**

Parameter	Description
<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>sipv6</i>	Source IPv6 address
<i>sipv6_masklen</i>	Source IPv6 address mask
<i>dip</i>	Destination IPv4 address
<i>dip_mask</i>	Destination IPv4 address mask
<i>dipv6</i>	Destination IPv6 address
<i>dipv6_masklen</i>	Length of the destination IPv6 address mask.
<i>sport</i>	Source port
<i>dport</i>	Destination port

**Defaults** N/A

**Command** NFPP configuration mode  
**Mode**

**Usage Guide** Use this command to create a new user-defined anti-attack type and specify the message fields to be matched.

**Configuration** The following example specifies the message matching filed for the user-defined anti-attack.

**Examples**

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# nfpp define tcp
Ruijie(config-nfpp-define)#match etype 0x0800 protocol 0x06
```

Related Commands	Command	Description
		<b>show nfpp define summary</b>

Platform N/A

Description

## 18.54 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>

Defaults The default is 20,000.

Command NFPP define 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\_DEFINE-4-SESSION\_LIMIT: Attempt to exceed limit of name's 20,000 monitored hosts. to remind the administrator

**Configuration** The following example sets the maximum monitored host number.

**Examples**

```
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>

**Platform** N/A

**Description**

## 18.55 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**

## 18.56 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** NFPP configuration mode.

**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)# 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** N/A

**Description**

## 18.57 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

## 18.58 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**

## 18.59 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**

## 18.60 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**

## 18.61 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>
	<b>show nfpp arp-guard summary</b>	Displays the configuration.

**Platform** N/A  
**Description**

## 18.62 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>
	<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**

## 18.63 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**

## 18.64 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	Parameter	Description
<b>Description</b>	<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** Interface configuration mode

**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**

## 18.65 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 Examples** The following example enables the user-defined anti-attack function on the interface.

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp define tcp enable
```

Related Commands	Command	Description
	<b>show nfpp define summary</b>	Displays the user-defined anti-attack configuration.

**Platform Description** N/A

## 18.66 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 from1 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**

## 18.67 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

## 18.68 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** 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 on interface G0/1.

**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
	N/A	N/A

**Platform** N/A  
**Description**

## 18.69 nfpp dhcpv6-guard enable

Use this command to enable the DHCPv6 anti-attack function on the interface.

Use the **no** or **default** form of this command to restore the default setting.

**nfpp dhcpv6-guard enable**

**no nfpp dhcpv6-guard enable**

**default nfpp dhcpv6-guard enable**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** The DHCPv6 anti-attack function is not enabled on the interface.

**Command Mode** Interface configuration mode

**Usage Guide** The interface DHCPv6 anti- attack configuration is prior to the global configuration.

**Configuration Examples** The following example enables the DHCPv6 anti-attack function on interface G0/1.

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp dhcpv6-guard enable
```

Related Commands	Command	Description
	<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**

## 18.70 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	Parameter	Description
-----------	-----------	-------------



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** 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 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**

## 18.71 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**

## 18.72 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**

Command	Description
---------	-------------

Commands		
<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**

## 18.73 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** 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 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**

## 18.74 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** Interface configuration mode

**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**

## 18.75 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	Parameter	Description
-----------	-----------	-------------

<b>Description</b>		
	<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** 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 ip-guard isolate-period 180
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<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**

## 18.76 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** }

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<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** 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 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**

## 18.77 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** Interface configuration mode

**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**

## 18.78 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** Interface configuration mode

**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**

## 18.79 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 Mode** Interface configuration mode

**Usage Guide** The attack threshold value shall be equal to or greater than the rate-limit threshold.

**Configuration Examples** The following example sets the rate-limit threshold and the attack threshold.

```

Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp nd-guard policy per-port ns-na 50 100
Ruijie(config-if)# nfpp nd-guard policy per-port rs 10 20
Ruijie(config-if)# nfpp nd-guard policy per-port ra-redirect 10 20

```

Related Commands	Command	Description
	<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 Description** N/A

## 18.80 no all-guard enable

Use this command to disable all NFPP guards (except guards self-defined and enabled in interface configuration mode).

**no all-guard enable**

Use this command to enable all NFPP guards.

**all-guard enable**



Parameter	Parameter	Description
Description	N/A	N/A

**Command Mode** NFPP configuration mode

- Usage Guide**
- By default, all basic NFPP guards are enabled.
  - This global command supports basic NFPP guards including ARP-GUARD, IP-GUARD, ICMP-GUARD, DHCP-GUARD, DHCPv6-GUARD and ND-GUARD.
  - The **no** form command will disable all guards, which is displayed guard-by-guard by using the **show running-config** command. The exception is guards self-defined and configured in interface configuration mode.

**Configuration Examples**

```
Ruijie(config)#show running-config | begin nfpp
nfpp
log-buffer enable
arp-guard rate-limit per-port 201
arp-guard attack-threshold per-port 210
!
Ruijie(config)# nfpp
Ruijie(config-nfpp)#no all-guard enable
Ruijie(config-nfpp)#show running-config | begin nfpp
nfpp
log-buffer enable
no arp-guard enable
arp-guard rate-limit per-port 201
arp-guard attack-threshold per-port 210
no icmp-guard enable
no ip-guard enable
no dhcp-guard enable
no dhcpv6-guard enable
no nd-guard enable
!
Ruijie(config-nfpp)#all-guard enable
Ruijie(config-nfpp)#show running-config | begin nfpp
nfpp
log-buffer enable
arp-guard rate-limit per-port 201
arp-guard attack-threshold per-port 210
!
no service password-encryption
!
```

**Platform** N/A

## Description

## 18.81 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 Examples** The following example displays the statistical information of the monitored host.

```
Ruijie# show nfpp arp-guard hosts statistics
success    fail    total
-----    ----    -----
100        20     120
```

The following example shows the monitored host.

```
Ruijie# show nfpp arp-guard hosts
If column 1 shows '*', it means "hardware do not isolate user" .
VLAN interface IP address MAC address remain-time(s)
---- -
1 Gi0/1 1.1.1.1 - 110
2 Gi0/2 1.1.2.1 - 61
*3 Gi0/3 - 0000.0000.1111 110
4 Gi0/4 - 0000.0000.2222 61
Total:4 hosts
```

Related Commands	Command	Description
	<b>clear nfpp arp-guard hosts</b>	Clears the monitored hosts.

**Platform** N/A

## Description

## 18.82 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**

## 18.83 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**

## 18.84 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**

## 18.85 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**

## 18.86 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**

## 18.87 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**

## 18.88 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** Privileged EXEC mode

**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	Command	Description
---------	---------	-------------

Commands	
<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**

## 18.89 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** Privileged EXEC mode

**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
		<code>clear nfpp dhcpv6-guard hosts</code>

**Platform** N/A

**Description**

## 18.90 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** Privileged EXEC mode

**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**

## 18.91 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 Examples** The following example displays statistics of FW-guard monitored hosts.

```
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** N/A  
**Description**

## 18.92 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 Examples** The following example displays the FW-guard configuration.

```
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

## 18.93 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 Privileged EXEC mode  
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
	icmp-guard trusted-host	Sets the trusted host.

Platform N/A

Description

## 18.94 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 Description** N/A

## 18.95 show nfpp ip-guard summary

Use this command to display the configuration.

**show nfpp ip-guard summary**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** 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**

## 18.96 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** Privileged EXEC mode

**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**

## 18.97 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 Examples** The following example displays the NFPP log configuration.

```
Ruijie#show nfpp log summary
Total log buffer size : 10
Syslog rate : 1 entry per 2 seconds
Logging:
VLAN 1-3, 5
interface Gi 0/1
interface Gi 0/2
```

The following example displays the log number in the buffer area.

```
Ruijie#show nfpp log buffer statistics
There are 6 logs in buffer.
```

The following example shows the NFPP log buffer area:

```
Ruijie#show nfpp log buffer
Protocol VLAN Interface IP address MAC address Reason Timestamp
-----
ARP 1 Gi0/1 1.1.1.1 - DoS 2009-05-30
16:23:10
ARP 1 Gi0/1 1.1.1.1 - ISOLATED 2009-05-30
16:23:10
ARP 1 Gi0/1 1.1.1.2 - DoS 2009-05-30
16:23:15
ARP 1 Gi0/1 1.1.1.2 - ISOLATE_FAILED 2009-05-30
16:23:15
ARP 1 Gi0/1 - 0000.0000.0001 SCAN 2009-05-30
```

```
16:30:10
ARP - Gi0/2 - - PORT_ATTACKED 2009-05-30
16:30:10
```

Field	Description
Protocol	ARP, IP, ICMP, DHCP,DHCPv6, NS-NA, RS, RA-REDIRECT
Reason	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**

## 18.98 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**

## 18.99 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**

## 18.100 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** N/A  
**Description**

## 19 DoS Protection Commands

### 19.1 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	Parameter	Description
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-attack of the self-consumption.

**Examples** 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**

### 19.2 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 Examples** The following example enables the anti-attack of the invalid TCP packets:

```
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**

## 19.3 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 Examples** The following example enables the anti-land-attack:

```
Ruijie(config)# ip deny land
```

The following example disables the anti-land-attack:



```
Ruijie(config)# no ip deny land
```

**Related  
Commands**

Command	Description
<code>show ip deny land</code>	Displays the anti-land-attack state.

**Platform** N/A**Description**

## 19.4 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**

## 19.5 show ip deny invalid-l4port

Use this command to display the state of the anti-consumption-attack.

**show ip deny invalid-l4port**

Parameter Description	Parameter	Description
		N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the state of the anti-consumption-attack.

```
Ruijie# show ip deny invalid-l4port
DoS Protection Mode           State
-----
protect against invalid l4port attack Off
```

Related Commands	Command	Description
		N/A

**Platform Description** N/A

## 19.6 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**

Parameter Description	Parameter	Description
		N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** N/A

**Configuration** The following example displays the state of the anti-attack of the invalid TCP packets.

```
Ruijie# show ip deny invalid-tcp
DoS Protection Mode           State
-----
```

```
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**

## 19.7 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

# 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 <i>tm-rng-name</i>	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 <i>cos</i>	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 <i>vid</i>	VLAN ID
VID inner <i>vid</i>	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 } {any | host
destination-mac-address } [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
- ldp
- login
- nntp
- pim-auto-rp
- pop2
- pop3
- smtp
- sunrpc
- syslog
- tacacs
- talk
- telnet
- time
- uucp
- whois
- www

The UDP ports are as follows. A UDP port can be specified by port name and port number.

- biff
- bootpc
- bootps
- discard
- dnsmx
- 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 action { forward | drop | redirect }

Use this command to set the action for a VLAN access map entry. Use the **no** form of this command to remove the action for the VLAN access map..

**action** { **forward** | **drop** | **redirect** *interface-name* }

**no action** { **forward** | **drop** | **redirect** *interface-name* }

Parameter Description	Parameter	Description
-----------------------	-----------	-------------

*interface-name*

Redirect interface

**Defaults** The VLAN access map entry has no action by default.

**Command Mode** VLAN access-map configuration mode

**Usage Guide** To make the VACL take effect, the action for the VLAN access map entry must be configured. Use the **show vlan access-map** command to display the VLAN access maps created on the device.

**Configuration Examples** The following example sets the action for the VLAN access map *vlan1-map* to **forward**.

```
Ruijie(config)# vlan access-map vlan1-map
Ruijie(config-access-map)# action forward
```

**Related Commands**

Command	Description
show access-map	Displays all VLAN access maps created on the device.
show access-map <i>map-name</i>	Displays the specified VLAN access map..

**Platform Description** N/A

## 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 Mode** Privileged EXEC mode

**Usage Guide** This command is used to clear the counters of packets matching the specified or all ACLs.

**Configuration Examples** The following example clears the packet matching counter of ACL No. 2700:

```
Ruijie #show access-lists 2700
```



```

expert access-list extended 2700
  10 permit ip VID 4 host 192.168.3.55 any host 192.168.99.6 any (88 matches)
  20 deny tcp any any eq login any any (33455 matches)
  30 permit tcp any any host 192.168.6.9 any (10 matches)

Ruijie# 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**} [**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}** {*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*] **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**} **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*]**deny icmp** {*source-ipv6-prefix / prefix-length* | **host** *source-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
<i>sn</i>	ACL entry sequence number
<i>source-ipv6-prefix</i>	Source IPv6 network address or network type
<i>destination-ipv6-prefix</i>	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 <i>ipv6</i>   <i>icmp</i>   <i>tcp</i>   <i>udp</i> 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 macl
Ruijie(config-mac-nacl)#deny host 0013.0049.8272 any aarp
Ruijie(config-mac-nacl)# show access-lists
mac access-list extended macl
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 macl 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 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
<b>in</b>	Specifies filtering on inbound packets.
<b>out</b>	Specifies filtering on outbound packets.

**Defaults** No expert access list is applied on the interface.

**Command mode** Interface configuration mode.

**Usage Guide** This command is used to apply the specified access list 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
accept_00d0f8xxxxxx_only in
```

**Related Commands**

Command	Description
show access-group	Displays the ACL configuration.

**Platform Description** N/A

## 1.9 expert access-list advanced

Use this command to create an advanced expert access list and place the device in expert advanced access list configuration mode. Use the **no** form of this command to remove the advanced expert access list.

**expert access-list advanced** *name*

**no expert access-list advanced** *name*

**Parameter Description**

Parameter	Description
<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 Examples** The following example creates an advanced expert access list named adv-acl.

```
Ruijie(config)# expert access-list advanced adv-acl
Ruijie(config-exp-dacl)# show access-lists
expert access-list advanced adv-acl
```

Related Commands	Command	Description
	show access-lists	Displays all access lists.
	show access-lists <i>name</i>	Displays the access list of a specified name.

**Platform** N/A

**Description**

## 1.10 expert access-list extended

Use this command to create an extended expert access list. Use the **no** form of the command to remove the ACL.

**expert access-list extended** {*id* | *name*}

**no expert access-list extended** {*id* | *name*}

Parameter Description	Parameter	Description
	<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**

## 1.11 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 Description** N/A

## 1.12 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**      The following example resequences entries of expert access list “exp-acl”:

**Examples**      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**

## 1.13 global ip 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 ip access-group**

**no global ip 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** The following example applies the global IP-based access list on interface fastEthernet0/0.

**Examples**

```
Ruijie(config)# interface fastEthernet 0/0
Ruijie(config-if-GigabitEthernet 0/0)#global ip access-group
```

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A

**Description**

## 1.14 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
<i>in</i>	Filters the incoming packets of the interface.
<i>out</i>	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** The following example applies the ACL 120 on interface fastEthernet0/0 to filter the incoming packets:

**Examples**

```
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** N/A

**Description**

## 1.15 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**

## 1.16 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

## 1.17 ip access-list log-update interval

Use this command to configure the interval at which the IPv4 access list log is updated. Use the **no** form of this command to restore the default interval.

**ip access-list log-update interval** *time*

**no ip access-list log-update interval**

**Parameter  
Description**

Parameter	Description
<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**

The following example configures the interval for the IPv4 access list log update to 10 minutes:

**Examples**

```
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

## 1.18 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

## 1.19 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 Examples**      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 Description**      N/A

## 1.20 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**

## 1.21 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.



<b>Defaults</b>	-
<b>Command mode</b>	Global configuration mode
<b>Usage Guide</b>	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**

## 1.22 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

## 1.23 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**

## 1.24 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
in	Specifies filtering on inbound packets
out	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** The following example applies the IPv6 access list named **v6-acl** to interface GigabitEthernet 0/1:

**Examples**

```
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**

## 1.25 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**

## 1.26 mac access-group

Use this command to apply the specified MAC access list 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
in	Specifies filtering on the inbound packets.
out	Specifies filtering on the outbound packets.

**Defaults** No MAC access list is applied by default.

**Command mode** Interface configuration mode.

**Usage Guide** Use this command to apply the access list 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**

## 1.27 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 Description** N/A

## 1.28 mac access-list extended

Use this command to create an extended MAC access list. Use the **no** form of the command to remove the MAC access list.

**mac access-list extended** { *id* | *name* }

**no mac access-list extended** { *id* | *name* }

Parameter Description	Parameter	Description
	<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 Description** N/A

## 1.29 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	Parameter	Description
-----------	-----------	-------------

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 Examples**      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**

## 1.30 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** } { **any** | **host destination-mac-address** } [ *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** | *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*] **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** The following example shows how to create and display an Expert Extended ACL. This expert ACL

**Examples**

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 aarp
Ruijie(config-mac-nacl)#show access-lists
mac access-list extended 702
10 permit host 0013.0049.8272 any aarp 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

## 1.31 redirect destination interface

Use this command to redirect the traffic matching the access list to the specified interface. Use the **no** form of this command to remove the redirection.

**redirect destination interface** *interface-name* **acl** { *id* | *name* } **in**

**no redirect destination interface** *interface-name* **acl** { *id* | *name* } **in**

#### Parameter Description

Parameter	Description
<i>interface-name</i>	Redirect interface
<i>id</i>	Access list number
<i>name</i>	Access list name

#### Defaults

No redirection is configured.

#### Command mode

Interface configuration mode

#### Usage Guide

Use this command to configure access redirection, namely, to redirect the traffic matching the access list to the specified interface. You can monitor the operation of a specified access list by using this command.

#### Configuration Examples

The following example configures access redirection.

#### Examples

```
Ruijie(config)# interface gigabitEthernet 0/3
Ruijie(config-if-GigabitEthernet 0/3)# redirect destination interface
```

```
gigabitEthernet 0/2 acl1 in
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 1.32 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**

**Parameter  
Description**

Parameter	Description
<i>text</i>	Comment that describes the access entry.

**Defaults**

The access entries have no remarks.

**Command  
mode**

ACL configuration mode.

**Usage Guide**

Use this command to write a helpful comment for an access entry.

Up to 100 characters are allowed in the remark.

Two identical access entry remarks in one access list 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**

## 1.33 security access-group

Use this command to configure an interface secure channel.

**security access-group** { *id* | *name* }

**no security access-group**

Parameter	Parameter	Description
<b>Description</b>	<i>id</i>	Access list number.
	<i>name</i>	Name of the access list.

**Defaults** N/A

**Command mode** Interface or VXLAN configuration mode

**Usage Guide** If a device is configured authentications such as 802.1x or Web authentication, the user cannot access the external network before passing the authentication. You can use this command to configure a secure channel for the users on the specified interface to access the external network without authentication.

**Configuration** The following example configures a secure channel on interface GigaEthernet 1/1:

**Examples**

```
Ruijie(config)# interface GigaEthernet 1/1
Ruijie(config-if-GigabitEthernet 1/1)# security access-group 1
```

Related Commands	Command	Description
	show secu-acl	Displays the secure channel configuration.

**Platform** N/A

**Description**

## 1.34 security global access-group

Use this command to configure the global secure channel.

**security global access-group** { *id* | *name* }

**no security global access-group**

Parameter	Parameter	Description
<b>Description</b>		

<i>id</i>	Access list number.
<i>name</i>	Name of the access list.

**Defaults** -

**Command mode** Global configuration mode

**Usage Guide** If a device is configured authentications such as 802.1x or Web authentication, the user cannot access the external network before passing the authentication. You can use this command to configure a global secure channel for some users to access the external network without authentication.

