



**RG-S8600**

**IPv6**

**RGOS 10.4(2b1)**

(4 1JA@Âr€RS )4)Hd)xŠ:Àö-Ø.l3v3fI@tÀe

©2000-2010



---

# RGOS<sup>®</sup> 10.4(2b1)

**1.**

Courier New

5

**2.**

Arial

```
[]      []
```

```
{x|y|...}
```

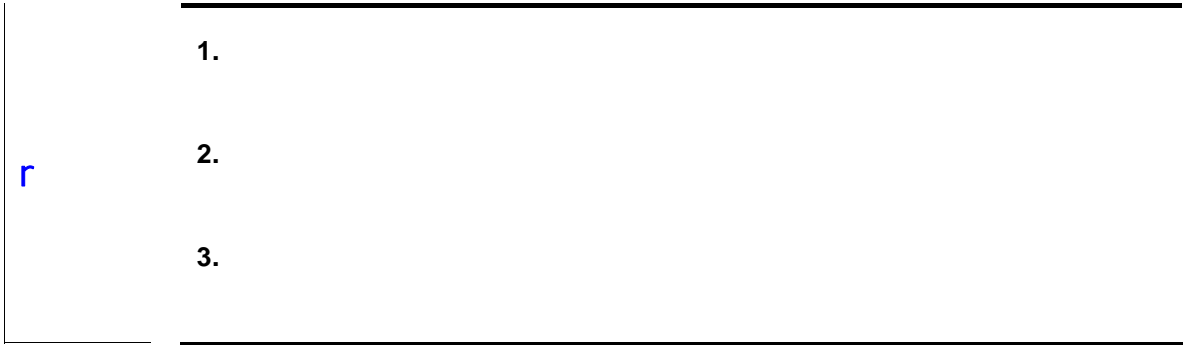
```
[x|y|...]
```

```
//
```

---

3.

r



# 1 CLI

## 1.1

### 1.1.1 alias

alias

no

**alias** *mode command-alias original-command*

**no alias** *mode [original-command]*

<i>mode</i>	
<i>command-alias</i>	
<i>original-command</i>	

EXEC

EXEC

h p s u un

help ping show

undebug undebug

no alias exec

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

EXEC

"sv" "show version"

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

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

"ia"

"ip address"

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

"ip address"

**show aliases**

"def-route"

"ip route"

0.0.0.0 0.0.0.0 192.168.1.1"

```
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)# def-route?
% Unrecognized command.
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
```

<b>show aliases</b>	

---

---

---

---

**privilege**

*ommand-string*

*mand-string*

---

---

CLI

0-15

---

---

---

---

CLI

**privilege ?**

---

---

0.0.2 294.68 -139.2 -19.1Hp

```

Ruijie(config)# enable secret level 1 0 test
Ruijie(config)# privilege exec level 1 reload
                1    CLI                reload
Ruijie> reload ?
<cr>
                reload                1                all
Ruijie(config)# privilege exec all level 1 reload
                1    CLI                reload
Ruijie> reload ?
at                reload at a specific time/date
cancel            cancel pending reload scheme
in                reload after a time interval
<cr>

```

<b>enable secret</b>	CLI

2B05bRdUjã.IBB!NãrEã

## EXEC

```
Ruijie# show aliases exec
```

```
exec mode alias:
```

```
h             help  
p             ping  
s             show  
u             undebug  
un            undebug
```



---

# 2

## 2.1

### 2.1.1 disable

disable

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

	<i>privilege-level</i>	

|

|

|

**disable**

Ruijie# **disable 10**

	enable	

	-	-

## 2.1.2 enable

enable

	-	-

--	--

--	--

--	--

--	--

	-	-

--	--

	-	-

## 2.1.3 enable password

enable password

no

**enable password** [*level level*] {*password* | [0 | 7] *encrypted-password*}**no enable password**

<i>Password</i>	EXEC	
<i>Level</i>		
<b>0 7</b>	0	7
<i>encrypted-password</i>		

1 26

r EXEC

pw10

Ruijie(config)# enable password pw10

enable secret	

-	-

## 2.1.4 enable secret

enable secret no

**enable secret** [*level level*] {*secret* | [0 | 5] *encrypted-secret*}

**no enable secret**

<i>Secret</i>	EXEC
<i>Level</i>	
<b>0 5</b>	0 5
<i>encrypted-password</i>	



---

|

|

|

|

**no enable service**

enable service ssh-sesrver, SSH Server

Ruijie(Config # **enable service ssh-sesrver**



---

## **Telnet**

configure terminal

line tty 1 16

---

enable

Web

**no ip http authentication**

Web

local

Ruijie(config)# **ip http authentication local**

**enable service**



EXEC

lock

lock

-	-

lock

Locked

line

lockable

line

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

lockable	

-	-

### 2.1.11 lockable

**lock**            **lock**            **no**            **line**            **lockable**  
**lockable**  
**no lockable**

-	-

┌

┌ **line**

┌ **lock**

EXEC

┌

```

Ruijie(config)# line console 0
Ruijie(config-line)# lockable
Ruijie(config-line)# end
Ruijie# lock
Password: <password>
Again: <password>
Locked
Password: <password>

```

<b>lock</b>	

---

**login**

**no login**

	-	-

|

|

line

|

AAA  
VTY console

---

|

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

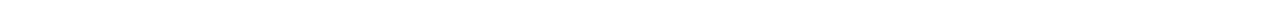
|

--	--	--

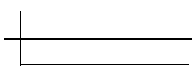
**password**

line

-



line



username

VTY

Ruijie(config)# **no aaa new-model**

Ruijie(config)# **username test password 0 test**

Ruijie(config)# **line vty 0**

Ruijie(config-line)# **login local**

<b>username</b>	

-	-

## 2.1.15 privilege mode

CLI

-	-

CLI

CLI

CLI

CLI

-	-

--	--

---

	-	-
--	---	---

### 2.1.16 password

line                      line                      **password**                      **no**                      line