**Configuration Examples** The following example configures a global secure channel.

```
Ruijie(config)#security global access-group 1
```

**Related Commands**

Command	Description
show secu-acl	Displays the secure channel configuration..

**Platform** N/A

**Description**

## 1.35 security uplink enable

Use this command to configure an exceptional interface of the global secure channel.

**security uplink enable**

**no security uplink enable**

**Parameter Description**

Parameter	Description
N/A	N/A

**Defaults** The global secure channel takes effect on all interfaces by default.

**Command mode** Interface configuration mode.

**Usage Guide** The global secure channel takes effect on all interfaces by default. To disable the secure channel function on some interfaces, you can use this command to configure the interface as exceptional.

**Configuration Examples** The following example configures interface GigaEthernet 1/1 as an exceptional interface of the secure channel.

```
Ruijie(config)# interface GigaEthernet 1/1
```

```
Ruijie(config-if-GigabitEthernet 1/1)# security uplink enable
```

**Related  
Commands**

Command	Description
show secu-acl	Displays the secure channel configuration.

**Platform** N/A

**Description**

## 1.36 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

**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**

## 1.37 show access-lists

Use this command to display all access lists or the specified access list.

**show access-lists** [ *id* | *name* ] [ **summary** ]

**Parameter**

Parameter	Description
-----------	-------------



<b>Description</b>		
	<i>id</i>	Access list number
	<i>name</i>	Name of the IP access list
	summary	Access list summary
<b>Defaults</b>	N/A	
<b>Command mode</b>	Global configuration mode	
<b>Usage Guide</b>	Use this command to display the specified access list. If no access list number or name is specified, all the access lists are displayed.	
<b>Configuration Examples</b>	<pre>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)</pre>	

## 1.38 show expert access-group

Use this command to display the expert access list applied to the interface.

**show expert access-group** [ **interface** *interface-name* ]

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<i>interface</i>	Interface name
<b>Defaults</b>	-	
<b>Command mode</b>	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** Ruijie# show expert access-group interface gigabitethernet 0/2  
**Examples** 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**

## 1.39 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.

## 1.40 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 Examples** Ruijie# show ipv6 traffic-filter interface gigabitethernet 0/4

```
ipv6 access-group v6 in
Applied On interface GigabitEthernet 0/4.
```

## 1.41 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>

**Defaults** N/A

**Command mode** Privileged EXEC mode

**Usage Guide** Use this command to display the MAC access list configured on the interface. If no interface is specified, the MAC access lists on all interfaces are displayed.

**Configuration Examples** Ruijie# show mac access-group interface gigabitethernet 0/3

```
mac access-group mm in
Applied On interface GigabitEthernet 0/3.
```

## 1.42 show redirect interface

Use this command to display the access redirection configuration.

**show redirect [ interface *interface-name* ]**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<b>interface</b> <i>Interface-name</i>	Interface name
<b>Defaults</b>	N/A	
<b>Command mode</b>	Privileged EXEC mode	
<b>Usage Guide</b>	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.	
<b>Configuration Examples</b>	The following example displays the access redirection configuration on interface GigabitEthernet 0/3.	
	<pre>Ruijie #show redirect interface gigabitEthernet 0/3 acl redirect configuration on interface gigabitEthernet 0/3 redirect destination interface gigabitEthernet 0/3 acl 1 in</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	N/A	N/A
<b>Platform Description</b>	N/A	

## 1.43 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**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	N/A	N/A.
<b>Defaults</b>	The SVI filter takes effect for both Layer2 and Layer3 packets by default.	
<b>Command mode</b>	Global configuration mode	
<b>Usage Guide</b>	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** N/A

**Description**

## 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** Policy configuration mode

**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
<b>Description</b>	<i>class-map-name</i>	Class map name. The class map name can be a maximum of 31 characters.

**Defaults** None

**Command** Global configuration mode

**Mode**

**Usage Guide** N/A

**Configuration** The following example creates a class map named cm\_acl to match an access list named me.

**Examples**

```
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 drr-queue bandwidth

Use this command to set the DRR queue weight ratio. Use the **no** or **default** form of this command to restore the default setting.

**drr-queue bandwidth** *weight1...weight8*

**no drr-queue bandwidth**

**default drr-queue bandwidth**

Parameter	Parameter	Description
-----------	-----------	-------------

<b>Description</b>	<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 1:1:1:1:1:1:1:1.

**Command Mode** Global configuration mode

**Usage Guide** N/A

**Configuration** The following example configures the DRR queue weight ratio to 1:1:1:2:2:4:6:8.

**Examples**

```
Ruijie(config)# drr-queue bandwidth 1:1:1:2:2:4:6:8
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
		<b>show mls qos queuing</b>

**Platform Description** N/A

## 2.4 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 } }
```

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<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-vlaue-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-vlaue-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** The following example creates a class map named cmap1 to match DSCP 20, 22, 24 and 30.

**Examples**

```
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** N/A

**Description**

## 2.5 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** Interface configuration mode.

**Mode**

**Usage Guide** N/A

**Configuration** The following example configures the default CoS value to 7.

**Examples**

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mls qos cos 7
```

Related Commands	Command	Description
	<b>show mls qos interface</b> <i>interface-id</i>	Displays information of the specified interface.

**Platform** N/A

**Description**

## 2.6 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 qos map cos-dscp 8 10 16 18 24 26 32 34
```

Related Commands	Command	Description
	<b>show mls qos maps cos-dscp</b>	Displays the CoS-DSCP mapping.

**Platform Description** N/A

## 2.7 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 Mode** Global configuration mode.

**Usage Guide** N/A

**Configuration Examples**

```
Ruijie(config)# mls qos map dscp-cos 8 10 16 18 to 0
```

Related Commands	Command	Description
	show mls qos maps dscp-cos	Displays the DSCP-CoS mapping.

**Platform Description** N/A

## 2.8 mls qos map ip-precedence-dscp

Use this command to map the IP precedence to the DSCP value. Use the **no** or **default** form of this command to restore the default IP-precedence to DSCP mapping.

**mls qos map ip-precedence-dscp** *dscp1 ... dscp8*

**no mls qos map ip-precedence-dscp**

**default mls qos map ip-precedence-dscp**

Parameter Description	Parameter	Description
	<i>dscp1...dscp8</i>	DSCP list. The range is from 0 to 63.

**Defaults** By default, the IP precedence 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 ip-prec -dscp 8 10 16 18 24 26 32 34
```

Related Commands	Command	Description
	show mls qos maps ip-pre-dscp	Displays the IP-precedence to DSCP mapping.

**Platform Description** N/A

## 2.9 mls qos scheduler

Use this command to configure the output queue scheduling. Use the **no** or **default** form of this command to restore the default scheduler.

**mls qos scheduler [ sp | rr | wrr | drr | wfq ]**

**no mls qos scheduler**

Parameter	Parameter	Description
Description	<b>sp</b>	Specifies the absolute priority scheduling.
	<b>rr</b>	Specifies the round-robin scheduling.
	<b>wrr</b>	Specifies the frame count weighted round-robin scheduling.
	<b>drr</b>	Specifies the frame length weighted round-robin scheduling.
	<b>wfq</b>	Specifies the weighted fair queuing.

**Defaults** The default queue scheduling is **wrr**.

**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	Command	Description
Commands	<b>show mls qos scheduler</b>	Displays the output queue scheduling.

**Platform** N/A

**Description**

## 2.10 mls qos trust

Use this command to configure the trust mode on an interface. Use the **no** or **default** form of this command to restore the default setting.

**mls qos trust { cos | dscp | ip-precedence }**

**no mls qos trust**

**default mls qos trust**

Parameter	Parameter	Description
Description	<b>cos</b>	Specifies the CoS trust mode.
	<b>dscp</b>	Specifies the DSCP trust mode.
	<b>ip-precedence</b>	Specifies the IP-PRE 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</b> <i>interface-id</i>	Displays the specified interface configuration.

**Platform** N/A

**Description**

## 2.11 police

Use this command to configure traffic policing for a class map in a policy map. Use the **no** form of this command to remove traffic policing for the class map.

**police** *rate-bps burst-byte* [ **exceed-action** { **drop** | **dscp** *new-dscp* | **cos** *new-cos* [ **none-tos** ] } ]  
**no police**

Parameter Description	Parameter	Description
	<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** N/A

**Description**

## 2.12 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
<b>Description</b>	<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
```



**default priority-queue cos-map**

Parameter	Parameter	Description
Description	<i>qid</i>	Queue ID. The range is from 1 to 8.
	<i>cos0 ... cos7</i>	CoS value. The range is from 0 to 7.

**Defaults** The default mapping between the CoS value and the queue ID is listed below:

Queue 1	Queue 2	Queue 3	Queue 4	Queue 5	Queue 6	Queue 7	Queue 8
CoS 0	CoS 1	CoS 2	CoS 3	CoS 4	CoS 5	CoS 6	CoS 7

**Command** Global configuration mode.

**Mode**

**Usage Guide** N/A

**Configuration** The following example maps the CoS 3, 5 to the output queue 1.

**Examples**

```
Ruijie(config)#priority-queue cos-map 1 3 5
```

Related	Command	Description
Commands	<b>show mls qos queuing</b>	Displays the output queues.

**Platform** N/A

**Description**

## 2.15 qos queue

Use this command to configure a minimum or maximum of the interface bandwidth to a queue. Use the **no** or **default** form of this command to remove the minimum or maximum of the interface bandwidth.

**qos queue** *queue-id* **bandwidth** { **minimum** | **maximum** } *bandwidth*

**no qos queue** *queue-id* **bandwidth** { **minimum** | **maximum** }

**default qos queue** *queue-id* **bandwidth** { **minimum** | **maximum** }

Parameter	Parameter	Description
Description	<i>queue-id</i>	Queue ID. The range is from 1 to 8.
	<b>bandwidth</b> { <b>minimum</b>   <b>maximum</b> } <i>bandwidth</i>	Bandwidth value. The value range depends on the specific product.

**Defaults** No minimum or maximum of interface bandwidth to a queue is configured by default.

**Command** Interface configuration mode



**Mode****Usage Guide** N/A

**Configuration Examples** The following example configures the minimum interface bandwidth of queue 1 to 5 Mbps, and the maximum to 10 Mbps; and configures the minimum interface bandwidth of unicast queue 2 to 2 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 Commands**

Command	Description
<b>show qos bandwidth [ interfaces interface-id ]</b>	Displays the interface bandwidth of the queue.

**Platform** N/A**Description**

## 2.16 queueing wred

Use this command to enable the WRED (Weighted Random Early Detection) function. Use the **no** or **default** form of this command to disable the WRED function.

**queueing wred****no queueing wred****default queueing wred****Parameter Description**

Parameter	Description
N/A	N/A

**Defaults** WRED is disabled by default.**Command Mode** Global configuration mode**Usage Guide** N/A**Configuration Examples** The following example enables WRED.

```
Ruijie(config)# queueing wred
```

**Related Commands**

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

## 2.17 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
<b>Description</b>	<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**

## 2.18 service-policy

Use this command to apply the policy map to the interface or the virtual group. Use the **no** or **default** form of this command to remove the policy map.

**service-policy** { **input** | **output** } *policy-map-name*  
**no service-policy** { **input** | **output** } *policy-map-name*  
**default service-policy** { **input** | **output** } *policy-map-name*

Parameter	Parameter	Description
Description	<i>policy-map-name</i>	Policy map name
	<b>input</b>	Applies the policy map to the input direction.
	<b>output</b>	Applies the policy map to the output direction.

**Defaults** No policy map is configured on the interface or virtual group by default.

**Command Mode** Interface configuration mode, 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
```

The following example applies policy map “po” to the output direction of virtual group 3.

```
Ruijie(config)# virtual-group 3
Ruijie(config-VirtualGroup)# service-policy output po
```

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 Description** N/A

## 2.19 set

Use this command to configure the CoS, DSCP or VID value for the traffic. Use the **no** form of this command to remove the CoS, DSCP or VID value from the traffic.

**set** { **ip dscp** *new-dscp* | **cos** *new-cos* | **vid** *new-vid* }  
**no set** { **ip dscp** | **cos** | **vid** }

Parameter	Parameter	Description
Description	<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.
<b>vid</b> <i>new-vid</i>	Configures the VID value for the traffic. The range is from 1 to 4094.

**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 Description** N/A

## 2.20 show class-map

Use this command to display the class map.

```
show class-map [ class-map-name ]
```

Parameter Description	Parameter	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** N/A  
**Description**

## 2.21 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
<b>Description</b>	<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
Scheduler type: drr
Wrr queue bandwidth: 1 1 1 1 2 2 2 2
Drr queue bandwidth: 1 1 2 2 2 2 4 4
Wfq queue bandwidth: 1 1 2 2 4 4 4 4
```

The fields in the output of this command are described in the following table.

Field	Description
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
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 2.22 show mls qos maps

Use this command to display DSCP-CoS mapping, CoS-DSCP mapping and IP-PRE-DSCP mapping.

**show mls qos maps [ cos-dscp | dscp-cos | ip-prec-dscp ]**

Parameter Description	Parameter	Description
	cos-dscp	Displays the CoS-DSCP mapping.

<b>dscp-cos</b>	Displays the DSCP-CoS mapping.
<b>ip-prec-dscp</b>	Displays the IP-PRE-DSCP mapping..

**Defaults** None

**Command Mode** Privileged EXEC mode, global configuration mode, interface configuration mode.

**Usage Guide** N/A

**Configuration Examples** The following example displays the CoS-DSCP mapping.

```
Ruijie# show mls qos maps cos-dscp
cos dscp
--- ----
0 0
1 8
2 16
3 24
4 32
5 40
6 48
7 56
```

The fields in the output of this command are described in the following table.

Field	Description
cos	Indicates the CoS value.
dscp	Indicates the DSCP value mapped .

The following example displays the DSCP- CoS mapping.

```
Ruijie# show mls qos maps dscp-cos
dscp cos      dscp cos      dscp cos      dscp cos
-----
0 0           1 0           2 0           3 0
4 0           5 0           6 0           7 0
8 1           9 1           10 1          11 1
12 1          13 1          14 1          15 1
16 2          17 2          18 2          19 2
```

20	2	21	2	22	2	23	2
24	3	25	3	26	3	27	3
28	3	29	3	30	3	31	3
32	4	33	4	34	4	35	4
36	4	37	4	38	4	39	4
40	5	41	5	42	5	43	5
44	5	45	5	46	5	47	5
48	6	49	6	50	6	51	6
52	6	53	6	54	6	55	6
56	7	57	7	58	7	59	7
60	7	61	7	62	7	63	7

The fields in the output of this command are described in the following table.

Field	Description
dscp	Indicates the DSCP value.
cos	Indicates the CoS value mapped .

The following example displays the IP-PRE-DSCP mapping.

```
Ruijie# show mls qos maps ip-prec-dscp
ip-precedence 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
ip-precedence	Indicates the IP-PRE value.
dscp	Indicates the DSCP value mapped .

#### Related Commands

Command	Description
N/A	N/A



**Platform** N/A  
**Description**

## 2.23 show mls qos queueing

Use this command to display the QoS queuing configuration.

**show mls qos queueing**

Parameter	Parameter	Description
Description		

**Defaults** N/A

**Command Mode** Privileged EXEC mode, global configuration mode, interface configuration mode.

**Usage Guide** N/A

**Configuration Examples** The following example displays the QoS queuing configuration.

```
Ruijie# show mls qos queueing
```

```
Cos-queue map:
```

```
cos qid
```

```
--- ---
```

```
0 1
```

```
1 2
```

```
2 3
```

```
3 4
```

```
4 5
```

```
5 6
```

```
6 7
```

```
7 8
```

```
wrr bandwidth weights:
```

```
qid weights
```

```
--- -----
```

```
1 1
```

```
2 2
```

```

3 3
4 4
5 5
6 6
7 7
8 8

```

```

drr bandwidth weights:

```

```

qid weights

```

```

--- -----

```

```

1 3

```

```

2 3

```

```

3 3

```

```

4 3

```

```

5 3

```

```

6 3

```

```

7 3

```

```

8 3

```

```

wfq bandwidth weights:

```

```

qid weights

```

```

--- -----

```

```

1 3

```

```

2 4

```

```

3 5

```

```

4 6

```

```

5 7

```

```

6 8

```

```

7 9

```

```

8 10

```

The fields in the output of this command are described in the following table.

Field	Description
Cos-queue map	Indicates the mapping between the CoS value and the queue ID.
wrr bandwidth weights	Indicates the WRR queue weight.

drp bandwidth weights	Indicates the DRR queue weight.
wfq bandwidth weights	Indicates the WFQ queue weight.
cos	Indicates the CoS value.
qid	Indicates the queue ID.
weights	Indicates the weight value

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 2.24 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
<b>Description</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 Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 2.25 show mls qos scheduler

Use this command to display the queue scheduling policy.

**show mls qos scheduler**

Parameter	Parameter	Description
<b>Description</b>		

**Defaults** None

**Command Mode** Privileged EXEC mode, global configuration mode, interface configuration mode.

**Usage Guide** N/A

**Configuration Examples** The following example displays the queue scheduling policy.

### Examples

```
Ruijie# show mls qos scheduler
Global Multi-Layer Switching scheduling
Weighted Round Robin
```

The fields in the output of this command are described in the following table.

Field	Description
Weighted Round Robin	Indicates that the queue scheduling policy is WRR. The other queue scheduling policies are listed as follows: SP: Strict Priority RR: Round Robin DRR: Deficit Round Robin WFQ: Weighted Fair Queue

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 2.26 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

## 2.27 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**

## 2.28 show qos bandwidth

Use this command to display the bandwidth configuration.

**show qos bandwidth [ interfaces *interface-id* ]**

Parameter	Parameter	Description
<b>Description</b>	<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**

## 2.29 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**

## 2.30 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
<b>Description</b>	<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** N/A  
**Description**

## 2.31 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

## 2.32 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 1:1:1:1:1:1:1:1.

**Command Mode** Global configuration mode.

**Usage Guide** If the weight value is 0, the SP scheduling policy is applied.

**Configuration Examples** The following example configures the WFQ queue weight ratio to 1:1:2:4:4:4:6:8.