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

**no password**

	<i>password</i>	line

---

**service password-encryption**



<b>interface</b> <i>interface-name</i>	Telnet
<b>!vrf</b> <i>vrf-name</i>	VRF

┌

┌

telnet	
<b>r</b>	<b>/ipv6</b> IPV6

```

1          telnet          IPV4      192.168.1.1
          vlan 1          VRF          vpn1
Ruijie# telnet 192.168.1.1 /source interface vlan 1 /vrf vpn1
2          telnet          IPV6      2AAA:BBBB::CCCC
Ruijie# telnet 2AAA:BBBB::CCCC

```

<b>ip telnet source-interface</b>	IP      Telnet
<b>show session</b>	TTY
<b>exit</b>	

┌

-	-

## 2.1.19 username

---

<i>password</i>	
<b>07</b>	0 7
<i>encrypted-password</i>	
<i>privilege-level</i>	

	<i>message</i>	
	Ruijie(config) Ruijie(config)# <b>banner login</b> \$ <i>enter your password</i> \$	
	-	-
	-	-

### 2.2.2 banner motd

	no banner motd	banner motd
	<b>banner motd</b> <i>c message c</i>	
	<i>c</i>	
	<i>message</i>	



```

Ruijie#show boot system
system boot file: flash:/rgos.bin

Ruijie#dir
Directory of flash:/
 11015744 2008-01-01 08:00:46  rgos.bin
 12019754 2008-02-01 08:00:46  s5750_10_4.bin
    399 2006-01-01 08:01:37  config.text
33,030,144 bytes total. (10,590,592 bytes free)

Ruijie(config)# boot system s5750_10_4.bin
Ruijie(config)# show boot system
system boot file: flash:/ s5750_10_4.bin
                        s5750_10_4.bin

```

<b>show boot system</b>	

-

-	-

## 2.2.4 clock set

### clock set

**clock set** *hh:mm:ss month day year*

<i>hh:mm:ss</i>	24 : :
<i>day</i>	1-31
<i>month</i>	1-12
<i>year</i>	1993-2035

---

|

|

|

clock set

|

2003 3 17 10 20 30

Ruijie# **clock set** 10:20:30 3 17 2003

Ruijie# **show clock**

clock: 2003-3-17 10:20:32

|

<b>show clock</b>	

|

|

-	-

## 2.2.5 clock update-calendar

**clock update-calendar**

|

-	-

|


|

|

calendar

---

Ruijie# clock update-calendar



L

--	--

-

- ÎB1u)ÓÞÛ

AGÅ´



```

|
|
|
|
|

```

```

10
Ruijie# reload in 10
Router will reload in 600 seconds.

```

```

|
|
|
|
|

```

-	-
-	-

## 2.2.10 session-timeout

```

|
|
|
|
|
|
|
|
|

```

```

LINE
no session-timeout
session-timeout minutes [output]
no session-timeout

```

<i>minutes</i>	
<b>output</b>	

0 min

LINE

LINE  
LINE

```

line vty 0          5 30

```

---

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

-	-

-	-

## 2.2.11 speed

**speed speed**

**no speed**

**speed speed**

<i>Speed</i>	bps 9600 19200 38400 57600 115200 9600

9600

57600 bps

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

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

-	-

--	--

	-	-
--	---	---

**2.2.12 write**

running-config

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

<b>memory</b>	NVRAM running-config startup-config	<b>copy</b>
<b>network</b>	TFTP running-config tftp	<b>copy</b>
<b>terminal</b>		<b>show running-config</b>

```

[Failed]
The device [usb1] does not exist, write to the default config file
[/config.text]? [no] yes
Write to the default config file: [/config.text]
[OK]

```

<b>boot config</b>	
<b>copy</b>	
<b>show running-config</b>	

-	-

## 2.3

### 2.3.1 show clock

**show clock**

**show clock**

-	-

detail

**show clock**

```

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

```

<b>clock set</b>	
-	-

## 2.3.2 show line

### show line

**show line** [*console line-num* | *aux line-num* | *vty line-num* | *line-num*]

<b>console</b>	
<b>aux</b>	aux
<b>vty</b>	vty
<i>line-num</i>	line

|  
 |  
 |  
 |

```

              console
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
```

-	-

-	-

### 2.3.3 show reload

**show reload**

**show reload**

-	-

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

-	-

---

	-	-

### 2.3.4 show running-config

show running-config

show running-config

	-	-

|

|

|

|



	-	-

|

--	--

---

L

---

---

By Ruijie Network

System start time: 1970-6-14 11:49:53

System uptime: 3:17:1:17

System hardware version: 2.0

System software version: RGOS 10.3.00(4), Release(34679)

System boot version: 10.2.34077

System CTRL version: 10.2.24136

System serial number: 1234942570001

-	-

-	-

## 3 LINE

### 3.1 LINE

#### 3.1.1 access-class

Line ACL **access-class** *acl-no* { **in** | **out** }  
Line no **access-class** *access-list-number* { **in** | **out** }  
LINE ACL  
[no] **access-class** *access-list-number* { **in** | **out** }

LINE

	-	-

### 3.1.2 line

LINE

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

<b>aux</b>		
<b>console</b>		
<b>tty</b>		
<b>vty</b>		telnet/ssh
<i>First-line</i>		first-line
<i>Last-line</i>		last-line

|

|

|

LINE

|

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

	-	-

|

	-	-

### 3.1.3 line vty

VTY

**no**

VTY

**line vty** *line-number*

**no line vty** *line-number*

-	-

VTY            5            0-4

VTY

1            VTY            20            VTY            0--19

Ruijie(config)# **line vty** 19

2            VTY            10            VTY            0—9

Ruijie(config)# **line vty** 10

-	-

-	-

### 3.1.4 transport input

Line            **transport input**            Line

**default transport input**            LINE

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

**default transport input**

<b>all</b>	Line
<b>ssh</b>	Line            SSH

LINE

<b>telnet</b>	Line	Telnet
<b>none</b>	Line	

VTY TTY NONE  
**default transport input**

Line

Line VTY VTY **show**  
**running** Line  
**input default transport input no transport**  
**transport input none**

```

line vty 0 4 telnet
Ruijie# configure terminal
Ruijie(config)# line vty 0 4
Ruijie(config-line)# transport input telnet

```

<b>show running</b>	
---------------------	--

RGOS10.1

-	-
---	---

# 4 ISSU

## 4.1

### 4.1.1 issu abortversion

issu abortversion [ {M2|M1} *image*]



--	--

### 4.1.2 issu acceptversion

ISSU

**issu acceptversion {M2|M1} image**

{M2 M1}	
image	

1

Ruijie# **issu acceptversion M2 flash:install-s86-new.bin\_**

<b>show issu state [detail]</b>	issu
<b>show redundancy states</b>	

S8600

<b>10.4</b>	

### 4.1.3 issu commitversion

**issu commitversion {M2|M1} image**

{M1 M2}	
image	

|

|

| **r** ISSU

| 1  
 Ruijie# **issu commitversion M1 flash:install-s86-new.bin\_**

<b>show issu state [detail]</b>	issu
<b>show redundancy states</b>	

| S8600

<b>10.4</b>	

### 4.1.4 issu loadversion

**issu loadversion {M1|M2} active-image {M2|M1} standby-image [force]**



## 4.1.5 issu runversion

**issu runversion {M2|M1} *image***



## 4.1.6 issu set rollback-timer

**issu set rollback-timer** {*seconds*| *hh:mm:ss*}

**no issu set rollback-timer**

## 4.2

### 4.2.1 show issu rollback-timer

Show issu rollback-timer


┌

45

┌

┌

```

1          ISSU
Ruijie# show issu rollback-timer
Rollback Process State = IN progress
Configured Rollback Time = 45:00
Automatic Rollback Time = 39:00
    
```