```
Ruijie(config)# wfq-queue bandwidth 1 1 2 4 4 4 6 8
```

**Related  
Commands**

Command	Description
<b>show mls qos queueing</b>	Displays the QoS queuing configuration.

**Platform Description** N/A

## 2.33 wrr-queue bandwidth

Use this command to set the WRR weight ratio. Use the **no** or **default** form of this command to restore the default setting.

**wrr-queue bandwidth** *weight1 ... weight8*

**no wrr-queue bandwidth**

**default wrr-queue bandwidth**

**Parameter  
Description**

Parameter	Description
<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 1:1:1:1:1:1:1:1.

**Command** Global configuration mode

**Mode**

**Usage Guide** If the weight value is 0, the SP scheduling policy is applied.

**Configuration** The following example configures the WRR queue weight ratio to 1:1:1:1:2:2:4:8.

**Examples**

```
Ruijie(config)# wrr-queue bandwidth 1 1 1 1 2 2 4 8
```

**Related**

**Commands**

Command	Description
<b>show mls qos queuing</b>	Displays the QoS queuing configuration.

**Platform** N/A

**Description**

## 2.34 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** Interface configuration mode.

**Usage Guide** DSCP-threshold mapping can be enabled by mapping DSCP-CoS to CoS-threshold. When all CoS values are mapped to one threshold on the interface, it changes the enabled WRED to RED.

**Configuration** The following example enters the interface GigabitEthernet 1/3 to map CoS 1, 2 to threshold 2.

**Examples**

```
Ruijie(config)# interface gigabitethernet 1/3
```

```
Ruijie(config-if-GigabitEthernet 1/3)#wrr-queue cos-map 2 1 6
```

**Related  
Commands**

Command	Description
<b>show queuing wred interface</b> <i>interface-id</i>	Displays the WRED configuration on the interface.

**Platform**

N/A.

**Description**

## 2.35 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 queuing wred interface</b> <i>interface-id</i>	Displays the WRED configuration on the interface.

**Platform** N/A.  
**Description**

## 2.36 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**



## Reliability Configuration Commands

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1. REUP Commands
2. RLDP Commands
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# 1 REUP Commands

## 1.1 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**

## 1.2 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 Mode** Global configuration mode.

**Usage Guide** First create a link state track group and then add a port into the specified link state track group.

**Configuration** The following example shows how to create a link state track group:

**Examples** Ruijie(config)# link state track 1

Related Commands	Command	Description
	<b>link state group</b>	Adds the port to the specified link state track group.

**Platform Description** N/A.

### 1.3 mac-address-table move update max-update-rate

Use this command to configure the maximum number of MAC address update packets sent per second.

**mac-address-table move update max-update-rate** *pkts-per-second*

**no mac-address-table move update max-update-rate**

Parameter Description	Parameter	Description
	<i>pkts-per-second</i>	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** The following example shows how to configure the maximum number of MAC address update packets sent per second:

**Examples**

```
Ruijie(config)# mac-address-table move update max-update-rate 20
```

**Related Commands**

Command	Description
N/A.	N/A.

**Platform**

N/A.

**Description**

## 1.4 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**

## 1.5 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** Global configuration mode.

**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**

## 1.6 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
<b>mac-address-table move update transit vlan</b>	Enables REUP to transmit the mac-address-table update messages.

**Platform** N/A.

**Description**

## 1.7 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** Interface configuration mode.

**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:

**Examples** 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**

## 1.8 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 Mode** Interface configuration mode.

**Usage Guide** In order to reduce the flood due to the MAC address update and the influence on the normal data transmission of the switch, Ruijie products add a configuration of MAC address update group. Only if all the interfaces are added to a MAC address update group, the downstream data transmission be restored rapidly.

**Configuration Examples**

```
Ruijie(config-if)# mac-address-table update group 2
```

Related Commands	Command	Description
	<b>show mac-address-table update group detail</b>	Displays the mac-address-table update group information.

**Platform** N/A.

**Description**

## 1.9 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** Interface configuration mode.

**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**

## 1.10 switchport backup interface preemption

Use this command to configure the REUP link preemption function.

**switchport backup interface** *interface-id* **preemption mode** { **forced** | **bandwidth** | **off** }

**switchport backup interface** *interface-id* **preemption delay** *delay-time*

**no switchport backup interface** *interface-id* **preemption delay**

**Parameter Description**

Parameter	Description
<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** Interface configuration mode.

**Mode**

**Usage Guide** The preemption mode includes **forced**, **bandwidth** and **off**. In the **bandwidth** preemption mode, the interface with high bandwidth has priority over other interfaces to transmit the data. In the **forced**

preemption mode, the primary has priority over backup interfaces to transmit the data. No preemption event occurs in the **off** preemption mode. By default, the preemption mode is off.

The preemption delay refers to the delay time of the link switchover after the restoration of the link failure.

**Configuration Examples** The following example 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:

```
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
```

**Related Commands**

Command	Description
<b>show interface switchport backup</b>	Displays the dual link backup configuration.

**Platform** N/A.  
**Description**

## 1.11 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-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 Examples** The following example configures VLAN load balancing on dual links.

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport backup interface gigabitEthernet 0/2 prefer
instance 1
```



Related Commands	Command	Description
	<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**

## 1.12 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 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.

## 1.14 show mac-address-table move update

Use this command to display the statistics about the MAC address updates tranceived on the interface.

**show mac-address-table move update**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Privileged EXEC mode.

**Usage Guide** N/A.

**Configuration** 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 mac-address-table update group detail

Use this command to display the mac-address-table update group information.

**show mac-address-table update group detail**

Parameter Description	Parameter	Description
	<b>detail</b>	Displays the detailed information about the mac-address-table update group.

**Defaults** N/A

**Command Mode** Privileged EXEC mode.

**Usage Guide** N/A.

**Configuration** Ruijie # configure terminal

**Examples**

```
Ruijie (config)# mac-address-table move update receive
Ruijie (config)# interface range gigabitEthernet 0/3-4
Ruijie (config-if-range)# mac-address-table update group
Ruijie (config-if-range)# end
Ruijie # show mac-address-table update group detail
Mac-address-table Update Group:1
Received mac-address-table update message count:7
Group member  Receive Count  Last Receive  Switch-ID  Receive Time
-----
GigabitEthernet 0/3  0                0000.0000.0000
GigabitEthernet 0/4  0                0000.0000.0000
```

Related Commands	Command	Description
	N/A.	N/A.

**Platform** N/A.

**Description**

## 2 RLDP Commands

### 2.1 rldp detect-interval

Use this command to configure the interval at which the RLDP sends the detection message on the port. Use the **no** form of this command to restore the default value.

**rldp detect-interval** *interval*

**no rldp detect-interval**

Parameter Description	Parameter	Description
	<i>interval</i>	Detection interval in the range 2 to 15 seconds

**Defaults** 3 seconds.

**Command Mode** Global configuration mode.

**Usage Guide** In the environment where STP is enabled, it is recommended that the product of interval multiplying the maximum number of detections is less than the topology convergence time of STP.

**Configuration Examples** The following example shows how to set the detection interval as 5s:

```
Ruijie(config)# rldp detect-interval 5
```

Related Commands	Command	Description
	<b>rldp detect-max</b>	Sets the maximum number of detections.

**Platform Description** N/A.

### 2.2 rldp detect-max

Use this command to set the maximum number of sending detection packets on the port. If the neighboring port does not respond when this detection number is exceeded, the link is considered faulty. Use the **no** form of this command to restore it to the default value.

**rldp detect-max** *num*

**no rldp detect-max**

Parameter Description	Parameter	Description
-----------------------	-----------	-------------

<i>num</i>	Maximum number of detections in the range 2 to 10
------------	---

**Defaults** 2.

**Command** Global configuration mode.

**Mode**

**Usage Guide** This command is used together with the detection interval to specify the maximum number of detections.

**Configuration** The following example shows how to set the maximum number of detections as 5:

**Examples** Ruijie(config)# rldp detect-max 5

Related Commands	Command	Description
	<b>rldp detect-interval</b>	Sets the detection interval.

**Platform** N/A.

**Description**

## 2.3 rldp enable

Use this command to enable RLDP globally. Use the **no** form of this command to disable the function.

**rldp enable**

**no rldp enable**

Parameter Description	Parameter	Description
	N/A.	N/A.

**Defaults** Disabled.

**Command** Global configuration mode.

**Mode**

**Usage Guide** You can enable RLDP on the interface only when the global RLDP is enabled.

**Configuration** The following example shows how to enable RLDP:

**Examples** Ruijie(config)# rldp enable

Related Commands	Command	Description
	<b>rldp port</b>	Enables the RLDP function on the port.

**Platform** N/A.  
**Description**

## 2.4 rldp neighbor-negotiation

Use this command to enable RLDP neighbor negotiation. Use the **no** form or **default** form of this command to restore the default setting.

**rldp neighbor-negotiation**  
**no rldp neighbor-negotiation**  
**default rldp neighbor-negotiation**

Parameter Description	Parameter	Description
	N/A.	N/A.

**Defaults** RLDP neighbor negotiation is disabled by default.

**Command Mode** Global configuration mode.

**Usage Guide** With neighbor negotiation enabled, RLDP unidirectional-/bidirectional-link detection starts only after the neighbor negotiation is successful. (Receiving the Prob message from the neighbor indicates the neighbor negotiation is successful.)

**Configuration Examples** The following example shows how to enable RLDP neighbor negotiation:

```
Ruijie#config
Ruijie(config)#rldp neighbor-negotiation
```

Related Commands	Command	Description
	<b>rldp port</b>	Enables the RLDP function on the port.

**Platform** N/A.  
**Description**

## 2.5 rldp port

Use this command to enable RLDP on the port and specify detection type and troubleshooting method. Use the **no** form of this command to disable the function.

**rldp port { unidirection-detect | bidirection-detect | loop-detect } { warning | shutdown-svi | shutdown-port | block }**  
**no rldp port { unidirection-detect | bidirection-detect | loop-detect }**

Parameter Description	Parameter	Description
	<b>unidirection-detect</b>	Sets unidirectional link detection.
	<b>bidirection-detect</b>	Sets bidirectional link detection.
	<b>loop-detect</b>	Sets loop detection type.
	<b>warning</b>	Warns the user.
	<b>shutdown-svi</b>	Shutowns the SVI the port belongs to.
	<b>shutdown-port</b>	Shutowns the port.

**Defaults** N/A

**Command Mode** Interface configuration mode.

**Usage Guide** The RLDP detection on the port takes effect only when the global RLDP is enabled.

**Configuration Examples** The following example shows how to configure RLDP detection on fas 0/1, specify the detection type as loop detection, and troubleshooting method as block.

```
Ruijie(config)# interface fas 0/1
Ruijie(config-if)# rldp port loop-detect block
```

Related Commands	Command	Description
	<b>rldp enable</b>	Enables RLDP globally.

**Platform Description** N/A.

## 2.6 rldp reset

Use this command to make all the ports that have been handled using rldp shutdown or disable to perform RLDP detection again.

**rldp reset**

Parameter Description	Parameter	Description
	N/A.	N/A.

**Defaults** N/A.

**Command Mode** Privileged EXEC mode.



**Usage Guide** N/A.

**Configuration** The example below demonstrates how to use this command:

**Examples** Ruijie# rldp reset

Related Commands	Command	Description
	rldp enable	Enables RLDP globally.

**Platform** N/A.

**Description**

## 2.7 show rldp

Use this command to display the RLDP information.

**show rldp [ interface *interface-id* ]**

Parameter Description	Parameter	Description
	<i>interface-id</i>	Interface ID

**Defaults** N/A.

**Command Mode** Privileged EXEC mode.

**Usage Guide** N/A.

**Configuration** N/A.

**Examples**

Related Commands	Command	Description
	N/A.	N/A.

**Platform** N/A.

**Description**

## 3 DLDP Commands

### 3.1 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

## 3.2 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	Command	Description
Commands	N/A	N/A

**Platform**  
**Description**

N/A

### 3.3 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	Parameter	Description
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	Command	Description
Commands	N/A	N/A

**Platform** N/A

## Description

### 3.4 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

### 3.5 dldp retry

Use this command to set the DLDP retry count.

Use the **no** form of this command to restore the default setting.

**dldp retry** *retry-num*

**no dldp retry**

	Parameter	Description
Parameter	<i>retry-num</i>	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** The following example sets the DLDP retry count to 4.

**Examples**

```
Ruijie#config
Ruijie(config)#dldp retry 4
```

	Command	Description
Related Commands	N/A	N/A

**Platform Description** N/A

### 3.6 dldp resume

Use this command to set the DLDP recovery count.

Use the **no** form of this command to restore the default setting.

**dldp resume** *resume-num*

**no dldp resume**

	Parameter	Description
Parameter	<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.

**Defaults** The default is 3.

**Command Mode** Global configuration mode

**Usage Guide** This command is used to set the DLDP recovery count.

**Configuration** The following example sets the DLDP recovery count to 4.

**Examples**

```
Ruijie#config
Ruijie(config)#dldp resume 4
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

### 3.7 show dldp

Use this command to display DLDP configuration information or statistics at various monitoring points.

**show dldp** [ **interface** *interface-name* ] [ **statistic** ]

Parameter	Parameter	Description
<b>Description</b>	<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
-----
V12      Passive 192.168.6.3 2h34m5s    10        9
V14      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
-----
V12      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



## 4 PCAP Commands

### 4.1 packet capture file

Use this command to specify the name of the file to be saved.

**packet capture file** *filename* [**buffer-size** *buf-size*] [**packet-num** *pkt-num*]

Use this command to clear configurations for file saving and restore the configurations for outputting logs.

**clear packet capture file**

Parameter Description	Parameter	Description
	<i>filename</i>	Name of the file to be saved
	<i>buf-size</i>	Buffer size. The buffer size is 2 MB by default if this field is not specified. Packet capture automatically stops when the buffer is full.
	<i>pkt-num</i>	Number of captured packets. Packet capture automatically stops when the number of captured packets reaches the specified value. The packet capture will continue by default unless otherwise specified.

**Command Mode** Privileged EXEC mode

**Usage Guide** The data of captured packets is saved in the file by default after the file name is set. If no file name is set, the data is directly output on the console as system logs. Only 30 packets can be output by default when no file name is set.

**Configuration Example** #Set the name of the file to be saved to **capture.pcap**, and set the number of captured packets to 100.

```
Ruijie# packet capture file flash:capture.pcap packet-num 100
```

**Verification** Run the **show packet capture status** command to check whether the configuration succeeds.

### 4.2 packet capture point

Use this command to create capture points.

**packet capture point** *capture-point-name* **rule** *rule-name* **location** {**interface** *interface-name* | **vlan** *vlan-id* | **control-plane**} {**in** | **out** | **both**}

Use this command to clear capture points.

**clear packet capture point** *capture-point-name*

Parameter Description	Parameter	Description
	<i>capture-point-name</i>	Name of a capture point
	<i>rule-name</i>	Name of matching rule, which is defined by using the <b>packet capture rule</b> command
	<i>interface-name</i>	Name of the interface for capturing packets
	<i>vlan-id</i>	ID of the VLAN for capturing packet
	<b>control-plane</b>	Packet capture on the control plane
	<b>in   out   both</b>	Packet capture direction: inbound, outbound, or bidirectional.

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** Users can define multiple capture points (a maximum of 4 capture points are supported currently) at the same location as required, to match different capture rules or packet directions. The capture points can work simultaneously without affecting each other.

**Configuration** #Create a capture point for capturing CPU packets on the GI0/1 interface.

**Example** Ruijie# packet capture point cap-1 rule tcp location interface gi0/1 both

**Verification** Run the **show packet capture status** command to check whether the configuration succeeds.

## 4.3 packet capture rule

Use this command to define a capture matching rule.

**packet capture rule** *rule-name* [**src-mac** *smac*] [**dst-mac** *dmac*] [**etype** *type* / **ip** / **arp** ] [**src-ip** *sip sip-mask*] [**dst-ip** *dip dip-mask*] [**src-ipv6** *sipv6 sipv6-prefix*] [**dst-ipv6** *dipv6 dipv6-prefix*][**protocol** *protocol* / **tcp** / **udp**] [**src-port** *sport* ] [**dst-port** *dport*]

Use this command to clear a capture matching rule.

**clear packet capture rule** *rule-name*

Parameter Description	Parameter	Description
	<i>rule-name</i>	Name of a matching rule
	<i>smac</i>	Source MAC address
	<i>dmac</i>	Destination MAC address
	<i>type</i> / <b>ip</b> / <b>arp</b>	Layer-2 protocol type
	<i>sip</i>	Source IP address
	<i>sip-mask</i>	Source IP mask
	<i>dip</i>	Destination IP address
	<i>dip-mask</i>	Destination IP mask

<i>sipv6</i>	Source IPv6 address
<i>sipv6-prefix</i>	Source IPv6 prefix
<i>dipv6</i>	Destination IPv6 address
<i>dipv6-prefix</i>	Destination IPv6 prefix
<i>protocol</i>   <b>tcp</b>   <b>udp</b>	Layer-3 protocol type
<i>sport</i>	TCP/UDP source port
<i>dport</i>	TCP/UDP destination port

**Command Mode** Privileged EXEC mode

**Usage Guide**

1. Users can define multiple rules for packet capture and differentiate them by different names. After a rule is defined, the rule needs to be referenced by the capture point to actually take effect.
2. Before deleting the capture rule, all capture points referencing the rule need to be deleted.

**Configuration** #Define a TCP capture matching rule.

**Example**

```
Ruijie# packet capture rule tcp etype ip protocol tcp
```

**Verification** Run the **show packet capture status** command to check whether the configuration succeeds.

## 4.4 packet capture start

Use this command to start capturing packets.

**packet capture start**

Use this command to stop capturing packets.

**packet capture stop**

Parameter Description	Parameter	Description
	<b>start</b>	Starts capturing packets.
	<b>stop</b>	Stop capturing packets.

**Command Mode** Privileged EXEC mode

**Usage Guide**

1. If the packet capture stop command is not entered after packet capture starts, the packet capture will automatically stop at the capture point when the number of captured packets reaches the specified number. If the packet capture stop condition is not met, run this command to immediately stop the packet capture.
2. Use the packet capture start command to capture packets at all capture points simultaneously.

**Configuration** #Start capturing packet.

**Example** Ruijie# packet capture start

**Verification** Run the **show packet capture status** command to check whether the configuration succeeds.

## 4.5 show packet capture status

Use this command to display the packet capture information.

**show packet capture status**

Parameter Description	Parameter	Description
	N/A	N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** Use this command to display the packet capture information.

**Configuration Example** N/A

#Display the packet capture information as follows:

```
Ruijie#show packet capture status

Capture rules:
  Capture rules tcp:
    etype: 0x0800
    source MAC: 2222.2222.2222
    destination MAC: 1111.1111.1111
    protocol: 0x6
    source IP: 10.10.10.3
    destination IP: 10.10.10.10
    source port: 5
    destination port: 10

Capture points:
  Capture point controlplane:
    Capture rules: tcp
    location: control-plane
    direction: all
    status: stopped
    packets captured(in): 200
    packets captured(out): 200
```

```
Capture file:
  filename: /tmp/test.pcap
  buffer size: 2(MB)
  packets limit: 500
Ruijie#
```

## Field description:

Field	Description
Capture rule	Name of a capture rule
etype	Layer-2 protocol type
source MAC	Source MAC address
destination MAC	Destination MAC address
protocol	Layer-3 protocol type
source IP	Source IP address
destination IP	Destination IP address
source port	Source port
destination port	Destination port
Capture point	Name of a capture point
location	Location of a capture point
direction	Packet capture direction
buffer size	Buffer size
packets limit	Quantity limit of captured packets
filename	Name of an output file
status	Packet capture status
packets captured	Number of captured packets

N/A

## 5 VRRP Commands

### 5.1 show vrrp

Use this command to display the VRRP information.

**show** [ **ipv6** ] **vrrp** [ **brief** | *group* ]

Parameter	Parameter	Description
Description	<b>ipv6</b>	(Optional) Applies to IPv6 VRRP.
	<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** The following example displays the information of all VRRP groups.

**Examples**

```
Ruijie# show vrrp
FastEthernet 0/0 - Group 1
State is Backup
Virtual IP address is 192.168.201.1 configured
Virtual MAC address is 0000.5e00.0101
Advertisement interval is 3 sec
Preemption is enabled
min delay is 0 sec
Priority is 100
Master Device is 192.168.201.213 , pritority is 120
Master Advertisement interval is 3 sec
Master Down interval is 9 sec
FastEthernet 0/0 - Group 2
State is Master
Virtual IP address is 192.168.201.2 configured
Virtual MAC address is 0000.5e00.0102
Advertisement interval is 3 sec
Preemption is enabled
min delay is 0 sec
Priority is 120
Master Device is 192.168.201.217 (local), priority is 120
Master Advertisement interval is 3 sec
```

```
Master Down interval is 9 sec
Ruijie#
```

The following example displays the brief information of the VRRP group.

```
Ruijie# show vrrp brief
Interface  Grp Pri 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
Ruijie#show ipv6 vrrp brief
Interface      Grp Pri timer Own Pre State Master addr  Group addr
Gi0/13        1 100 3.60 -  P Master FE80::1          FE80::2
```

#### Related Commands

Command	Description
<code>vrrp group ip <i>ipaddress</i> [ <b>secondary</b> ]</code>	Enables the VRRP function and set the IP address for the virtual device.

**Platform** N/A  
**Description**

## 5.2 show vrrp interface

Use this command to display the information of the VRRP on the interface.

**show [ ipv6 ] vrrp interface *type number* [ **brief** ]**

#### Parameter Description

Parameter	Description
<b>ipv6</b>	(Optional) Applies to IPv6 VRRP.
<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
<code>vrrp group ip ip address [ secondary ]</code>	Enables the VRRP function and set the IP address for the virtual device

**Platform** N/A  
**Description**

### 5.3 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	Parameter	Description
<b>Description</b>	<i>interface-type</i> <i>interface-number</i>	Interface type and number

**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 VRRP packet transmission on all interfaces.



**Examples**

```
Ruijie# show vrrp packet statistics

Total
  InReceives: 966043 packets, InOctets: 38641824, InErrors: 38826
  OutTransmits: 306079, OutOctets: 7798564
GigabitEthernet 3/0/1
  InReceives: 799665 packets, InOctets: 31986600, InErrors: 19657
  OutTransmits: 272931, OutOctets: 6675320
GigabitEthernet 3/0/2
  InReceives: 0 packets, InOctets: 0, InErrors: 0
  OutTransmits: 681, OutOctets: 16344
```

The following example displays the statistics of VRRP packets on the interface gigabitEthernet 3/0/1.

```
Ruijie#show vrrp packet statistics gigabitEthernet 3/0/1
GigabitEthernet 3/0/1
  InReceives: 799911 packets, InOctets: 31996440, InErrors: 19657
  OutTransmits: 273053, OutOctets: 6677760
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 5.4 vrrp accept\_mode

Use this command to enable the packet accepting function on the IPv6 VRRP virtual router.

Use the **no** form of this command to disable this function.

**vrrp ipv6 group accept\_mode**

**no vrrp ipv6 group accept\_mode**

Parameter	Parameter	Description
<b>Description</b>	<i>group</i>	VRRP group number

**Defaults** The master IPv6 VRRP is not allowed to accept packets whose destination IPv6 address is the IPv6 address of a virtual router. However, the NA and NS packets should be accepted regardless of the configuration of Accept\_Mode. Also, the master IPv6 VRRP virtual router in the owner state will accept and process any packets whose destination IPv6 address is the IPv6 address of a virtual router, regardless of the configuration of Accept\_Mode.

**Command Mode** Interface configuration mode

**Usage Guide** Configuration of the network interface is effective for the master virtual router.

 Only IPv6 VRRP has this configuration mode.

**Configuration** The following example enables the accept mode on the 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)#ipv6 enable
Ruijie(config-if-GigabitEthernet 0/0)#ipv6 address 2001::2/64
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 FE80::1
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 2001::1
Ruijie(config-if-GigabitEthernet 0/0)# vrrp ipv6 1 accept_mode
```

**Platform** N/A

**Description**

## 5.5 vrrp authentication

Use this command to enable VRRP authentication.

Use the **no** form of this command to disable this function.

**vrrp group authentication string**

**no vrrp group authentication**

Parameter	Parameter	Description
<b>Description</b>	<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.

**Configuration** The following example sets the authentication password for 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 authentication x30dn78k
```

**Platform** N/A

**Description**

## 5.6 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
<b>Description</b>	<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** Global configuration mode

**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** The following example enables global BFD correlation for IPv4 VRRP.

**Examples**

```
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	Command	Description
---------	---------	-------------

<b>Commands</b>	N/A	N/A
-----------------	-----	-----

**Platform** N/A

**Description**

## 5.7 vrrp bfd (Interface Configuration Mode)

Use this command to enable BFD correlation for the specified IPv4 VRRP group.

Use the **no** form of this command to remove the BFD correlation for the specified IPv4 VRRP group.

**vrrp group bfd ip-address**

**no vrrp group bfd ip-address**

Parameter	Parameter	Description
<b>Description</b>	<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** Interface configuration mode.

**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** The following example enables BFD correlation for the VRRP group.

**Examples** 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	Command	Description
---------	---------	-------------

<b>Commands</b>	N/A	N/A
-----------------	-----	-----

**Platform** N/A

**Description**

## 5.8 vrrp delay

Use this command to set the reload latency of the VRRP group on the interface.

Use the **no** form of this command to restore the default setting.

**vrrp delay** { **minimum** *min-seconds* | **reload** *reload-seconds* }

**no vrrp delay**

Parameter	Parameter	Description
<b>Description</b>	<b>minimum</b> <i>min-seconds</i>	When the interface is up, VRRP group shall be reloaded after at least <i>min-seconds</i> .
	<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 <i>min-seconds</i> .

**Defaults** This function is disabled by default.

**Command** Interface configuration mode

**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** N/A

**Description**

## 5.9 vrrp description

Use this command to specify a descriptor for the VRRP.

Use the **no** form of this command to restore the default setting.

**vrrp** [ **ipv6** ] *group* **description** *text*

**no vrrp** [ **ipv6** ] *group* **description**

Parameter	Parameter	Description
Description	<b>ipv6</b>	Applies to IPv6 VRRP.
	<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"
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 fe80::1
Ruijie(config-if-GigabitEthernet 0/0)#vrrp ipv6 1 description "Building B -
Marketing and Administration"
```

Related Commands	Command	Description
	<b>vrrp</b> <i>group</i> <b>ip</b> <i>ip-address</i> [ <b>secondary</b> ]	Enables the VRRP function and set the IP address for the virtual device

**Platform Description** N/A

## 5.10 vrrp detection-vlan

Use this command to enable IPv4 VRRP packets to be sent to only the first or a specified Sub VLAN

in a Super VLAN interface.

Use the **no** form of this command to enable IPv4 VRRP packets to be sent to all the Sub VLANs in a Super VLAN interface.

**vrrp detection-vlan** {**first-subvlan** | *subvlan-id*}

**no vrrp detection-vlan**

Parameter	Parameter	Description
Description	<b>first-subvlan</b>	IPv4 VRRP packets are sent to only the first Sub VLAN in a Super VLAN interface.
	<i>subvlan-id</i>	IPv4 VRRP packets are sent to a specified Sub VLAN in a Super VLAN interface.

**Defaults** By default, IPv4 VRRP packets are sent to only the first Sub VLAN in a Super VLAN interface.

**Command Mode** Interface configuration mode

**Usage Guide** Use this command to configure the mode in which IPv4 VRRP packets are sent to a Super VLAN interface. There are three modes in which IPv4 VRRP packets are sent to a Super VLAN interface: to only the first Sub VLAN, to a specified Sub VLAN, or all Sub VLANs.

 This command is configured on a VLAN interface and applies only to Super VLAN interfaces.

**Configuration Examples** The following example enables IPv4 VRRP packets to be sent to all Sub VLANs in Super VLAN 3.

```
Ruijie#configure terminal
Ruijie(config)# vlan 3
Ruijie(config-vlan)# supervlan
Ruijie(config-vlan)# subvlan 5-10
Ruijie(config-vlan)#exit
Ruijie(config)#interface vlan 3
Ruijie(config-if)# no vrrp detection-vlan
```

Related Commands	Command	Description
	<b>vrrp ip</b>	Enables the VRRP function and set the IP address of the VRRP.

**Platform Description** N/A

## 5.11 vrrp ip

Use this command to enable VRRP on the interface and specify the related virtual IP address.

Use the **no** form of this command to restore the default setting.

**vrrp group ip** *ipaddress* [ **secondary** ]

**no vrrp group ip ipaddress [ secondary ]**

Parameter	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.

**Defaults** This function is disabled by default.

**Command Mode** Interface configuration mode

**Usage Guide** If the **secondary** parameter is not used, the IP address set here will become the master IP address of the virtual device. Note that if the VRRP group is using the IP address of the Ethernet interface, an error occurs when you remove the IP address of the VRRP group with the **no** command, because there are duplicated IP addresses in the LAN.

**Configuration Examples** The following example enables the VRRP function on Ethernet interface 0. The VRRP group number is 1, primary IP address of the virtual device is 10.0.1.20 and secondary IP address is 10.0.2.20.

```
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

## 5.12 vrrp ipv6

Use this command to enable IPv6 VRRP on the interface and specify the related virtual IPv6 address. Use the **no** form of the command to restore the default setting.

**vrrp group ipv6 ipv6-address**

**no vrrp group ip ipv6-address**

Parameter	Parameter	Description
Description	<i>group</i>	VRRP group number of the virtual device



<i>ipv6-address</i>	IPv6 address of the virtual device
---------------------	------------------------------------

**Defaults** This function is disabled by default.

**Command Mode** Interface configuration mode

**Usage Guide** IPv6 VRRP and IPv4 VRRP share group numbers ranging from 1 to 255. One VRRP group number of an interface is applicable to both IPv4 VRRP and IPv6 VRRP at the same time. The first configured address should be the link's local address, which cannot be deleted until the other virtual addresses are deleted.

**Configuration Examples** The following example enables the IPv6 VRRP function on Ethernet interface FastEthernet 0/0 with VRRP group number 1 and virtual IPv6 address FE80::1 and 2001::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)#ipv6 enable
Ruijie(config-if-GigabitEthernet 0/0)#ipv6 address 2001::2/64
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 FE80::1
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 2001::1
```

Related Commands	Command	Description
	<b>show ipv6 vrrp [ brief   group ]</b>	Displays the IPv6 VRRP configuration.

**Platform** N/A  
**Description**

## 5.13 vrrp preempt

Use this command to set the preemption mode of the VRRP group.

Use the **no** form of this command to restore the default setting.

**vrrp [ ipv6 ] group preempt [ delay seconds ]**

**no vrrp [ ipv6 ] group preempt [ delay ]**

Parameter Description	Parameter	Description
	<b>ipv6</b>	Applies to IPv6 VRRP.
	<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
```

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)#ipv6 enable
Ruijie(config-if-GigabitEthernet 0/0)#ipv6 address 2001::2/64
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 FE80::1
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 2001::1
Ruijie(config-if-GigabitEthernet 0/0)#vrrp ipv6 1 preempt delay 15
Ruijie(config-if-GigabitEthernet 0/0)#vrrp ipv6 1 priority 200
```

**Related Commands**

Command	Description
<b>vrrp group ip <i>ipaddress</i> [ <b>secondary</b> ]</b>	Enables the VRRP function and set the IP address for the virtual device.
<b>vrrp group priority <i>level</i></b>	Sets the VRRP group priority.

**Platform** N/A

**Description**

## 5.14 vrrp priority

Use this command to specify the priority of the VRRP group.

Use the **no** form of this command to restore the default setting.

**vrrp** [ ipv6 ] *group* **priority** *level*

**no vrrp** [ ipv6 ] *group* **priority**

Parameter	Parameter	Description
Description	<b>ipv6</b>	Specifies the priority of the IPv6 VRRP group.
	<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 Mode** Interface configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example sets the priority of IPv4 VRRP group 1 as 254.

```
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
```

The following example sets the priority of IPv6 VRRP group 1 as 254.

```
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)#ipv6 enable
Ruijie(config-if-GigabitEthernet 0/0)#ipv6 address 2001::2/64
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 FE80::1
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 2001::1
Ruijie(config-if-GigabitEthernet 0/0)#vrrp ipv6 1 priority 254
```

Related Commands	Command	Description
	<b>vrrp</b> <i>group</i> <b>ip</b> <i>ipaddress</i> [ <b>secondary</b> ]	Enables the VRRP function and set the IP address for the virtual device.
	<b>vrrp</b> <i>group</i> <b>preempt</b> [ <b>delay</b> <i>seconds</i> ]	Sets the VRRP in the preemption mode.

**Platform** N/A

**Description**

## 5.15 vrrp timers advertise

Use this command to specify the interval for the master device to send the VRRP advertisement.

Use the **no** form of this command to restore the default setting.

**vrrp [ ipv6 ] group timers advertise { advertise-interval | csec centisecond-interval }**

**no vrrp [ ipv6 ] group timers advertise**

Parameter	Parameter	Description
<b>Description</b>	<b>ipv6</b>	Applies to IPv6 VRRP.
	<i>group</i>	VRRP group number
	<i>advertise-interval</i>	Sets the interval time in seconds between sending VRRP advertisement.
	<b>csec centisecond-interval</b>	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. Based on the RFC specification, the maximum advertisement interval of the IPv4/IPv6 VRRPv3 group is 40 seconds. The advertisement interval can be configured larger than 40 seconds, but the effective advertisement interval is 40 seconds.

**Configuration** 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 IPv6 VRRP advertisement interval as 4 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)#ipv6 enable
Ruijie(config-if-GigabitEthernet 0/0)#ipv6 address 2001::2/64
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 FE80::1
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 2001::1
Ruijie(config-if-GigabitEthernet 0/0)#vrrp ipv6 1 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
```

The following example sets the IPv6 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)#ipv6 enable
Ruijie(config-if-GigabitEthernet 0/0)#ipv6 address 2001::2/64
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 FE80::1
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 2001::1
Ruijie(config-if-GigabitEthernet 0/0)#vrrp ipv6 1 timers advertise csec 50
```

Related Commands	Command	Description
	<b>vrrp group ip <i>ipaddress</i> [ <b>secondary</b> ]</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**

## 5.16 vrrp timers learn

Use this command to enable the timer learning function.

Use the **no** form of this command to restore the default setting.

**vrrp [ ipv6 ] group timers learn**

**no vrrp [ ipv6 ] group timers learn**

Parameter Description	Parameter	Description
	<b>ipv6</b>	Applies to IPv6 VRRP.
	<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** Interface configuration mode

**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
```

The following example to enables the timer learning function on the IPv6 VRRP group 1.

```
vrrp ipv6 1 timers learn
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)#ipv6 enable
Ruijie(config-if-GigabitEthernet 0/0)#ipv6 address 2001::2/64
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 FE80::1
Ruijie(config-if-GigabitEthernet 0/0)#vrrp 1 ipv6 2001::1
Ruijie(config-if-GigabitEthernet 0/0)#vrrp ipv6 1 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 ipv6</b> <i>ipaddress</i>	Enables the VRRP function and set the IPv6 address for the virtual device.
<b>vrrp group timers advertise</b> <i>interval</i>	Sets the IPv4 VRRP advertising interval.
<b>vrrp ipv6 group timers advertise</b> <i>interval</i>	Sets the IPv6 VRRP advertising interval.

**Platform** N/A

**Description**

## 5.17 vrrp track

Use these commands to enable the IPv4/IPv6 VRRP track in the interface configuration mode. Use the no form of these commands to restore the default setting.

```
vrrp group track { interface-type interface-number | bfd interface-type interface-number
ipv4-address } [ priority ]
```

```
vrrp ipv6 group track interface-type interface-number [ priority ]
```

```
no vrrp [ ipv6 ] group track interface-type interface-number
```

Use these commands to enable VRRP IPv4/IPv6 address track. Use the **no** form of these commands to restore the default setting.

```
vrrp group track ipv4-address [ interval interval-value ] [ timeout timeout-value ] [ retry retry-value ]
[ priority ]
```

```
vrrp ipv6 group track { ipv6-global-address | ipv6-linklocal-address interface-type interface-number }
[ interval interval-value ] [ timeout timeout-value ] [ retry retry-value ] [ priority ]
```

```
no vrrp group track ipv4-address
```

```
no vrrp ipv6 group track { ipv6-global-address | ipv6-linklocal-address interface-type interface-
number }
```

Use this command to disable the specified neighbor IP address track via BFD.

```
no vrrp group track bfd interface-type interface-number ipv4-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.
<b>ipv6</b>	Applies to IPv6 VRRP.
<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.
<i>ipv6-global-address</i>	Global unicast IPv6 address
<i>ipv6-linklocal-address</i>	Local link IPv6 address

#### Defaults

This function is disabled by default. Even if the VRRP function is enabled, no interface or IP address is specified.

**Command** Interface configuration mode  
**Mode**

**Usage Guide**

- i 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).
- i If a host is monitored, specify the IPv4 address for the IPv4 VRRP router or the IPv6 address for the IPv6 VRRP router.
- i If the host IP address is link-local, an interface must be specified.
- i 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**

Command	Description
---------	-------------



<b>Commands</b>	<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**

## 5.18 vrrp version

Use this command to configure the version of sending the IPv4 VRRP multicast packets.

For the IPv4 VRRP, there are two versions: VRRPv2 and VRRPv3.

Use the **no** form of this command to restore the default setting.

**vrrp group version** { 2 | 3 }


**no vrrp group version**

Parameter	Parameter	Description
<b>Description</b>	<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 Examples** The following example configures the version of sending the IPv4 VRRP packets on the interface 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.

<b>Platform</b>	N/A
<b>Description</b>	

## 6 VRRP Plus Commands

### 6.1 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.
	<i>group</i>	(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** The following example displays the details of all VRRP Plus groups.

**Examples**

```
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**

## 6.2 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 Examples** The following example displays the actions of the VRRP Plus on FastEthernet 0/0.

```
Ruijie# show vrrp balance interface FastEthernet 0/0
FastEthernet 0/0 - Group 1
  State is BVG
  Virtual IP address is 192.168.1.54
  Hello time 1 sec, hold time 3 sec
  Load balancing: host-dependent
  Redirect time 300 sec, forwarder time-out 14400 sec
  Weighting 90 (configured 100), thresholds: lower 1, upper 100
    Track object 1, state: down, decrement weight: 10
  There are 2 forwarders
  Forwarder 1 (local)
    MAC address:
      0000.5e00.0101
```

```

Owner ID is 00d0.f822.33ab
Forwarder 2
MAC address:
    001a.a916.0201
Owner ID is 00d0.f822.8800

```

**Related  
Commands**

Command	Description
<b>vrrp group balance</b>	Enables the VRRP Plus function.
<b>vrrp group load-balancing { host-dependent   round-robin   weighted }</b>	Sets the load balancing policy of the VRRP Plus.
<b>show vrrp balance interface type number [ brief ]</b>	Displays the VRRP Plus running status of the specified interface.