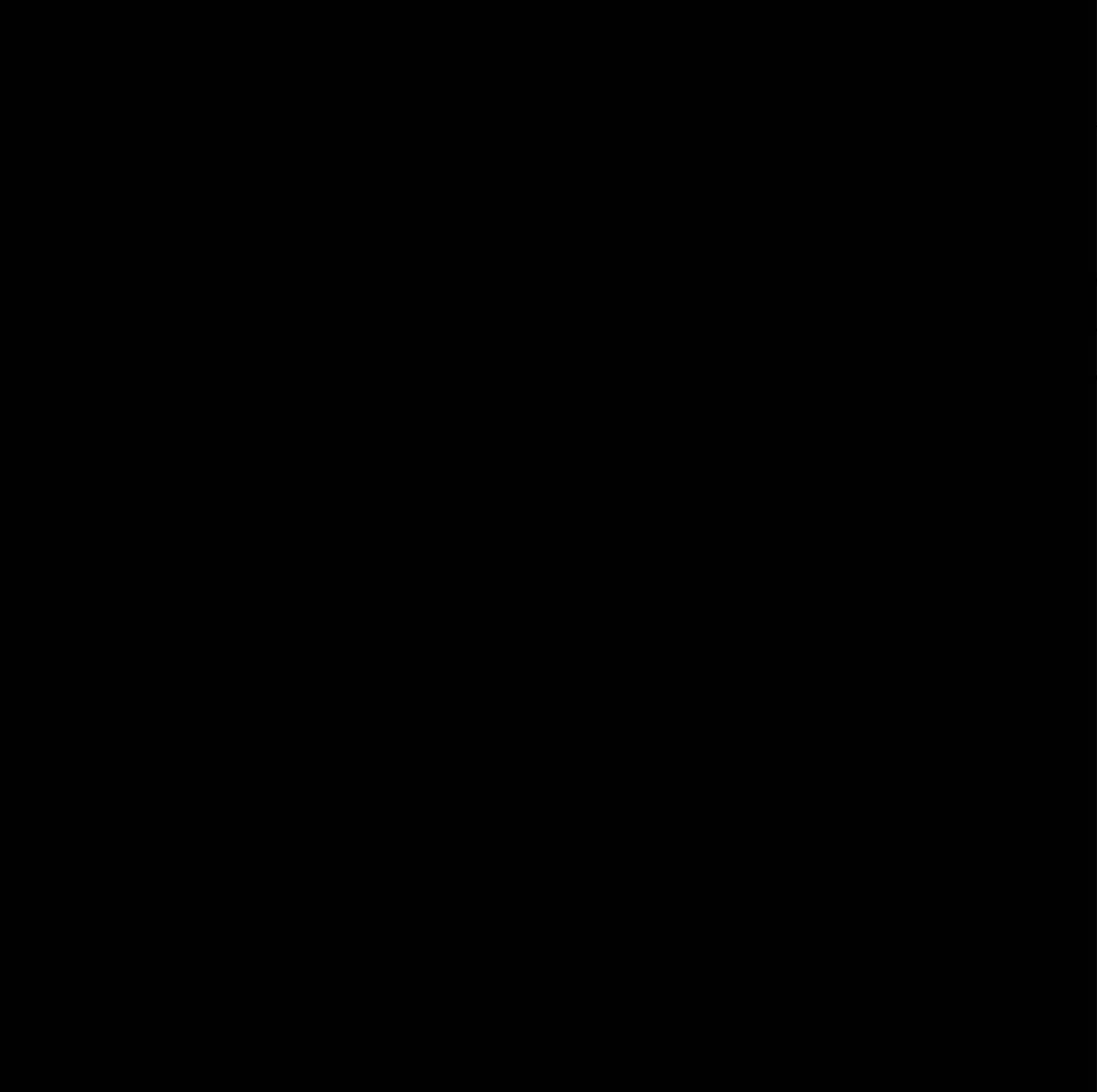

<b>Issu set rollback-timer</b>		

┌

S8600


<b>10.4</b>		

### 4.2.2 show issu state



ISSU

---

--	--	--

---

# 5

## 5.1

### 5.1.1 ping

**ping** [*vrf vrf-name*] [*ip*] [*ip-address* [*length length* ] [*ntimes times*] [*timeout seconds*] [*data data*] [*source source*] [*df-bit*] [*validate*]

<i>vrf-name</i>	VRF
<i>ip-address</i>	IPv4
<i>length</i>	
<i>times</i>	
<i>seconds</i>	1 T

---

## DNS

1 ping

Ruijie# **ping** 192.168.5.1

Sending 5, 100-byte ICMP Echoes to 192.168.5.1, timeout is 2 seconds:

< press Ctrl+C to break >

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/10  
ms

2 ping

Ruijie# **ping** 192.168.5.197 **length** 1500 **ntimes** 100 **timeout** 3 **data** ffff  
**source** 192.168.4.10

Sending 100, 1000-b

<i>length</i>	
<i>times</i>	
<i>seconds</i>	
<i>data</i>	
<i>source</i>	IPv6 ::1

2                    5                    100Byte                    IP

```

Ping ipv6
  ping ipv6
  ping ipv6
  2            5            100Byte            IP
  '!'                    ':'
           'C'
           ping
ping ipv6
  ping ipv6
  ping ipv6
  
```

	-	-
	ipv6	
	-	-

### 5.1.3 traceroute

traceroute

**traceroute** [**vrf**] [*vrf-name*] [**ip** *ip-address*][*ip-address* [**probe** *number* ] [**source** *source*]  
 [**timeout** *seconds*] [**ttl** *minimum maximum*]

<i>vrf-name</i>	VRF
<i>ip-address</i>	IPv4

```

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      202.101.143.130  4 msec  16 msec  8 msec
6      202.101.143.154  12 msec  8 msec  24 msec
7      61.154.22.36     12 msec  8 msec  22 msec
                                         IP      61.154.22.36
1 6

```

2 traceroute

```

Ruijie# traceroute 202.108.37.42
< press Ctrl+C to break >
Tracing the route to 202.108.37.42
1      192.168.12.1     0 msec  0 msec  0 msec
2      192.168.9.2      0 msec  4 msec  4 msec
3      192.168.110.1    16 msec 12 msec 16 msec
4      * * *
5      61.154.8.129    12 msec 28 msec 12 msec
6      61.154.8.17     8 msec  12 msec 16 msec
7      61.154.8.250    12 msec 12 msec 12 msec
8      218.85.157.222  12 msec 12 msec 12 msec
9      218.85.157.130  16 msec 16 msec 16 msec
10     218.85.157.77   16 msec 48 msec 16 msec
11     202.97.40.65    76 msec 24 msec 24 msec
12     202.97.37.65    32 msec 24 msec 24 msec
13     202.97.38.162   52 msec 52 msec 224 msec
14     202.96.12.38    84 msec 52 msec 52 msec
15     202.106.192.226  88 msec 52 msec 52 msec
16     202.106.192.174  52 msec 52 msec 88 msec
17     210.74.176.158  100 msec 52 msec 84 msec
18     202.108.37.42   48 msec 48 msec 52 msec
                                         IP      202.108.37.42
1 17
4