**Platform** N/A**Description**

## 6.3 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** Interface configuration mode**Mode****Usage Guide** To enable VRRP Plus, you must configure the VRRP group first.**Configuration** The following example enables the VRRP Plus function on the Layer 3 interface GigabitEthernet0/0.**Examples**

```

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**

## 6.4 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**

## 6.5 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
```

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** N/A

**Description**

## 6.6 vrrp timers redirect

Use this command to set the redirection interval and timeout of the proxy virtual MAC address for the VRRP Plus backup group.

Use the **no** form of this command to restore the default value.

**vrrp 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** Interface configuration mode

**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** N/A

**Description**

## 6.7 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** Interface configuration mode

**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> [ brief ]	Displays the VRRP Plus running status of the specified interface.
--	---

**Platform** N/A

**Description**

---

## 7 BFD Commands

### 7.1 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 50 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 50 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** Interface configuration mode

**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** 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**

## 7.2 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** Interface configuration mode  
**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**

## 7.3 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

## 7.4 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 Mode** Interface configuration mode

**Usage Guide** This command cannot be configured on the L3 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>	
<b>bfd slow-timer</b>		Configures the slow-timer time.

**Platform** N/A

**Description**

## 7.5 bfd slow-timer

Use this command to set the slow timer, which is used to send the BFD packets in the BFD asynchronous mode.

Use the **no** form of this command to restore the default setting.

**bfd slow-timer** [ *milliseconds* ]

**no bfd slow-timer**

Parameter Description	Parameter	Description
	<i>milliseconds</i>	BFD slow-timer time. The range is from 1,000 to 30,000. The unit is millisecond.

**Defaults** The default slow-timer is 3,000 milliseconds.

**Command Mode** Global configuration mode

**Usage Guide** N/A

**Configuration Examples** The following example sets the slow-timer to 14,000 milliseconds.

```
Ruijie(config)# bfd slow-timer 14000
```

Related Commands	Command	Description
	<b>bfd echo</b>	Enables the BFD echo function

**Platform Description** N/A

## 7.6 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**

Parameter Description	Parameter	Description
	<i>milliseconds</i>	(Optional) Sets the BFD up-dampening time. The range is from 0 to 300,000. The unit is millisecond.

**Defaults** The default is 0 millisecond, which means that the notification is sent to the related application once the session state is UP.

**Command Mode** Interface configuration mode

**Usage Guide** N/A

**Configuration** The following example sets the BFD up-dampening time to 60,000 milliseconds.

**Examples** Ruijie(config)# bfd up-dampening 60000

**Related  
Commands**

Command	Description
bfd	Configures the BFD session parameter.

**Platform** N/A

**Description**

## 7.7 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 | vrrp-balance | bgp-lsp | ldp-lsp | static-lsp | backward-lsp-with-ip | pst } ] [ ipv4 *ip-address* | ipv6 *ip-address* ] [ details ]

**Parameter  
Description**

Parameter	Description
vrf <i>vrf-name</i>	(Optional) sets the neighbor VRF name.
client	(Optional) specifies the routing protocol.
ap	Displays the BFD session configuration for Layer 3 aggregate ports.
bgp	Displays the BFD session configuration for BGP.
isis	Displays the BFD session configuration for ISIS.
ospf	Displays the BFD session configuration for OSPF.
ospfv3	Displays the BFD session configuration for OSPFv3.
rip	Displays the BFD session configuration for RIP.
vrrp	Displays the BFD session configuration for VRRP.
static-route	Displays the BFD session configuration for the static route.
pbr	Displays the BFD session configuration for PBR.
vrrp-balance	Displays the BFD session configuration for the VRPP.
bgp-lsp	Displays the BFD session configuration for the BGP-LSP.
ldp-lsp	Displays the BFD session configuration for the LDP-LSP.
backward-lsp-with-ip	Displays the BFD session configuration for the LSP backward IP co-operation.
static-lsp	Displays the BFD session configuration for the static LSP co-operation.
pst	Displays the BFD session configuration and the Layer3 interface status.
ipv4 <i>ip-address</i>	(Optional) Displays the session information of the specified IPv4 neighbor.
ipv6 <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
Holddown (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      Holdown(mult) State  Int
192.168.23.1 192.168.23.2  8192/0     Admin      0(3  )     Down
GigabitEthernet 0/2 (AP 1)
```

**Related  
Commands**

Command	Description
N/A	N/A

**Platform  
Description**

N/A

## 8 IP Event Dampening Commands

### 8.1 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.
	<b>restart-penalty</b>	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**

## 8.2 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**

### 8.3 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 Examples** The following example shows the details of IP event dampening configuration.

```
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**

<b>Command</b>	<b>Description</b>
<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

---

## 9 VSU Commands

### 9.1 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**

### 9.2 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** The following examples configures interface Gi 1/1/1 as a BFD port.

**Examples**

```
Ruijie(config)# interface GigabitEthernet 1/1/1
Ruijie(config-if- GigabitEthernet 1/1/1)# no switchport
Ruijie(config)# interface GigabitEthernet 2/1/1
Ruijie(config-if- GigabitEthernet 2/1/1)# no switchport
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# dual-active bfd interface GigabitEthernet 1/1/1
Ruijie(config-vs-domain)# dual-active bfd interface GigabitEthernet 2/1/1
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A

**Description**

### 9.3 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**

## 9.4 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****Description**

Parameter	Description
<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****Description**

N/A

## 9.5 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**

The following example configures AP 1 as the AP-based detection interface.

**Examples**

```
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**

## 9.6 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
<b>Description</b>	<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 Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 9.7 show switch id

Use this command to display the device ID.

**show switch id**

<b>Parameter</b>	<b>Parameter</b>	<b>Description</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 Examples</b>	The following example displays the device ID in the standalone mode.	
	<pre>Ruijie#show switch id Switch ID is 2</pre>	
	The following example displays the device ID in the VSU device.	
	<pre>Ruijie#show switch id Switch ID is 1</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>show switch virtual</b>	Displays the domain ID as well as the ID and role of each chassis.
<b>Platform Description</b>	N/A	

## 9.8 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**

<b>Parameter</b>	<b>Parameter</b>	<b>Description</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 Examples</b>	The following example displays the domain ID as well as the ID, status and role of the device in standalone mode.	
	<pre>Ruijie# show switch virtual Current system is running in "STANDALONE" mode.</pre>	

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</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

## 9.9 show switch virtual balance

Use this command to display the load balance configuration in VSU mode.

**show switch virtual balance**

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults**

N/A

**Command Mode**

Privileged EXEC mode

**Usage Guide**

N/A

**Configuration  
Examples**

The following example displays the load balance configuration of the device in VSU mode.

```
Ruijie#show switch virtual balance
Aggregate port LFF: enable
```

**Related  
Commands**

Command	Description
<b>show switch virtual</b>	Displays the domain ID as well as the ID and role of the device.

Platform	N/A
Description	

## 9.10 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

## 9.11 show switch virtual dual-active

Use this command to display the configuration of DAD.

**show switch virtual dual-active { bfd | aggregateport | summary }**

Parameter	Parameter	Description
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

## 9.12 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

## 9.13 show switch virtual role

Use this command to display the ID, role, and priority of each chassis.

**show switch virtual role**

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults**

N/A

**Command Mode**

Privileged EXEC mode

**Usage Guide**

N/A

**Configuration  
Examples**

The following example displays the domain ID as well as the ID, status and role of the device in standalone mode.

```

Ruijie# show switch virtual
Current system is running in "STANDALONE" mode.

```

The following example displays the domain ID as well as the ID, status and role of each device in VSU mode.

```

Ruijie#show switch virtual
Switch_id  Domain_id  Priority  Status  Role  Description
-----
--
1 (1)      1 (1)      100 (100)  OK      ACTIVE  switch-1

```

2 (2)	1 (1)	100 (100)	OK	CANDIDATE	switch-2
3 (3)	1 (1)	100 (100)	OK	STANDBY	switch-3

**Related  
Commands**

Command	Description
<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

## 9.14 show switch virtual topology

Use this command to display the VSU topology connection status.

**show switch virtual topology**

**Parameter  
Description**

Parameter	Description
N/A	N/A

**Defaults**

N/A

**Command Mode**

Privileged EXEC mode

**Usage Guide**

N/A

**Configuration**

The following example displays the topology status.

**Examples**

```
Ruijie# show switch virtual topology
Introduction: '[num]' means switch num, '(num/num)' means vsl-aggregateport
num.

Chain Topology:
[1] (1/2) --- (2/1) [2]

Switch[1]: ACTIVE, MAC: 00d0.f822.33d6, Description: Switch1
Switch[2]: STANDBY, MAC: 1234.5678.9003, Description: Switch2
```

**Field Description**

Field	Description
Ring Topology	Topology type.
Switch[-]	Device description.

**Related  
Commands**

Command	Description
N/A	N/A

**Platform**  
**Description**

N/A


## 9.15 switch

Use this command to specify the ID of a device in the VSU system.

Use the **no** form of this command to restore the default setting.

**switch** *switch\_id*

**no switch**

Parameter	Parameter	Description
<b>Description</b>	<i>switch_id</i>	ID of a device in the VSU system
		 The range depends on products.

**Defaults** The default is 1.

**Command Mode** 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**  
**Description**

N/A

## 9.16 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	Parameter	Description
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

## 9.17 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

## 9.18 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**

<b>Parameter</b>	<b>Parameter</b>	<b>Description</b>
<b>Description</b>	<i>switch_id</i>	Device ID
	<i>dev_name</i>	Device description, no greater than 32 characters.
<b>Defaults</b>	N/A	
<b>Command Mode</b>	config-vs-domain configuration mode	
<b>Usage Guide</b>	This command is configured on a device in whether standalone or VSU mode and takes effect immediately after configuration,	
<b>Configuration Examples</b>	The following example configures the description for a VSU switch.	
	<pre>Ruijie(config)# switch virtual domain 1 Ruijie(config-vs-domain)# switch 1 description buildingA Ruijie(config-vs-domain)# exit</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	N/A	N/A
<b>Platform Description</b>	N/A	


## 9.19 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**

<b>Parameter</b>	<b>Parameter</b>	<b>Description</b>
<b>Description</b>	<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.

<b>Defaults</b>	The default <i>new_domain_id</i> is 100 by default.	
<b>Command Mode</b>	config-vs-domain configuration mode	
<b>Usage Guide</b>	Use this command only in VSU mode. In addition, the setting can take effect only after the device is restarted.	
<b>Configuration</b>	The following example sets the domain ID of device 1 to 10 in VSU mode.	

**Examples**

```
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****Commands**

Command	Description
<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**

N/A

**Description**

## 9.20 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**

The following example sets the priority of device 1 to **200**.



**Examples**

```
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

## 9.21 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**

The following example modifies the ID of device 1 that is running to 2 in VSU mode.

**Examples**

```
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

## 9.22 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
<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 AP in VSU mode.

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# switch virtual aggregateport lff enable
```

Related Commands	Command	Description
	<b>show switch virtual balance</b>	Displays the current traffic balancing mode.

**Platform**  
**Description**

N/A

## 9.23 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	<i>domain_id</i>	Domain ID of the VSU, in the range from 1 to 255.

**Defaults** The default is 100.

**Command Mode** Global configuration mode

**Usage Guide** Only two devices with the same domain ID can form a virtual device. The domain ID must be unique within the local area network (LAN).

**Configuration Examples** The following example sets the domain ID of the VSU to 1 in standalone mode.

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)#
```

Related Commands	Command	Description
	<b>show switch virtual</b>	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

## 9.24 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**

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 ECMP interface in VSU mode.

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)#switch virtual ecmp lff enable
```

Related Commands	Command	Description
	<b>show switch virtual balance</b>	Displays the current load balance mode.

**Platform Description** N/A

## 9.25 vsl-port

Use this command to enter VSL-PORT mode

**vsl-port**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** N/A

**Command Mode** Global configuration mode

**Usage Guide** This command is configured on a device in whether standalone mode or VSU mode.

**Configuration Examples** The following example enters VSL-AP configuration mode on a device in standalone mode.

```
Ruijie(config)# vsl-port
Ruijie(config-vsl-port)#
```

The following example enters VSL-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

## 10 RNS &Track Commands

### 10.1 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

Track configuration mode

#### 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

The following example sets the delay time to 30 seconds when the tracked object changes to up from down.

#### Examples

```
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

N/A

#### Description

## 10.2 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** *a.b.c.d* [**source-ipaddr** *ip-address*] [**out-interface** *type num*] [**next-hop** *A.B.C.D*]} | **oob** *destination-hostname* **name-server** *a.b.c.d* [**source-ipaddr** *ip-address*] **via** *type num* **next-hop** *A.B.C.D*}

Parameter Description	Parameter	Description
	<i>destination-hostname</i>	Sets the destination IP address or the destination host domain name.
	<b>oob</b>	Enables management port detection.
	<i>a.b.c.d</i>	Sets the IP address for the DNS server.
	<i>ip-address</i>	Indicates the source IP address of RNS packets.
	<b>out-interface</b> <i>type num</i>	Specifies the egress interface (non-management port) for RNS packets.
	<b>via</b> <i>type num</i>	Specifies the management port as the egress interface (non-management port) for RNS packets.
	<i>A.B.C.D</i>	Specifies the next-hop IP address for 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.

```
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 Description** N/A

## 10.3 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

IP RNS TCP 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**

## 10.4 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** *A.B.C.D* ] ]

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>A.B.C.D</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

## 10.5 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 Description** N/A

## 10.6 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> <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 is allfail is this parameter supported, which is available exclusively.</b></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> [ <i>x-value y-value</i> ]	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** Global configuration mode  
**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	udp-echo
timeout	✓	✓	✓
rtt	✓	✓	✓

The default thresholds for monitored elements are listed as follows:

Monitored Element	Upper Threshold	Lower Threshold
timeout	-	-
rtt	5000 ms	0 ms

**Configuration** 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**

## 10.7 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** Global configuration mode  
**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** N/A  
**Description**

## 10.8 ip 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** Global configuration mode  
**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** N/A  
**Description**

## 10.9 ip rns restart

Use this command to restart the IP RNS probe.

**ip rns restart** *operation-number*

Parameter Description	Parameter	Description
	<i>operation-number</i>	

**Defaults** N/A

**Command Mode** Global configuration mode

**Usage Guide** 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.

**Configuration** The following example restarts IP RNS 1.

**Examples**

```
Ruijie(config)# ip rns restart 1
```

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 10.10 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*

Parameter Description	Parameter	Description
	<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 [ :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 hh:mm:ss</b>	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**

## 10.11 object

Use this command to add a tracked object to the object track list.

Use the **no** form of this command to delete a tracked object.

**object** *object-number* [ **not** ]

**no object** *object-number*

Parameter	Parameter	Description
Description	<i>object-number</i>	Tracked object number, in the range from 1 to 700

**Defaults** No tracked object is configured by default.

**Command** Track configuration mode

**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** N/A

**Description**

## 10.12 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** IP RNS ICMP echo configuration mode

**Mode**

**Usage Guide** This command is used to fill bytes in the probe packet to probe for the bigger packet.

Probe Type	Range	Default
icmp-echo	[ 36, 1472 ]	36
Udp-echo	[36, 1472]	36

**Configuration** 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**

## 10.13 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  
Description**

N/A

## 10.14 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**

## 10.15 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 Description** N/A

### 10.16 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**

Parameter	Description
-----------	-------------

<b>Description</b>	
<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.

```
Ruijie#show ip rns reaction-configuration
Entry number: 1
Reaction: rtt
Threshold Type: Never
Rising (milliseconds): 5000
Falling (milliseconds): 3000
Threshold Count: 5
Threshold Count2: 5
Action Type: trigger
Reaction: timeout
Threshold Type: Never
Threshold Count: 5
Threshold Count2: 5
Action Type: trigger
```

Field	Description
Entry number	IP RNS operation index
Reaction	Monitored object
Threshold Type	The available parameters are listed as follows: <b>never</b> : Never triggers operation. <b>consecutive</b> : Triggers operation when the value of monitored element exceeds the threshold range for <i>occurrences</i> consecutive times. <b>average</b> : Triggers operation when the average value of <b>number-of-measurements consecutive times</b> exceeds the threshold range. <b>immediate</b> : Triggers operation immediately when the value of monitored element exceeds the threshold range. <b>xofy</b> : X probes among the latest Y ones exceed the threshold range.
Rising (milliseconds)	Upper threshold

Falling (milliseconds)	Lower threshold
Threshold Count	The parameter refers to the x value when the threshold-type is <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** N/A

**Description**

## 10.17 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>

**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 Examples** The following example displays the reaction trigger information for all RNS objects.

```
Ruijie#show ip rns reaction-trigger
Entry number: 1
Target rns index: 2
Status of Entry (SNMP RowStatus): active
Operational State: pending
```

Field	Description
Entry number	RNS index
Target rns index	Target RNS index
Status of Entry (SNMP RowStatus)	Status of RNS entry

Operational State	Reaction-trigger state
-------------------	------------------------

Related Commands	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 10.18 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>

**Defaults** N/A

**Command Mode** Privileged EXEC mode

**Usage Guide** The statistics vary with different packet types.

**Configuration** The following example displays the RNS object statistics.

**Examples**

```
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** N/A  
**Description**

## 10.19 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** N/A  
**Description**

## 10.20 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** N/A

**Description**

## 10.21 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

IP RNS TCP 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**

## 10.22 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

IP RNS TCP 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**

## 10.23 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  
IP RNS TCP 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.

```
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**

## 10.24 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  
IP RNS TCP 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.

```
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**

## 10.25 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>	
<i>interface-type</i> <i>interface-number</i>		Sets the interface type and the interface number.

**Defaults** N/A

**Command** Global configuration mode

**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.

```
Ruijie(config)# track 3 interface ethernet 0/1 line-protocol
```

Related Commands	Command	Description
	<b>track rns</b>	

<b>show track</b>	Displays the tracked object related information.
-------------------	--

**Platform** N/A

**Description**

## 10.26 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**

## 10.27 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** Global configuration mode

**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** The following example configures the object “track 5” to track the RNS instance “rns 7”.

**Examples** 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**

## 10.28 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  
IP RNS UDP echo 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
```

<b>Related Commands</b>	Command	Description
	<b>frequency</b> <i>milliseconds</i>	Sets the interval of sending the packets.

**Platform** N/A

**Description**



## 11 VSD Commands

### 11.1 allocate interface

Use this command to allocate physical port resources to the VSD.

**allocate interface** *int\_index*

Use the **no** form of this command to reclaim physical ports allocated to a non-default VSD.

**no allocate interface** *int\_index*

Parameter Description	Parameter	Description
	<b>interface</b> <i>int_index</i>	Labels of physical ports

**Defaults** All physical ports belong to the default VSD, also known as VSD0.

**Command Mode** VSD configuration mode

**Usage Guide** This command is used to allocate or reclaim physical ports to or from a non-default VSD.



If no physical port is available for a non-default VSD, the VSD can only be managed but not used. If all physical ports are allocated to a non-default VSD, the default VSD will have no physical port available. The VSL interface cannot be allocated.

**Configuration Examples** The following example allocates physical ports to a non-default VSD (named admin).

```
Ruijie# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# vsd admin
Ruijie(config-vsd)#allocate interface tenGigabitEthernet 2/2/44
Interface-group[2/2/1 ~ 2/2/44] and their config will be removed from vsd[0].
Are you sure to continue(y/n)? [no]y
Allocating ports of slot 2/2 may lead to topological division because of vs1
port on this card.Are you sure to continue(y/n)? [no]y
```

**Platform Description** N/A

### 11.2 allocate slot

Use this command to allocate multi-service card resources to a VSD.

Use the **no** form of this command to reclaim multi-service card resources allocated to a non-default

VSD.

**allocate slot** *slot\_id*

**no allocate slot** *slot\_id*

Parameter Description	Parameter	Description
	<b>slot</b> <i>slot_id</i>	Slot ID of a multi-service card

**Defaults** Multi-service cards belong to the default VSD, also known as VSD0.

**Command Mode** VSD configuration mode

**Usage Guide** This command is used to allocate multi-service card resources to a non-default VSD or to reclaim multi-service card resources from the non-default VSD.

**Configuration Examples** The following example allocates multi-service cards to a non-default VSD (named admin).

```
Ruijie# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# vsd admin
Ruijie(config-vsd)# allocate slot 1/2
Allocating slot 1/2 may cause some service in source vsd to stop. Are you sure
to continue (y/n)? [no]y
Ruijie(config-vsd)#
```

**Platform Description** N/A

## 11.3 show vsd

Use this command to display the VSD information.

**show vsd** { **current-vsd** | { **membership** | **detail** | **all** } [ *vsd\_name* ] }

Parameter Description	Parameter	Description
	<b>current-vsd</b>	Name and ID of the current VSD
	<b>membership</b>	Displays physical port resources and multi-service resources in a VSD.
	<b>detail</b>	Displays detailed information about a VSD including its ID, name and MAC address.
	<b>all</b>	Displays full information about a VSD including its ID, name and MAC address, physical port resources and multi-service resources.
	<i>vsd_name</i>	Specifies a VSD. It refers to a VSD0, by default.

**Command Mode** Privileged EXEC mode/Global configuration mode

**Usage Guide** This command is used to display the information about VSD's physical port resources, multi-card resources and MAC address resources and etc.

**Configuration** The following example displays the ID and name of the current VSD.

**Examples**

```
Ruijie# sho vsd current-vsds
Current vsd is 1 -Default
Ruijie #
```

Field Description

Field	Description
Current vsd is 0	ID of the current VSD
Default	Name of the current VSD

The following example displays physical port resources and multi-service resources in all the VSDs.

```
Ruijie(config)# show vsd membership
vsd_id: 0
vsd_name: Default
interface:
TenGigabitEthernet 1/1   TenGigabitEthernet 1/2
    TenGigabitEthernet 1/3   TenGigabitEthernet 1/4
    TenGigabitEthernet 1/5   TenGigabitEthernet 1/6
    TenGigabitEthernet 1/7   TenGigabitEthernet 1/8

slot:
NA

vsd_id: 1
vsd_name: production
interface:
NA
slot:
NA
```

Field Description

Field	Description
vsd_id	ID of a VSD
vsd_name	Name of a VSD
interface	Physical port resources
slot	Multi-service card resources

The following example displays detailed information about all the VSDs.

```
Ruijie# show vsd detail
vsd_id: 0
vsd_name: Default
```

```

mac address: 00d0.f822.33c2
memory ratio: 70%
cpu weight: 10

memory:
Dev Slot Total (MB) Quota (MB) Used (MB) Available (MB)
--- ---
1 M1 4000 4000 900 3000
1 M2 4000 4000 700 3200

cpu:
Dev Slot Weight Usage (%)
--- ---
1 M1 10 5
1 M2 10 3

vsd_id: 1
vsd_name: production
mac address: 00d0.f822.33c3
memory ratio: 30%
cpu weight: 10

memory:
Dev Slot Total (MB) Quota (MB) Used (MB) Available (MB)
--- ---
1 M1 4000 900 200 700
1 M2 4000 900 100 800

cpu:
Dev Slot Weight Usage (%)
--- ---
1 M1 10 1
1 M2 10 1

```

## Field Description

Field	Description
vsd_id	VSD ID
vsd_name	VSD name
mac address	VSD MAC address
memory ratio	Maximum memory ratio
cpu weight	Maximum CPU weight
memory	Memory usage on different boards
Dev	Device number
Slot	Slot number
Total	Total memory (MB)

Quota	Allocated memory (MB)
Used	Used memory (MB)
Available	Idle memory (MB)
cpu	CPU usage on different boards
Weight	Used CPU weight
Usage	Used CPU ratio (%)

The following example displays the whole information about a VSD.

```
Ruijie#show vsd all
vsd_id: 0
vsd_name: Default
vsd mac address: 00d0.f822.33c0
memory ratio: 70%
cpu weight: 10

memory:
Dev Slot Total (MB) Quota (MB) Used (MB) Available (MB)
--- ---
1 M1 4000 4000 900 3000
1 M2 4000 4000 700 3200

cpu:
Dev Slot Weight Usage (%)
--- ---
1 M1 10 5
1 M2 10 3

interface:
    TenGigabitEthernet 2/2/1      TenGigabitEthernet 2/2/2
    TenGigabitEthernet 2/2/3      TenGigabitEthernet 2/2/4
    TenGigabitEthernet 2/2/5      TenGigabitEthernet 2/2/6
    TenGigabitEthernet 2/2/7      TenGigabitEthernet 2/2/8

slot:
    NA

vsd_id: 1
vsd_name: vsd1
vsd mac address: 00d0.f822.33c2
memory ratio: 30%
cpu weight: 10

memory:
```

```

Dev  Slot  Total (MB)  Quota (MB)  Used (MB)  Available (MB)
---  ---  -
1    M1    4000        900         200        700
1    M2    4000        900         100        800

cpu:
Dev  Slot  Weight  Usage (%)
---  ---  -
1    M1    10      1
1    M2    10      1

interface:
      NA

slot:
      NA

```

## Field Description

Field	Description
vsd_id	VSD ID
vsd_name	VSD name
vsd mac address	VSD MAC address
memory ratio	Maximum memory ratio
cpu weight	Maximum CPU weight
interface	Physical interface resource
slot	Multi-service card resource
memory	Memory usage on different boards
Dev	Device number
Slot	Slot number
Total	Total memory (MB)
Quota	Allocated memory (MB)
Used	Used VSD memory (MB)
Available	Idle memory (MB)
cpu	CPU usage on different boards
Weight	Used CPU weight
Usage	Used CPU ratio (%)

**Platform**  
**Description**

N/A

## 11.4 switchback

Use this command to switch back from the non-default VSD to the default VSD.

**switchback**

Parameter Description	Parameter	Description
	N/A	N/A

**Command Mode** Privileged EXEC mode

**Level** 14

**Usage Guide** This command is used to switch back from a non-default VSD to the default VSD. This command does not support login to the non-default VSD via Telnet, which means that this command is effective only when switching from the default VSD to the non-default VSD (that is to say, switchto shall go before switchback).

**Configuration Examples** The following example switches back from a non-default VSD (named admin) to the default VSD.

```
Ruijie# switchto vsd admin
*****
Ruijie General Operating System Software
Copyright (c) 1998-2013s by Ruijie Networks.
All Rights Reserved.
Neither Decompiling Nor Reverse Engineering Shall Be Allowed.
*****
admin# switchback
Ruijie#
```

**Platform Description** N/A

## 11.5 switchto vsd

Use this command to log in from the default VSD to a non-default VSD.

**switchto vsd** *vsd\_name*

Parameter Description	Parameter	Description
	<b>vsd</b> <i>vsd_name</i>	Name of a non-default VSD

**Command Mode** Privileged EXEC mode

**Level** 14

**Usage Guide** This command is used to log in from the default VSD to a non-default VSD.

**Configuration** The following example logs in from the default VSD to a non-default VSD (named admin).

```

Examples Ruijie# switchto vsd admin
*****
Ruijie General Operating System Software
Copyright (c) 1998-2013s by Ruijie Networks.
All Rights Reserved.
Neither Decompiling Nor Reverse Engineering Shall Be Allowed.
*****
admin#
    
```

**Platform** N/A  
**Description**

### 11.6 vsd

Use this command to create a VSD or just enter the VSD configuration mode (if a VSD has been created).

**vsd** *vsd\_name* [**id** *vsd\_number*]

Use the **no** form of this command to delete a created a non-default VSD.


**no vsd** *vsd\_name*

Parameter Description	Parameter	Description
	<b>vsd</b> <i>vsd_name</i>	Name of a non-default VSD
	<b>id</b> <i>vsd_number</i>	No. of a VSD When no parameter is specified, the system will automatically allocate the smallest number available to the VSD.

**Defaults** No non-default VSD is created by default.

**Command Mode** Global configuration mode

**Usage Guide** This command is used to create a VSD and enter the VSD configuration mode. If a VSD has been created, use this command to enter the VSD configuration mode. When entering the specified VSD configuration mode, you do not need to enter the vsd\_number. If you enter the vsd\_number, make sure that it is consistent with the current VSD number; otherwise, an error message appears.

 Get a corresponding license before you create a non-default VSD, with the total number of non-default VSDs created not greater than the total authorized number. The name of a VSD is independent from and irrelevant to the hostname of the device.

**Configuration** The following example creates a non-default VSD (named admin).



**Examples**

```
Ruijie# con t
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# vsd admin
Note: Creating VSD, one moment please ...
Ruijie(config-vsd)#
```

The following example enters the VSD configuration mode if a non-default VSD (named admin) has been created.

```
Ruijie# con t
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# vsd admin
Ruijie(config-vsd)#
```

The following example deletes a non-default VSD (named admin).

```
Ruijie# con t
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# no vsd admin
Deleting this vsd will remove its config. Continue to delete this vsd(y/n)? [no]y
Allocating ports of slot 2/2 may lead to topological division because of vsl
port on this card.Are you sure to continue(y/n)? [no]y
Note: Deleting VSD, one moment please ...
Ruijie(config)#
```

**Platform  
Description**

N/A

## 12 NLB GROUP Commands

### 12.1 nlb-group

Use this command to create a cluster group and specify the cluster's attributes (VRF, IP address and reflector port) or the port connecting the cluster with device.

Use the **no** form of this command to delete the cluster's attributes or delete the port connecting with the cluster separately.

**nlb-group** *group-number* [ **vrf** *vrf-name* ] **ip** *nlb-address* [ **reflector-port** *interface-name* ]

**nlb-group** *group-number* **destination-port** *interface-name*

**no nlb-group** *group-number* [ [ **vrf** *vrf-name* ] **ip** *nlb-address* [ **reflector-port** *interface-name* ] ]

**no nlb-group** *group-number* [ **destination-port** *interface-name* ]

**no nlb-group all**

#### Parameter Description

Parameter	Description
<b>nlb-group</b> <i>group-number</i>	Cluster group number
<b>vrf</b> <i>vrf-name</i>	VRF name
<b>ip</b> <i>nlb-address</i>	NLB address
<b>reflector-port</b> <i>interface-name</i>	Reflector port, which serves as a relay port to send the packets to the cluster. For the interface-name, please specify the corresponding interface number and it can be the physical port (the L2AP excluded) only.
<b>destination-port</b> <i>interface-name</i>	Port connecting the cluster with device. For the interface-name, please specify the corresponding interface number and it can be the physical port (the L2AP included) only, but not the SVI or Routed Port.

**Defaults** N/A

**Command Mode** Global configuration mode

- Usage Guide**
- The Switch Port and Layer 2 aggregate ports (APs) can be both configured as the cluster connecting port. However, only the Switch Port can be set as the reflector port.
  - After a port has been configured as a reflector port, other configurations are not allowed for this port.
  - Only after configuring the cluster's VRF, IP address and reflector port, the packets are allowed to be routed to the connecting port. If no cluster's connecting port is configured, the packets will flood in the VLAN belonging to the cluster.
  - With the cluster's VRF, IP address and reflector port deleted, the packets routed to the cluster

can only be routed to the single server of the cluster.

- When deleting, if no cluster attributes or connecting ports are specified, the entire cluster group will be removed.
- In non-VSU, it is recommended to configure at least 2 Layer-2 AP member ports in different line cards as the reflectors. In VSU, AP member ports had better reside in different line cards on different chassis. Thereby, standby can be configured so that data stream will not be interrupted by port troubles.
- After configuring the cluster attributes, the cluster service is enabled only on the connecting port with cluster configured. If no cluster attribute is configured, the cluster service is not enabled.
- No VRF keyword means the global VRF takes effect.

**Configuration Examples** The following example creates a cluster group and configures the cluster attributes and the cluster connecting port.

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# nlb-group 1 vrf vpn-1 ip 192.168.10.1 reflector-port
gigabitEthernet 0/1
Ruijie(config)# nlb-group 1 destination-port gigabitEthernet 0/2, 0/3
```

The following example deletes the cluster attributes of cluster group1.

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# no nlb-group 1 vrf vpn-1 ip 192.168.10.1 reflector-port
gigabitEthernet 0/1
```

The following example deletes the connecting port of cluster group1.

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# no nlb-group 1 destination-port gigabitEthernet 0/2, 0/3
```

The following example configures the same connecting port for different cluster groups.

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#nlb-group 1 ip 192.168.10.10 reflector-port gigabitEthernet
1/1
Ruijie(config)#nlb-group 1 destination-port gigabitEthernet 1/2, 1/3
Ruijie(config)#nlb-group 2 ip 192.168.10.20 reflector-port gigabitEthernet
1/1
Ruijie(config)#nlb-group 2 destination-port gigabitEthernet 1/4, 1/5
```

The following example configures the aggregate port as the reflector port.

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#interface gigabitEthernet 1/1
Ruijie(config-if-range)#port-group 1
Ruijie(config-if-range)#exit
Ruijie(config)#interface gigabitEthernet 2/1
Ruijie(config-if-range)#port-group 1
```

```
Ruijie(config-if-range)#exit
Ruijie(config)#nlb-group 1 ip 192.168.10.10 reflector-port aggregateport 1
Ruijie(config)#nlb-group 1 destination-port gigabitEthernet 1/2, 1/3
```

**Related  
Commands**

Command	Description
<b>show nlb-group</b>	Displays the cluster configuration.

**Platform** N/A  
**Description**

## 12.2 show nlb-group

Use this command to display the cluster configuration.

**show nlb-group** [ *group\_number* ].

**Parameter  
Description**

Parameter	Description
<i>group-number</i>	Cluster group number

**Defaults** N/A

**Command  
Mode** Privileged EXEC mode/Global configuration mode

**Usage Guide** N/A

**Configuration** The following example displays the cluster configuration.

**Examples**

```
Ruijie#show nlb-group 1
group-number: 1
destination-port:
  GigabitEthernet 1/2
  GigabitEthernet 1/3
cluster-vrf: vpn-1
cluster-ip: 192.168.10.10
reflector-port: GigabitEthernet 1/1
```

Field	Description
group-number	Cluster group number
destination-port	Port connecting the cluster with device
cluster-vrf	Cluster VRF name
cluster-ip	Cluster IP address
reflector-port	Reflector port

**Related  
Commands**

---

Command	Description
<b>nlb-group</b>	Creates a cluster group and specify the cluster attributes and the port connecting the cluster with device.

**Platform**

N/A

**Description**

---



## Data Center Commands

---

### 1. L2GRE Commands

# 1 L2GRE Commands

## 1.1 arp-inhibition enable

Use this command to enable ARP flooding inhibition.

**arp-inhibition enable**

Use this command to disable ARP flooding inhibition.

**no arp-inhibition enable**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** ARP flooding inhibition is disabled by default.

**Command** L2GRE LAN configuration mode

**Mode**

**Default Level** 14

**Usage Guide** When ARP flooding inhibition is enabled, after a packet is received from the L2GRE tunnel on the edge device and decapsulated, if this packet is an ARP reply packet, L2GRE ARP flooding inhibition entries are created locally based on this packet. Afterwards, when receiving an ARP request from the host at the local site, which requests for the hosts at other sites, the edge device preferentially conducts pickup based on the L2GRE ARP flooding inhibition entries. If no entry is available, the edge device floods the ARP request to the core network. This reduces the number of ARP flooding times. ARP flooding inhibition takes effect only after broadcast isolation is enabled.

**Configuration** The following example enables ARP flooding inhibition.

**Examples**

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# l2gre instance gre1 vpnid 100 type lan
Ruijie(config-l2gre)# source 1.1.1.1
Ruijie(config-l2gre)# destination 2.2.2.1
Ruijie(config-l2gre)# extern-vlan 100
Ruijie(config-l2gre)# broadcast disable
Ruijie(config-l2gre)# arp-inhibition enable
Ruijie(config-l2gre)# exit
Ruijie(config)
```

**Platforms** N/A

## 1.2 broadcast disable

Use this command to enable broadcast isolation.

**broadcast disable**

Use this command to disable broadcast isolation.

**no broadcast disable**

<b>Parameter Description</b>	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>	Parameter	Description	N/A	N/A
Parameter	Description				
N/A	N/A				
<b>Defaults</b>	Broadcast isolation is not configured by default.				
<b>Command Mode</b>	L2GRE LAN configuration mode				
<b>Default Level</b>	14				
<b>Usage Guide</b>	<p>After broadcast isolation is enabled, unknown unicast packets will not be flooded to other sites. Quick aging of address table entries may make data stream become unknown unicast packets that cannot be flooded to other sites, resulting in network congestion. Therefore, after broadcast isolation is enabled, you need to adjust the aging time of the address table to be longer than that of the host ARP to prevent aging of the address table entries within a short time.</p>				
<b>Configuration Examples</b>	<p>The following example enables broadcast isolation.</p> <pre>Ruijie# configure terminal Enter configuration commands, one per line. End with CNTL/Z. Ruijie(config)# l2gre instance gre1 vpnid 100 type lan Ruijie(config-l2gre)# source 1.1.1.1 Ruijie(config-l2gre)# destination 2.2.2.1 Ruijie(config-l2gre)# extend-vlan 100 Ruijie(config-l2gre)# broadcast disable Ruijie(config-l2gre)# exit Ruijie(config)</pre>				
<b>Platforms</b>	N/A				

### 1.3 clear l2gre arp-cache

Use this command to clear L2GRE ARP caches on the device.

**clear l2gre arp-cache**

<b>Parameter Description</b>	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> </tr> </tbody> </table>	Parameter	Description	N/A	N/A
Parameter	Description				
N/A	N/A				
<b>Command Mode</b>	Privileged EXEC mode				



**Default Level** 1

**Usage Guide** NA

**Configuration** The following example clears L2GRE ARP caches.

**Examples** Ruijie(config)#clear l2gre arp-cache

**Prompt Messages** N/A

**Platforms** N/A

## 1.4 destination

Use this command to configure the peer address of the L2GRE instance.

**destination** *ip-address*

Use this command to delete the peer address of the L2GRE instance.