```

```

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

```

-	-

-

-	-

## 5.1.4 traceroute ipv6

traceroute ipv6

**traceroute [ipv6 ip-address] [probe number] [timeout seconds] [ttl minimum maximum]**

<i>ip-address</i>	IPv6
<i>number</i>	
<i>seconds</i>	
<i>minimum maximum</i>	TTL



Traceroute ipv6

DNS

traceroute ipv6

1

---

--	--	--

- -

---

---

# 6

## 6.1

### 6.1.1 carrier-delay

**carrier-delay**

**no**

**carrier-delay** [ *seconds* ]

**no carrier-delay**

<i>seconds</i>	1 60

2

```
DCD                                DCD  Down    Up
DCD
   DCD
      DCD
```

5

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(coinfig)# carrier-delay 5
```

-	-

--	--

	-	-
--	---	---

### 6.1.2 clear counters

**clear counters** [*interface-id*]

	<i>interface-id</i>	

┌

┌

	<b>show interfaces</b>	<b>clear</b>
<b>counters</b>		

Ruijie# **clear counters gigabitethernet 1/1**

	<b>show interfaces</b>	

┌

	-	-

### 6.1.3 clear interface

**clear interface** *interface-id*

	<i>interface-id</i>	

┌

---

|

|

|

Switch Port,L2 Aggregate port

,Routed port,L3 Aggregate port

**shutdown no shutdown**

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

---

|

|

-	-

## 6.1.5 duplex

no

**duplex {auto | full | half}**

**no duplex**

|

auto	
full	
half	

|

|

|

**show interfaces**

|

Ruijie(config-if)# **duplex full**

|

--	--

no

**flowcontrol {auto | off | on}**

**no flowcontrol**

<b>auto</b>	
<b>off</b>	
<b>on</b>	

└───┘

└───┘

└───┘

**show interfaces**

└───┘

1/1

Ruijie(config)# **interface gigabitethernet 1/1**

Ruijie(config-if)# **flowcontrol on**

<b>show interfaces</b>	

└───┘

-	-

### 6.1.7 interface aggregateport

no

**interface aggregateport *port-number***

<i>port-number</i>	Aggregate port

└───┘

┌

┌

aggregate port    aggregate port  
                  aggregate port

**interfaces**    **show interfaces aggregateport**

**show**

┌

Ruijie(config)# **interface aggregateport 3**  
Ruijie(config-if)#

┌

<b>show interfaces</b>	

┌

S8600  
                  8  
                  128    AP

┌

-	-

### 6.1.8 interface fastEthernet

**interface fastEthernet** *mod-num/port-num*

┌

<i>mod-num/port-num</i>	/

┌

┌

┌

no  
**fastEthernet**

**show interfaces**    **show interfaces**

┌

Ruijie(config)# **interface fastEthernet 1/2**

---

```
Ruijie(config-if)#
```

<b>show interfaces</b>	

-	-

### 6.1.9 interface giagbitEthernet

**interface gigabitEthernet** *mod-num/port-num*

<i>mod-num/port-num</i>	/

```
no show interfaces show interfaces  
gigabitEthernet
```

```
Ruijie(config)# interface gigabitEthernet 1/2  
Ruijie(config-if)#
```

<b>show interfaces</b>	

-	-

---

## 6.1.10 interface tenGigabitEthernet

10G

**interface tenGigabitEthernet** *mod-num/port-num*



---

|

|

|

**show interfaces show interfaces vlan**

|

Ruijie(config)# **interface vlan 2**  
Ruijie(config-if)#

ü...@		
<b>show interfaces</b>		

S8600

2K SVI

2K IP

pair state length(meters)

B Ok 2

pair state length(meters)

C Short 1

pair state length(meters)

D Short 1

pairs	
state	OK Short Open A B OK C D Short A B C D OK
length	state OK Short Open length

-	-

86/96  
M8600\_48GT\_4SFP\_POE\_II  
M8600\_48GT\_4SFP\_E  
M8600\_48GT\_4SFP\_E\_II

M9600\_48GT\_4SFP\_POE\_II  
M9600\_48GT\_4SFP\_E  
M9600\_48GT\_4SFP\_E\_II

### 6.1.13 medium-type

no

medium-type { fiber | copper }

no medium-type

fiber	
copper	

---

Ap SVI

```
Ruijie(config)# interface gigabitethernet 1/1  
Ruijie(config-if)# medium-type copper
```

```
show interfaces
```

```
24SFP/12GT      12  SFP      12  10/100/1000M BASE-T  
                SFP      10/100/1000M BASE-T
```

```
-
```

```
-
```

## 6.1.14 mtu

mtu

**Mtu num**

```
num                64 9216(
```

---

	<b>show interfaces</b>	

┌

┌

-	-

### 6.1.16 snmp trap link-status

SNMP LinkTrap, LinkTrap no SNMP Link

LinkTrap

**snmp trap link-status**

**no snmp trap link-status**

┌


┌

┌

┌

Link SNMP LinkTrap

Ap SVI LinkTrap

Link SNMP LinkTrap,

┌

```

1 Link trap
Ruijie(config)# interface gigabitEthernet 1/1
Ruijie(config-if)# no snmp trap link-status

2 Link trap
Ruijie(config)# interface gigabitEthernet 1/1
Ruijie(config-if)# snmp trap link-status

```

┌

Ruijie(config-if)# snmp trap link-status	link trap
Ruijie(config-if)# no snmp trap link-status	link trap

┌





		<b>switchport</b>	2
	<b>no switchport</b>		3
<b>switchport</b>			
<b>no switchport</b>			





switch port

access

VLAN VLAN 1



VLAN ID  
VLAN

VLAN ID

VLAN ID

VLAN  
VLAN

switch port	access	VLAN
<b>switchport access vlan</b>		VLAN
switch port	trunk	VLAN
VLAN	VLAN	trunk port VLAN
VLAN	<b>switchport trunk</b>	

```
Ruijie(config-if)# ifconfig 192.168.1.1 255.255.255.0 ifconfig 192.168.1.1 255.255.255.0 ifconfig 192.168.1.1 255.255.255.0
```



	Trunk VLAN	VLAN VLAN ID	vlan-list VLAN
<b>allowed vlan</b> <i>vlan-list</i>	VLAN ID	VLAN ID	-
	10-20		,
	1-10,20-25,30,33		
	all	VLAN	VLAN
	add	VLAN	VLAN
	remove	VLAN	VLAN
	except	VLAN	VLAN
	VLAN		
<b>native vlan</b> <i>vlan-id</i>	Native VLAN		

VLAN            all            Native VLAN            VLAN 1

**Native VLAN**

Trunk                    native VLAN            native VLAN  
 UNTAG                    VLAN                    VLAN ID  
 IEEE 802.1Q            PVID            native VLAN            VLAN ID            Trunk  
 native VLAN                    UNTAG

**VLAN**

Trunk                    VLAN 1 4094  
 Trunk                    VLAN                    Trunk

**show interfaces switchport**

```

VLAN 2            1/15
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

```

	<b>show interfaces</b>		
	<b>switchport access</b>	accessport	statics VLAN
	-	-	

## 6.2

### 6.2.1 show interfaces

**show interfaces** [*interface-id*] [counters | description | status | switchport | trunk | transceiver [alarm | diagnosis]]

```

Ruijie# show interfacesgigabitEthernet 0/1 switchport
Interface Switchport ModeAccess Native Protected VLAN lists
-----
GigabitEthernet 0/1 enabled Access 11 Disabled ALL

```

<b>duplex</b>	
<b>flowcontrol</b>	
<b>interface gigabitEthernet</b>	
<b>interface aggregateport</b>	
<b>interface vlan</b>	switch virtual interface SVI
<b>shutdown</b>	
<b>speed</b>	
<b>switchport priority</b>	802.1q
<b>switchport protected</b>	

-	-

# 7 Aggregate Port

## 7.1

### 7.1.1 aggregateport load-balance

AP no

**aggregateport load-balance {dst-mac | src-mac | src-dst-mac | dst-ip | src-ip | src-dst-ip }**

**no aggregateport load-balance**

<b>dst-mac</b>	MAC	MAC	AP
<b>src-mac</b>	MAC	MAC	AP
<b>src-dst-ip</b>	IP	IP	IP— IP—
<b>dst-ip</b>	IP	IP	AP
<b>src-ip</b>	IP	IP	AP
<b>src-dst-mac</b>	MAC—	MAC	MAC—

MAC

```
show aggregateport load-balance
```

```
Ruijie(config)# aggregateport load-balance dst-mac
```

```
show aggregateport load-balance
```

```
aggregateport
```

```
S8600
```

```
Aggregate Port
```

```
no
```

```
Aggregate Port
```

```
port-group port-group-number
```

```
no port-group
```

```
port-group-number
```

```
Aggregate Port
Port
```

```
Aggregate
```

```
Aggregate Port
```

```
VLAN
```

```
AP
```

```
AP
```

```
VLAN
```

```
trunk port
```

```
native
```

```
1/3 AP 3
```

```
Ruijie(config)# interface gigabitethernet 1/3
```

```
Ruijie(config-if)# port-group 3
```

```
-
```

```
-
```

S8600		8
	128	AP
-	-	

## 7.2

### 7.2.1 show aggregateport

aggregateport

<i>aggregate-port-number</i>	Aggregate Port
<b>load-balance</b>	aggregaye port
<b>summary</b>	aggregate port

Aggregate Port

---

	-	-
--	---	---

# 8 VLAN

## 8.1

### 8.1.1 name

VLAN **no**

**name** *vlan-name*

**no name**

	<i>vlan-name</i>	VLAN

VLAN VLAN VLAN ID VLAN 2 "VLAN0002"

VLAN

**show vlan** vlan

```
Ruijie(config)# vlan 10
Ruijie(config-vlan)# name vlan10
```

**show vlan** \*20!~"ü@ "9 )|& Ç

**switchport access vlan *vlan-id***

**no switchport access vlan**

<b>access</b>	switch port	access port
<b>trunk</b>	switch port	trunk port
<b>hybrid</b>	switch port	hybrid port

**no switchport trunk {allowed vlan | native vlan }**

<b>allowed vlan</b> <i>vlan-list</i>	Trunk	VLAN	vlan-list
	VLAN		VLAN
	VLAN ID	VLAN ID	-
	10-20		,
	1-10,20-25,30,33		
	all	VLAN	VLAN
<b>native vlan</b> <i>vlan-id</i>	add	VLAN	VLAN
	remove	VLAN	VLAN
	except	VLAN	VLAN
	VLAN		

VLAN                      all                      Native VLAN                      VLAN 1

**Native VLAN**

```

Trunk                      native VLAN                      native VLAN
  UNTAG                      VLAN                      VLAN ID
IEEE 802.1Q                      PVID                      native VLAN                      VLAN ID                      Trunk
native VLAN                      UNTAG
VLAN
Trunk                      VLAN 1 4094
  Trunk                      VLAN                      VLAN                      Trunk
  
```

**show interfaces switchport**

```

VLAN 2                      1/15
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
Interface  Switchport Mode  Access Native Protected VLAN lists
-----
FigabitEthernet 1/15  enabled TRUNK 1 1 Disabled 1,3-4094
  
```

--	--	--

VLAN

	-	-
--	---	---

## 8.2

### 8.2.1 show vlan

VLAN

**show vlan [id *vlan-id*]**

<i>vlan-id</i>	VLAN ID
----------------	---------

|

|

|

**end**

**Ctrl+C**

**exit**

|

Ruijie# **show vlan id 1**

VLAN Name

Status

Ports

-----

1 VLAN0001

STATIC

Fa0/1, Fa0/2

--	--

# 9 Super-vlan

## 9.1

### 9.1.1 subvlan

super vlan subvlan subvlan

**subvlan** *vlan-id-list*

**no subvlan** [*vlan-id-list*]

<i>Vlan-id-list</i>	VLAN subvlan ID, vlan

└───┘

VLAN

**no subvlan** supevlan subvlan

```
Ruijie(config)# vlan 3
Ruijie(config-vlan)# supervlan
Ruijie(config-vlan)# subvlan 5
Ruijie(config-vlan)# subvlan 7-19
```

<b>show supervlan</b>	supervlan

└───┘

-	-
---	---

### 9.1.2 subvlan-address-range

subvlan ip

**subvlan-address-range** *start-ip end-ip*

**no subvlan-address-range**

<i>start-ip</i>	SubVLAN	IP	
<i>end-ip</i>	SubVLAN	IP	

-

VLAN

**end**                      **Ctrl+C**  
**exit**