**no destination** *ip-address*

**Parameter Description**

Parameter	Description
<i>ip-address</i>	IP address

**Defaults** N/A

**Command** L2GRE LINE configuration mode

**Mode** L2GRE LAN configuration mode

**Default Level** 14

**Usage Guide** This command is specific to the L2GRE instance.

Up to one peer destination address can be configured for the L2GRE LINE instance.

One or multiple peer destination addresses can be configured for the L2GRE LAN instance.

**Configuration** The following example configures a peer address for the L2GRE LAN instance.

**Examples**

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# l2gre instance gre1 vpnid 100 type lan
Ruijie(config-l2gre)# source 1.1.1.1
Ruijie(config-l2gre)# destination 2.2.2.1
Ruijie(config-l2gre)# destination 4.4.4.1
Ruijie(config-l2gre)# source 3.3.3.1
Ruijie(config-l2gre)# exit
Ruijie(config)
```

The following example configures a peer address for the L2GRE LINE instance.

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# l2gre instance gre2 vpnid 200 type line
Ruijie(config-l2gre)# source 1.1.1.2
Ruijie(config-l2gre)# destination 2.2.2.2
Ruijie(config-l2gre)# exit
Ruijie(config)
```

**Verification** Use the **show l2gre instance** command to display the L2GRE instance.

**Prompt Messages** N/A

**Common Errors** NA

**Platforms** N/A

## 1.5 extend-vlan

Use this command to configure an allowed VLAN for the L2GRE instance.

**extend-vlan** *vlan-vid*

Parameter Description	Parameter	Description
	<i>vlan-vid</i>	The VLAN in the L2GRE instance for packet forwarding

**Defaults** N/A

**Command Mode** L2GRE LINE configuration mode  
L2GRE LAN configuration mode

**Default Level** 14

**Usage Guide** This command is specific to L2GRE instance configuration. Different L2GRE instances cannot use the same allowed VLAN.

**Configuration Examples** The following example configures an allowed VLAN for the L2GRE LAN instance.

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# l2gre instance dci-lan1 vpnid 100 type lan
Ruijie(config-l2gre)# extend-vlan 100
Ruijie(config-l2gre)# exit
```

```
Ruijie(config)#
```

The following example configures an allowed VLAN for the L2GRE LINE instance.

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# l2gre instance dci-line1 vpnid 200 type line
Ruijie(config-l2gre)# extend-vlan 300
Ruijie(config-l2gre)# exit
Ruijie(config)#
```

**Verification** Use the **show l2gre instance** command to display the L2GRE instance.

**Prompt Messages** N/A

**Common Errors** N/A

**Platforms** N/A

## 1.6 keepalive

Use this command to enable the keepalive function for the L2GRE tunnel.

**keepalive** [*seconds* [*retries*]]

Use this command to disable the keepalive function.

**no keepalive**

Parameter Description	Parameter	Description
	<i>seconds</i>	Detection interval
	<i>retries</i>	Retry times. If the peer end does not reply when the retry times are reached, timeout occurs.

**Command Mode** L2GRE LINE configuration mode  
L2GRE LAN configuration mode

**Defaults** N/A

**Default Level** 14

**Usage Guide** N/A

**Configuration Examples** The following example configures the keepalive function for the L2GRE instance with 10 seconds detection interval and 3 retries.

```

Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# l2gre instance gre1 vpnid 100 type lan
Ruijie(config-l2gre)# source 1.1.1.1
Ruijie(config-l2gre)# destination 2.2.2.1
Ruijie(config-l2gre)# source 3.3.3.1
Ruijie(config-l2gre)# extend-vlan 200
Ruijie(config-l2gre)# keepalive 10 3
Ruijie(config-l2gre)# exit
Ruijie(config)

```

**Verification** Use the **show l2gre instance** command to display the L2GRE instance.

**Prompt Messages** N/A

**Common Errors** N/A

**Platforms** N/A

## 1.7 l2gre instance

Use this command to create an L2GRE instance, or enter L2GRE LINE or L2GRE LAN configuration mode.

**l2gre instance** *name* **vpnid** *id* **type** { **lan** | **line** }

Use this command to delete an L2GRE instance.

**no l2gre instance** *name* **vpnid** *id* **type** { **lan** | **line** }

Parameter Description	Parameter	Description
	<i>name</i>	L2GRE instance name
	<b>vpnid</b> <i>id</i>	VPN ID corresponding to the L2GRE instance
	<b>type</b> { <b>lan</b>   <b>line</b> }	L2GRE type <b>line</b> : peer-to-peer L2GRE <b>lan</b> : L2GRE with LAN

**Defaults** N/A

**Command Mode** Global configuration mode

**Default Level** 14

**Usage Guide** N/A

**Configuration** 1. The following example configures an L2GRE LAN instance.

**Examples**

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# l2gre instance gre1 vpnid 100 type lan
Ruijie(config-l2gre)# exit
Ruijie(config)#
```

2. The following example configures an L2GRE LINE instance.

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# l2gre instance gre2 vpnid 200 type line
Ruijie(config-l2gre)# exit
Ruijie(config)
```

**Verification** Use the **show l2gre instance** command to display the L2GRE instance.

**Prompt Messages** N/A

**Common Errors** Fail to create an L2GRE instance for lack of hardware resources.

**Platforms** N/A

## 1.8 l2gre ttl

Use this command to configure TLL for L2GRE encapsulation.

**l2gre ttl** *ttl-value*

Use this command to restore the default TLL value.

**no l2gre ttl** *ttl-value*

Parameter Description	Parameter	Description
	<b>ttl</b> <i>ttl-value</i>	TLL value

**Defaults** The default TLL value is 255.

**Command Mode** Global configuration mode

**Default Level** 14

**Usage Guide** N/A

**Configuration** The following example configures L2GRE TTL.

**Examples**

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# l2gre instance gre1 vpnid 100 type lan
Ruijie(config-l2gre)# source 1.1.1.1
Ruijie(config-l2gre)# destination 2.2.2.1
Ruijie(config-l2gre)# source 3.3.3.1
Ruijie(config-l2gre)# extend-vlan 200
Ruijie(config-l2gre)# exit
Ruijie(config)# l2gre ttl 55
```

**Verification** Use the **show running-config** command to display the default TTL value.

**Prompt**

N/A

**Messages****Common****Errors**

N/A

**Platforms**

N/A

## 1.9 multicast

Use this command to enable the multicast L2GRE packet flooding function.

**multicast** *ip-address*

Use this command to disable the multicast L2GRE packet flooding function.

**no multicast** *ip-address*

**Defaults**

N/A

**Parameter  
Description**

Parameter	Description
<i>ip-address</i>	Multicast IP address

**Command  
Mode**

L2GRE LAN configuration mode

**Default Level**

14

**Usage Guide**

This command is specific to L2GRE LAN configuration mode. To enable multicast L2GRE packet flooding, the local IP address of the L2GRE must be configured on a routed port.

**Configuration Examples** The following example configures the multicast address for an L2GRE LAN instance to enable multicast flooding.

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# l2gre instance dci-lan1 vpnid 100 type lan
Ruijie(config-l2gre)# multicast 224.1.1.100
Ruijie(config-l2gre)# exit
Ruijie(config)#
```

**Verification** Use the **show l2gre instance** command to display the L2GRE instance.

**Prompt Messages** N/A

**Common Errors** N/A

**Platforms** N/A

## 1.10 path-mtu-discovery

Use this command to enable path MTU discovery.

**path-mtu-discovery** [ **age-timer** *time* ]

Use this command to disable path MTU discovery.

**no path-mtu-discovery**

**Parameter Description**

Parameter	Description
<i>time</i>	Discovery interval. The default value is 10 minutes.

**Defaults** Path MTU discovery is disabled by default.

**Command** L2GRE LINE configuration mode

**Mode** L2GRE LAN configuration mode

**Default Level** 14

**Usage Guide** L2GRE encapsulates an L2GRE header for a packet. As a result, the length of the packet increases by about 46 bytes. You can enable path MTU discovery to implement quick discovery of L2GRE network exceptions caused by MTU problems of the carrier's IP core network.

**Configuration Examples** The following example enables path MTU discovery.

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# l2gre instance dci-lan1 vpnid 100 type lan
Ruijie(config-l2gre)# path-mtu-discovery
Ruijie(config-l2gre)# exit
Ruijie(config)#
```

## 1.11 show l2gre

Use this command to display the L2GRE instance configuration.

**show l2gre arp-cache**

**show l2gre instance** [ *name* ]

**show l2gre mac** [ *address mac-address* ] [ *vpnid id* ] [ *destination ip-address* ]

**show l2gre mac count**

Parameter Description	Parameter	Description
	N/A	N/A
<b>Command Mode</b>	Privileged EXEC mode	
<b>Default Level</b>	1	
<b>Usage Guide</b>	N/A	

**Configuration Examples** The following example displays the L2GRE instance GRE1.

```
Ruijie(config)#show l2gre instance
L2gre total count          : 2
L2gre line count          : 0
L2gre lan count           : 2
L2gre line capacity       : 1000
L2gre lan capacity        : 500
name: gre1 vpnid: 1 type: lan
  source: 4.1.1.1
  destination: 3.1.1.1      alive: up      pmtu: -
  multicast: -
  extend-vlan: 1
  broadcast: enable
  arp-inhibition: disable
  path-mtu-discovery: disable
  keepalive: period in 11 seconds, retries 4
```

Field Description:

Field	Description
source	The local address of the L2GRE instance
destination	The local address of the L2GRE instance
extend-vlan	An allowed list of VLANs for the L2GRE instance
broadcast	Whether broadcast isolation is enabled
arp-inhibition	Whether ARP flooding inhibition is enabled
keepalive	Keepalive interval
path-mtu-discovery	Whether path MTU discovery is enabled
retries	Keepalive retry times



**Prompt**  
**Messages**

N/A

**Platforms**

N/A

## 1.12 source

Use this command to configure the local address of the L2GRE instance.

**source** { *ip-address* | **interface** *interface-number* }

Use this command to remove the local address configuration of the L2GRE instance.

**no source** { *ip-address* | **interface** *interface-number* }

**Parameter**  
**Description**

Parameter	Description
<i>ip-address</i>	IP address
<b>interface</b> <i>interface-number</i>	Interface name

**Command** L2GRE LINE configuration mode

**Mode** L2GRE LAN configuration mode

**Defaults** N/A

**Default Level** 14

**Usage Guide** This command is specific to L2GRE LAN/LINE configuration mode.

**Configuration** 1. The following example configures a source address for the L2GRE LAN instance.

**Examples**

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# l2gre instance gre1 vpnid 100 type lan
Ruijie(config-l2gre)# source 1.1.1.1
Ruijie(config-l2gre)# exit
Ruijie(config)
```

2. The following example configures a source address for the L2GRE LINE instance.

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# l2gre instance gre2 vpnid 200 type line
Ruijie(config-l2gre)# source 1.1.1.2
Ruijie(config-l2gre)# exit
Ruijie(config)
```

**Verification**      Use the **show l2gre instance** command to display the L2GRE instance.

**Prompt  
Messages**          N/A

**Common  
Errors**             N/A

**Platforms**         N/A



## Network Management & Monitoring Commands

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1. SNMP Commands
2. RMON Commands
3. NTP Commands
4. SNTP Commands
5. SPAN-RSPAN Commands
6. sFlow Commands

# 1 SNMP Commands

## 1.1 no snmp-server

Use this command to disable the SNMP agent function.

**no snmp-server**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** SNMP agent is enabled by default.

**Command mode** Global configuration mode.

**Usage Guide** This command disables the SNMP agent services of all versions supported on the device.

**Configuration Examples** The following example disables the SNMP agent.

```
Ruijie(config)# no snmp-server
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 1.2 show snmp

Use this command to display the SNMP configuration.

**show snmp [ mib | user | view | group | host | process-mib-time ]**

Parameter Description	Parameter	Description
	<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.
	<b>process-mib-time</b>	Displays the MIB node requiring the longest processing time.

**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** The following example disables the interface to send link traps.

**Examples**

```
Ruijie(config)# interface gigabitEthernet 1/1
Ruijie(config-if-GigabitEthernet 1/1)# no snmp trap link-status
```

The following example enables the interface to send link traps.

```
Ruijie(config)# interface gigabitEthernet 1/1
Ruijie(config-if-GigabitEthernet 1/1)# snmp trap link-status
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 1.4 snmp-server chassis-id

Use this command to specify the SNMP chassis ID. Use the **no** form of this command to restore the default chassis ID.

**snmp-server chassis-id** *text*

**no snmp-server chassis-id**

Parameter Description	Parameter	Description
	<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 Description** N/A

## 1.6 snmp-server contact

Use this command to specify the system contact string. Use the **no** form of this command to remove the system contact string.

**snmp-server contact text**

**no snmp-server contact**

**Parameter Description**

Parameter	Description
<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 Description** N/A



## 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 Description** N/A

## 1.8 snmp-server flow-control

Use this command to configure the SNMP flow control. Use the **no** form of this command to 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 Examples** The following example configures the number of SNMP requests processed per second to 200.

```
Ruijie(config)# snmp-server flow-control pps 200
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 1.9 snmp-server group

Use this command to configure a new SNMP group. Use the **no** form of this command to remove a specified SNMP group.

**snmp-server group** *groupname* { **v1** | **v2c** | **v3** { **auth** | **noauth** | **priv** } } [ **read** *readview* ] [ **write** *writeview* ] [ **access** { [ **ipv6** *ipv6\_aclname* | *aclnum* | *aclname* } ]

**no snmp-server group** *groupname* { **v1** | **v2c** | **v3** { **auth** | **noauth** | **priv** } }

Parameter Description	Parameter	Description
	<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* ] [ **via** *mgmt-name* ] [ *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* ] [ **via** *mgmt-name* ]

**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
<b>via mgmt-name</b>	Specifies the MGMT port.
<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.

The **via** parameter can take effect only when the **oob** parameter is configured.

The **vrf** parameter cannot be used together with the **oob** parameter.

**Configuration** 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 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 mode** Global configuration mode.

**Usage Guide** N/A

**Configuration Examples** The following example configures the resend times of inform requests to 5.

```
Ruijie(config)# snmp-server inform retries 5
```

The following example configures the inform request timeout to 20 seconds.

```
Ruijie(config)# snmp-server inform timeout 20
```

Related Commands	Command	Description
	N/A	N/A

**Platform Description** N/A

## 1.12 snmp-server location

Use this command to set the system location string. Use the **no** form of this command to remove the system location string.

**snmp-server location** *text*

**no snmp-server location**

Parameter Description	Parameter	Description
	<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>

**Platform** N/A

**Description**

## 1.13 snmp-server logging

Use this command to enable the system to log the GET, GET-NETX and SET operations of NMS.

Use the **no** form of this command to disable the SNMP logging function.

**snmp-server logging { get-operation | set-operation }**

**no snmp-server logging { get-operation | set-operation }**

Parameter Description	Parameter	Description
		<b>get-operation</b>
	<b>set-operation</b>	Logging function for the SET operation.

**Defaults** The SNMP logging function is disabled by default.

**Command mode** Global configuration mode.

**Usage Guide** This command is used to enable the logging function for the GET, GET-NETX and SET operations of NMS.

With the **get-operation** enabled, the SNMP agent logs the IP address of NMS, operation type and operation node OID during the GET and GET-NEXT operations.

With the **set-operation** enabled, the SNMP agent logs the IP address of NMS, operation type and operation node OID and related values during the SET operation.

A larger number of logs may affect the device performance. Under normal condition, it is recommended to disable the SNMP logging function.

**Configuration** The following example enables the logging function for the GET and SET operations:

**Examples**

```
Ruijie(config)#snmp-server logging get-operation
Ruijie(config)#snmp-server logging set-operation
```

The operation logs are displayed as below:

```
Ruijie#*Feb 7 15:31:16: %SNMP-6-GET_OPER: NMS source-ip(13.12.11.7)
```

```

operation(GET) object(id=1.3.6.1.2.1.1.5.0)

Ruijie#*Feb 7 15:32:16:%SNMP-6-GETN_OPER: NMS source-ip(13.12.11.7)
operation(GET-NEXT) object(id=1.3.6.1.2.1.1.5.0)

Ruijie#*Feb 7 15:33:23: %SNMP-6-SET_OPER: NMS source-ip(13.12.11.7)
operation(SET) object(id=1.3.6.1.2.1.1.5.0, value=ruijie)

```

The following example disables the logging function for the GET and SET operations:

```

Ruijie(config)#no snmp-server logging get-operation
Ruijie(config)#no snmp-server logging set-operation

```

#### Related Commands

Command	Description
N/A	N/A

**Platform** N/A  
**Description**

## 1.14 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 Examples** The following example configures the network element coding text to FZ\_CDMA\_MSC1.

```
Ruijie(config)# snmp-server net-id FZ_CDMA_MSC1
```

#### Related

Command	Description
---------	-------------

<b>Commands</b>		
	N/A	N/A

**Platform** N/A

**Description**

## 1.15 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**

<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<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 Examples** N/A

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>snmp-server queue-length</b>	Specifies the length of the message queue for each SNMP trap host.

**Platform** N/A

**Description**

## 1.16 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**



<b>Parameter Description</b>	<b>Parameter</b>	<b>Description</b>
	<i>length</i>	Queue length. The range is from 1 to 1000.
<b>Defaults</b>	The default is 10.	
<b>Command mode</b>	Global configuration mode.	
<b>Usage Guide</b>	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.	
<b>Configuration Examples</b>	The following example specifies the length of message queue as 100.	
	<pre>Ruijie(config)# snmp-server queue-length 100</pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<b>snmp-server packetsize</b>	Specifies the largest size of the SNMP packet.
<b>Platform Description</b>	N/A	

## 1.17 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>	<b>Parameter</b>	<b>Description</b>
	N/A	N/A
<b>Defaults</b>	The SNMP message reload function is disabled by default.	
<b>Command mode</b>	Global configuration mode.	
<b>Usage Guide</b>	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.	
<b>Configuration Examples</b>	The following example enables the SNMP message reload function:	
	<pre>Ruijie(config)# snmp-server system-shutdown</pre>	

<b>Related Commands</b>	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 1.18 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**

<b>Parameter Description</b>	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
```

<b>Related Commands</b>	Command	Description
	N/A	N/A

**Platform** N/A  
**Description**

## 1.19 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 Description** N/A

## 1.20 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 mode** Global configuration 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**

## 1.21 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** Global configuration mode.

**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**

## 1.22 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 Examples** The following example configures an SNMPv3 user with MD5 authentication and DES encryption:

```
Ruijie(config)# snmp-server user user-2 mib2user v3 auth md5 authpassstr priv
des56 despassstr
```

**Related Commands**

Command	Description
<b>show snmp user</b>	Displays the SNMP user configuration.

**Platform Description** N/A

### 1.23 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 mode** 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
<b>show snmp view</b>	Displays the SNMP view configuration.

**Platform** N/A

**Description**

## 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.

The example below enables log statistics on interface GigabitEthernet 0/1.

**Examples**

```
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.

The example below enables monitoring the statistics of interface GigabitEthernet 0/1.

### Examples

```
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
```

	Command	Description
<b>Related commands</b>	<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.