```
Ruijie(config)# vlan 3
Ruijie(config-vlan)# subvlan-address-range 192.168.3.10
192.168.3.100
```

<b>show supervlan</b>		supervlan

-		-

### 9.1.3 supervlan

VLAN                      **supervlan**

**supervlan**

**no supervlan**

-		-

|

| VLAN

| end Ctrl+C  
| exit

| Ruijie(config)# **vlan 3**  
| Ruijie(config-vlan)# **supervlan**

<b>show supervlan</b>	supervlan

|

-	-

### 9.1.4 proxy-arp

VLAN ARP

**proxy-arp**

**no proxy-arp**

-	-

|

| VLAN

| end Ctrl+C  
| exit

```
Ruijie(config)# vlan 3  
Ruijie(config-vlan)# proxy-arp
```

```
show supervlan
```

supervlan	
-	-

## 9.2

### 9.2.1 show supervlan

SuperVLAN

SubVLAN

1wP,avgjTm,V,7va ArcBWbNMTcBWbNR&



# 10 Protocol VLAN

## 10.1

### 10.1.1 protocol-vlan ipv4 addr mask addr vlan id

IP VLAN

<i>addr</i>	IP	x.x.x.x	
<i>id</i>	VLAN ID	1-	VLAN

┌

┌

┌

```
Ruijie(config)# protocol-vlan ipv4 192.168.100.3 mask 255.255.0 vlan 100
```

<b>show protocol-vlan ipv4</b>	-
<b>no protocol-vlan ipv4 addr mask addr</b>	-
<b>no protocol-vlan ipv4</b>	-

┌

RGOS10.1

-	-

### 10.1.2 protocol vlan ipv4

IP

VLAN

Protocol VLAN







**private-vlan mapping** {*svlist* | **add** *svlist* | **remove** *svlist*}

**no private-vlan mapping**

<i>svlist</i>	secondary VLAN list
<b>no</b>	

|

Primary VLAN

|

```
Ruijie(config)# interface vlan 22
Ruijie(config-if)# private-vlan mapping add 24-26
```

<b>show vlan private-vlan</b>	-

RGOS10.1

-	-

### 11.1.3 private-vlan type

VLAN      VLAN

**private-vlan** {*community* | *isolated* | *primary*}

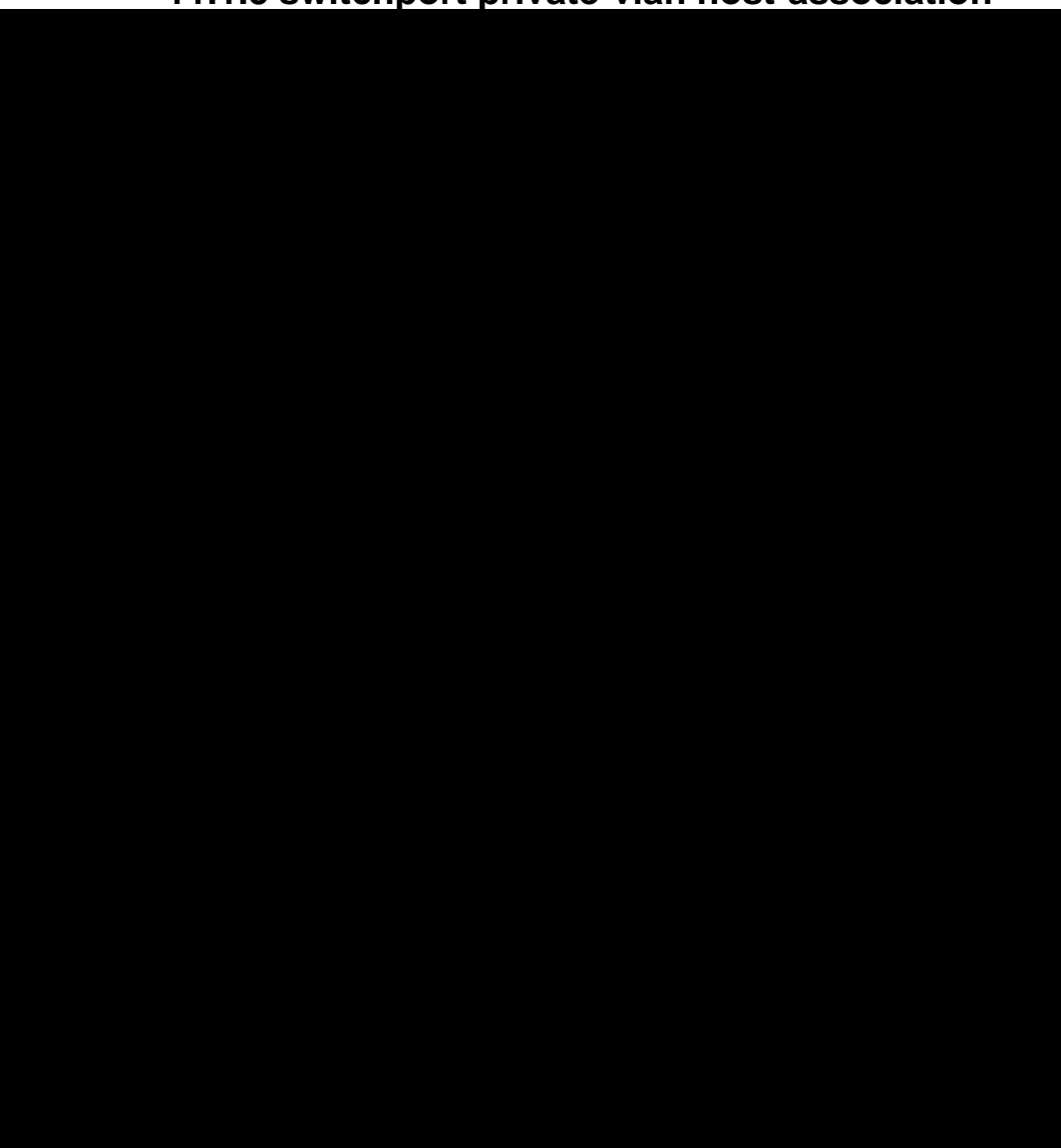
**no private-vlan** {*community* | *isolated* | *primary*}

<i>community</i>	community VLAN
<i>isolated</i>	isolated VLAN
<i>primary</i>	primary VLAN
<i>no</i>	VLAN



	<b>show vlan private-vlan</b>	-
	RGOS10.1	
	-	-

### 11.1.5 switchport private-vlan host-association



secondary VLAN

--

D

	-
--	---

### 11.1.6 switchport private-vlan mapping

private VLAN

secondary VLAN

**switchport private-vlan mapping** *p\_vid* {*svlist*|**add** *svist* |**remove** *svlist*}

**no switchport private-vlan mapping**

<i>p_vid</i>	primary VID
<i>svlist</i>	secondary VLAN list
<b>no</b>	secondaryVLAN

secondary VLAN

VLAN