The example below displays the RMON alarm table.

**Examples**

```

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**

The example below displays the RMON statistics.

**Examples**

```

Ruijie#show rmon statistics
ether statistic table:
    index = 1
    interface = GigabitEthernet 0/1
    owner = admin
    status = 0
    dropEvents = 61
    octets = 170647461
    pkts = 580375
    broadcastPkts = 2135
    multiPkts = 3615
    crcAlignErrors = 0
    underSizePkts = 0
    overSizePkts = 0
    fragments = 0
    jabbers = 0
    collisions = 0
    packets64Octets = 3254668
    packets65To127Octets = 1833370
    
```



```
packets128To255Octets = 2098146
packets256To511Octets = 126716
packets512To1023Octets = 363621
packets1024To1518Octets = 1077865
```

**Related  
commands**

Command	Description
<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 Examples** The following example disables NTP.

```
Ruijie(config)#no ntp
```

Related Commands	Command	Description
	ntp server	Specifies an NTP server.

**Platform Description** N/A

### 3.2 ntp access-group

Use this command to configure an access group to control NTP access. Use the **no** form of this command to remove the peer access group.

**ntp access-group** { peer | serve | serve-only | query-only } *access-list-number* | *access-list-name*

**no ntp access-group** { peer | serve | serve-only | query-only } *access-list-number* | *access-list-name*

Parameter Description	Parameter	Description
	peer	Allows the device to receive time requests and NTP control queries to synchronize itself to the servers specified in the access list.

<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 Description** N/A

### 3.4 ntp authentication-key

Use this command to configure an NTP authentication key. Use the **no** form of this command to remove the NTP authentication key.

**ntp authentication-key** *key-id* **md5** *key-string* [*enc-type*]

**no ntp authentication-key** *key-id*

Parameter Description	Parameter	Description
	<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
```

Related Commands	Command	Description
		<b>ntp authenticate</b>
	<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**

Parameter Description	Parameter	Description
		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 ] [ via mgmt-name ]
```

```
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.
<i>mgmt-name</i>	(Optional) Specifies the egress MGMT interface for the packets in oob mode.

**Defaults** No NTP server is configured by default.

**Command** Global configuration mode.

**mode**

**Usage Guide** At present, RGOS system only supports clients other than servers. Up to 20 servers can be synchronized.

To carry out the encrypted communication with the server, set the global encryption key and global trusted key firstly, and then specify the corresponding key as the trusted key of the server to launch the encrypted communication of the server. It requires the server presents identical global encryption key and global trust key to complete the encrypted communication with the server.

In the same condition (for instance, precision), the prefer clock is used for synchronization.

 The source interface of NTP packets must be configured with the IP address and can be communicated with the peer.

**Configuration** 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** N/A

**Description**

### 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 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** The following example displays the SNTP configuration.

#### Examples

```
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

### 4.2 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** The following example enables SNTP.

**Examples** Ruijie(config)# **sntp enable**

Related Commands	Command	Description
	<b>show sntp</b>	Displays the SNTP configuration.

**Platform** N/A

**Description**

### 4.3 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 mode** 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**

## 4.4 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* | *domain* } [ **via** *mgmt-name* ] [ **source** *source-ip-address* ]

**no sntp server**

Parameter Description	Parameter	Description
	<i>ip-address</i>	IP address of the SNTP server.
	<b>oob</b>	(Optional) Accesses the SNTP server from the MGMT interface.
	<i>domain</i>	Specifies the domain name of the SNTP server.
	<i>source-ip-address</i>	(Optional) Indicates the specified source IP address.
	<i>mgmt-name</i>	(Optional) Specifies the egress MGMT interface for the packets in oob mode.

**Defaults** No SNTP server is configured by default.

**Command mode** Global configuration mode.

**Usage Guide** As SNTP is fully compatible with NTP, the SNTP server can be used as an NTP server in Internet.

**Configuration** 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**

## 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** ]

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** | **tx** | **both** ]

Use this command to limit the SPAN source traffic to specific VLANs.

**monitor session** *session-num* **filter vlan** *vlan-id-list* [ **rx** | **tx** | **both** ]

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** The following example configures the source port and destination port of the SPAN session.

**Examples**

```
Ruijie(config)# monitor session 1 source interface gigabitEthernet 0/1
Ruijie(config)# monitor session 1 destination interface gigabitEthernet 0/2
```

The following example configures the SPAN session mirroring only the traffic permitted by the access list.

```
Ruijie(config)# monitor session 3 source interface gigabitEthernet 0/3 rx acl 90
```

The following example configures a remote SPAN session.

```
Ruijie(config)# monitor session 10 remote-source
```

The following example configures the destination port of the remote SPAN session.

```
Ruijie(config)# monitor session 4 destination remote vlan 10 interface gigabitEthernet 0/5
```

The following example configures the source VLAN of the SPAN session.

```
Ruijie(config)# monitor session 1 source vlan 1
```

The following example removes the SPAN session.

```
Ruijie(config)# no monitor session 1
```

The following example removes the source port and destination port of the SPAN session.

```
Ruijie(config)# no monitor session 1 source interface gigabitEthernet 0/18
Ruijie(config)# no monitor session 1 destination interface gigabitEthernet 0/18
```

#### 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>

**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>

**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 sFlow Commands

### 6.1 sflow agent

Use this command to configure the address of the sFlow Agent.

```
sflow agent { address { ip-address | ipv6 ipv6-address } } | { interface { interface-name | ipv6 interface-name } }
```

Use this command to delete the address of the sFlow Agent.

```
no sflow agent { address | interface }
```

Use this command to restore the default setting.

```
default sflow agent { address | interface }
```

Parameter Description	Parameter	Description
	<b>address</b>	Configures the IP address of the sFlow Agent.
	<i>ip-address</i>	sFlow Agent IPv4 address.
	<b>ipv6</b> <i>ipv6-address</i>	sFlow Agent IPv6 address.
	<b>interface</b>	Configures the interface of the sFlow Agent.
	<i>interface-name</i>	Interface of IPv4 address.
	<b>ipv6</b> <i>interface-name</i>	Interface of IPv6 address.

**Defaults** No sFlow Agent address is configured by default.

**Command Mode** Global configuration mode

**Default Level** 14

**Usage Guide** This command is used to configure the Agent IP address field in the output sFlow datagram. The datagram not configured with this field cannot be output. The sFlow Agent address shall be a host address. When a non-host address (for example, a multicast or broadcast address) is configured as the sFlow Agent address, a message indicating configuration failure is displayed. It is recommended that the IP address of the sFlow Agent device be configured as the sFlow Agent address.

**Configuration Examples** The following example configures 192.168.2.1 as the sFlow Agent address.

```
Examples Ruijie(config)# sflow agent address 192.168.2.1
```

**Verification** Use the show sflow command to display the sFlow configuration.

**Prompt** Prompt an error message when the address is invalid.

**Messages**      `invalid host address.`

**Common Errors**      N/A

**Platforms**      N/A

## 6.2 sflow collector *collector-id* destination

Use this command to configure the address of the sFlow Collector.

```
sflow collector collector-id destination { ip-address | ipv6 ipv6_address } udp-port [ [ vrf vrf-name ] | [ oob [via mgmt_mgmt-name ] ] ]
```

Use this command to delete the address of the sFlow Collector.

```
no sflow collector collector-id destination { ip-address | ipv6 ipv6_address } udp-port [ [ vrf vrf-name ] | [ oob [via mgmt_mgmt-name ] ] ]
```

Use this command to delete the address of the sFlow Collector.

```
default sflow collector collector-id destination { ip-address | ipv6 ipv6_address } udp-port [ [ vrf vrf-name ] | [ oob [via mgmt_mgmt-name ] ] ]
```

### Parameter Description

Parameter	Description
<i>collector-id</i>	sFlow Collector ID. The range is from 1 to 2.
<i>ip-address</i>	sFlow Collector IPv4 address
<b>ipv6</b> <i>ipv6-address</i>	sFlow Collector IPv6 address
<i>udp-port</i>	sFlow Collector listening port number
<b>vrf</b> <i>vrf-name</i>	VRF instance name. It is not configured by default.
<b>oob</b>	The sampled traffics are output through the management interface. By default, this parameter is not configured.
<b>via mgmt</b> <i>mgmt-name</i>	The name of management interface for sampled output.

**Defaults**      No sFlow Collector address is configured by default.

**Command Mode**      Global configuration mode

**Default Level**      14

**Usage Guide**      This command is used to configure the sFlow Collector address. The sFlow Collector address shall be a host address. When a non-host address (for example, a multicast or broadcast address) is configured as the sFlow Collector address, a message indicating configuration failure is displayed. The sFlow Collector monitors the sFlow datagram on the specified port. When the vrf parameter is configured, the corresponding VRF instance must exist. When you remove the a VRF instance, the sFlow Collector

address will be removed if this VRF instance is also configured for an sFlow Collector address. When the oob parameter is configured, a datagram is sent to the sFlow Collector through the management interface.

**Configuration Examples** The following example configures 192.168.1.100 as the address of sFlow Collector 1, 6343 as the port number and vpn 1 as the VRF instance.

```
Ruijie(config)# sflow collector 1 destination 192.168.2.100 6343 vrf vpn1
```

**Verification** Use the **show sflow** command to display the sFlow Collector.

**Prompt Messages** Prompt an error message when the address is invalid.

```
invalid host address.
```

```
No VPN exists.
```

```
vpn is not exist
```

**Common Errors** N/A

**Platforms** N/A

### 6.3 sflow collector *collector-id* max-datagram-size

Use this command to configure the maximum length of the output sFlow datagram.

**sflow collector *collector-id* max-datagram-size *datagram-size***

Use this command to restore the default maximum length of the output sFlow datagram.

**no sflow collector *collector-id* max-datagram-size**

Use this command to restore the default maximum length of the output sFlow datagram.

**default sflow collector *collector-id* max-datagram-size**

Parameter Description	Parameter	Description
	<i>collector-id</i>	sFlow Collector ID. The range is from 1 to 2.
	<b>max-datagram-size</b> <i>datagram-size</i>	The maximum length of the output sFlow datagram. The range is from 200 to 9,000.

**Defaults** The default maximum length of the output sFlow datagram is 1,400.

**Command Mode** Global configuration mode

**Default Level** 14

<b>Usage Guide</b>	N/A
<b>Configuration Examples</b>	The following example configures 1,000 as the maximum length of the output sFlow datagram for sFlow Collector. <pre>Ruijie(config)# sflow collector 1 max-datagram-size 1000</pre>
<b>Verification</b>	Use the <b>show sflow</b> command to display the maximum length of the output sFlow datagram.
<b>Prompt Messages</b>	N/A
<b>Common Errors</b>	N/A
<b>Platforms</b>	N/A

## 6.4 sflow counter collector

Use this command to enable the sFlow Agent to send counter samples to the sFlow Collector.

**sflow counter collector** *collector-id*

Use this command to disable the sFlow Agent to send counter samples to the sFlow Collector.

**no sflow counter collector**

Use this command to disable the sFlow Agent to send counter samples to the sFlow Collector.

**default sflow counter collector**

Parameter Description	Parameter	Description
	<i>collector-id</i>	sFlow Collector ID. The range is from 1 to 2.

**Defaults** Sending counter samples to the sFlow Collector is disabled by default.

**Command Mode** Interface configuration mode

**Default Level** 14

**Usage Guide** This command can be used for physical ports, SVI ports and sub routed ports and aggregate ports. sFlow datagrams can be output only when an IP address is configured for the corresponding sFlow Collector.

**Configuration** The following example enables interface TenGigabitEthernet 0/5 to send counter samples to sFlow



**Examples** Collector 2.

```
Ruijie(config-if-TenGigabitEthernet 0/5)# sflow counter collector 2
```

**Verification** Use the **show sflow** command to display the sFlow counter sampling configuration.

**Prompt Messages** N/A

**Common Errors** N/A

**Platforms** N/A

## 6.5 sflow counter interval

Use this command to configure the sFlow counter sampling interval.

**sflow counter interval** *seconds*

Use this command to restore the default sFlow counter sampling interval.

**no sflow counter interval**

Use this command to restore the default sFlow counter sampling interval.

**default sflow counter interval**

### Parameter Description

Parameter	Description
<i>seconds</i>	sFlow counter sampling interval. The range is from 3 to 2,147,483,647. The unit is second.

**Defaults** The default sFlow counter sampling interval is 30 seconds.

**Command Mode** Global configuration mode

**Default Level** 14

**Usage Guide** This command is used to configure the global sFlow counter sampling interval, and sFlow Counter sampling of all interfaces uses this sampling interval.

**Configuration Examples** The following example configures the sFlow counter sampling interval to 60 seconds.

```
Ruijie(config)# sflow counter interval 60
```

**Verification** Use the **show sflow** command to display the sFlow counter sampling interval.

**Prompt Messages** N/A

**Common Errors** N/A

**Platforms** N/A

## 6.6 sflow enable

Use this command to enable flow sampling and counter sampling on the interface.

**sflow enable**

Use this command to disable flow sampling and counter sampling on the interface.

**no sflow enable**

Use this command to disable flow sampling and counter sampling on the interface.

**default sflow enable**

Parameter Description	Parameter	Description
	N/A	N/A

**Defaults** The sFlow sampling function on an interface is disabled by default.

**Command Mode** Interface configuration mode

**Default Level** 14

**Usage Guide** This command can be used to enable counter sampling and flow sampling for physical ports and aggregate ports. sFlow datagram can be output only when an IP address is configured for the corresponding sFlow Collector.

**Configuration Examples** The following example enables the sFlow sampling on interface TenGigabitEthernet 0/5.

```
Ruijie(config-if-TenGigabitEthernet 0/5)# sflow enable
```

**Verification** Use the **show sflow** command to display the status of the sFlow sampling function.

**Prompt Messages** N/A

**Common Errors** N/A

**Platforms** N/A

## 6.7 sflow flow collector

Use this command to enable the sFlow Agent to send flow samples to the sFlow Collector.

**sflow flow collector** *collector-id*

Use this command to disable the sFlow Agent to send flow samples to the sFlow Collector.

**no sflow flow collector**

Use this command to disable the sFlow Agent to send flow samples to the sFlow Collector.

**default sflow flow collector**

Parameter Description	Parameter	Description
	<i>collector-id</i>	sFlow Collector ID. The range is from 1
<b>Defaults</b>	Sending the flow samples to the sFlow Collector is disabled by default.	
<b>Command Mode</b>	Interface configuration mode	
<b>Default Level</b>	14	
<b>Usage Guide</b>	This command can be used for physical ports, SVI ports, sub routed ports and aggregate ports. sFlow datagrams can be output only when an IP address is configured for the corresponding sFlow collector.	
<b>Configuration Examples</b>	<p>The following example enables interface TenGigabitEthernet 0/5 to send flow samples to sFlow collector 2.</p> <pre>Ruijie(config-if-TenGigabitEthernet 0/5)# sflow flow collector 2</pre>	
<b>Verification</b>	Use the <b>show sflow</b> command to display the sFlow flow sampling configuration.	
<b>Prompt Messages</b>	N/A	
<b>Common Errors</b>	N/A	
<b>Platforms</b>	N/A	

## 6.8 sflow flow max-header

Use this command to configure the maximum length of the packet header copied during flow sampling.

**sflow flow max-header** *length*

Use this command to restore the default maximum length of the packet header copied during flow sampling.

**no sflow flow max-header**

Use this command to restore the default maximum length of the packet header copied during flow sampling.

**default sflow flow max-header**

Parameter Description	Parameter	Description
	<i>length</i>	Maximum length of the packet header to be copied. The range is from 18 to 256. The unit is byte.

**Defaults** The default length is 64 bytes.

**Command Mode** Global configuration mode

**Default Level** 14

**Usage Guide** Configure the maximum number of bytes of the packet content copied from the header of the original packet. The copied content is recorded in the generated sample.

**Configuration Examples** The following example sets the maximum length of the packet header copied during sFlow flow sampling to 128 bytes.

```
Ruijie(config)# sflow flow max-header 128
```

**Verification** Use the **show sflow** command to display the maximum length of the packet header copied during sFlow flow sampling.

**Prompt Messages** N/A

**Common Errors** N/A

**Platforms** N/A

## 6.9 sflow sampling-rate

Use this command to configure the sampling rate of sFlow flow sampling.  
**sflow sampling-rate** *rate*

Use this command to restore the default the sampling rate of sFlow flow sampling.

**no sflow sampling-rate**

Use this command to restore the default sampling rate of sFlow flow sampling.

**default sflow sampling-rate****Parameter Description**

Parameter	Description
<i>rate</i>	Sampling rate of sFlow sampling. One packet is sampled from every <i>n</i> packets ( <i>n</i> equals the value of rate). The range is from 4,096 to 65,535.

**Defaults**

The default sFlow flow sampling rate is 8,192.

**Command Mode**

Global configuration mode

**Default Level**

14

**Usage Guide**

This command is used to configure the global sampling rate of sFlow flow sampling, and sFlow flow sampling of all interfaces uses this sampling rate.

**Configuration Examples**

The following example sets the sFlow flow sampling rate to 4,096.

```
Ruijie(config)# sflow sampling-rate 4096
```

**Verification**

Use the **show sflow** command to display the sFlow flow sampling rate.

**Prompt Messages**

N/A

**Common Errors**

N/A

**Platforms**

N/A

## 6.10 show sflow

Use this command to display the sFlow configuration.

**show sflow**

**Parameter Description**

Parameter	Description
N/A	N/A

**Command Mode**

Privileged EXEC mode/global configuration mode/interface configuration mode

**Default Level**

14

**Usage Guide**

N/A

**Configuration** The following example displays the sFlow configuration.

**Examples**

```
Ruijie(config)#show sflow
sFlow datagram version 5
Global information:
Agent IP: 10.10.10.10
sflow counter interval:30
sflow flow max-header:64
sflow sampling-rate:8192
Collector information:
ID  IP                               Port Size VPN
1   192.168.2.100                     6343 1400
2   NULL                               0    1400
Port information
Interface                               CID  FID  Enable
TenGigabitEthernet 0/1                 0    1    Y
TenGigabitEthernet 0/2                 0    1    N
```

Field Description:

Field	Description
sFlow datagram version	sFlow datagram version. Currently, Ruijie supports V5 only.
Agent IP	IP address of the sFlow Agent. It can be configured by using the sflow Agent address { <i>ip-address</i>   <i>ipv6 ipv6-address</i> } command.
sflow counte interval	Counter sampling interval
sflow flow max-header	The maximum length of bytes of the packet header to be copied
sflow sampling-rate	Flow sampling rate
ID	sFlow Collector ID
IP	The IP address of the sFlow Collector to receive sFlow datagram
Port	Port No. of the sFlow Collector to receive sFlow datagram
Size	The maximum length of the output sFlow datagram
VPN	VPN instance name of sFlow Collector
Interface	An interface configured with sFlow function
CID	The destination sFlow Collector ID to which the sFlow Agent sends the counter samples.
FID	The destination sFlow Collector ID to which the sFlow Agent sends the flow samples.
Enable	The status of the sFlow sampling function

**Prompt**

N/A

**Messages****Platforms**

N/A