```
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
```

<b>show vlan private-vlan</b>	-

RGOS10.1

-	-

## 11.2

### 11.2.1 show vlan private-vlan

private VLAN

**show vlan private-vlan [community | primary | isolated]**

<b>primary</b>	primary VLAN
<b>community</b>	community VLAN
<b>isolated</b>	isolated VLAN

private VLAN

Ruijie# **show vlan private-vlan**

-	-

RGOS10.1

-	-

## 11.3 Hybrid

### 11.3.1 switchport hybrid allowed vlan

**switchport hybrid allowed vlan**[[add][tagged | untagged] | remove] *vlist*

**no switchport hybrid allowed vlan**

hybrid

<b>no</b>	hybrid

|  
|  
|

|  
|  
|

```
Ruijie(config-if)# switchport hybrid allowed vlan add untagged 3-5
```



# 12 QinQ

## 12.1

```

tunnel                                vid
dot1q outer-vid vid                   v_list
vid register inner-vid v_list

```

<i>vid</i>	vlan id
<b>no</b>	

```


```

```


```

```


```

```

tag vid tag vid 3
ruijie#configure
ruijie(config)#interface gigabitEthernet 0/1
ruijie(config-if)#switchport mode dot1q-tunnel
ruijie(config-if)#dot1q outer-vid 3 register inner-vid 4-22
ruijie(config-if)#end

```

[ <i>intf-id</i> ]	-

```


```

--	--

	-	-
--	---	---

### 12.1.2 dot1q relay-vid vid translate local-vid v-list

access trunk hybrid uplink

vid

**dot1q relay-vid** *vid* **translate local-vid** *v-list*

**no dot1q relay-vid** *vid* **translate local-vid** *v-list*

<i>v_list</i>		vid
<i>vid</i>	tag	vid
<b>no</b>		

```

tag vid 10-20 vid 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

```

<b>show translation-table</b> [interface <i>intf-id</i> ]	-

RGOS10.3

-	-

### 12.1.3 dot1q relay-vid vid translate inner-vid v-list

access trunk hybrid uplink

vid



|

|

|

```

tag
tag
ruijie# configure
ruijie(config)# interface gigabitEthernet 0/2
ruijie(config-if)# dot1q-Tunnel cos 3 remark-cos 5
ruijie(config-if)# end
    
```

<b>show interface intf-name remark</b>	-

|

-	-

### 12.1.5 frame-tag tpid tpid

tpid

**frame-tag tpid <tpid>**

**no frame-tag tpid**

<b>no</b>	<b>tpid</b>

|

(5760 )

|

```

tpid 0x9100
ruijie(config)# interface g 0/3
    
```

```
ruijie(config-if)# frame-tag tpid 0x9100
```

	<b>show inner-priority-trust</b>	-
	-	
	-	-

### 12.1.7 mac-address-mapping x source-vlan src-vlan-list

#### destination-vlan dst-vlan-id

vlan                      mac                      vlan

**mac-address-mapping x destination-vlan dst-vlan-id source-vlan src-vlan-list**

**no mac-address-mapping x destination-vlan dst-vlan-id source-vlan src-vlan-list**

	no	vlan                      vlan

┌  
└  
┌  
└

```

tag                      tag
ruijie#configure
ruijie(config)# interface gigabitEthernet 0/2
ruijie(config-if)# mac-address-mapping 1 destination-vlan 5
source-vlan 1-3
ruijie(config-if)#end
    
```

	<b>show interface mac-address-mapping x</b>	-
--	---	---

┌  
└



---

<b>no</b>	uplink

uplink

```
uplink
ruijie(config)#interface gigabitEthernet 0/1
ruijie(config-if)#switchport mode uplink
ruijie(config)#end
```

<b>show vlan</b>	-



```
ruijie(config)#end
```

```
show interface dot1q-tunnel
```

-



<b>show traffic-redirect</b>	-
RGOS10.3	
-	-

### 12.1.14 traffic-redirect access-group acl nested-vlan

dot1q-tunnel vid

**traffic-redirect access-group *acl* nested-vlan *vid* in**

**no traffic-redirect access-group *acl* nested -vlan**

<i>acl</i>	acl
<i>vid</i>	vid
<b>no</b>	vid

┌

┌

┌

```

1.1.1.3 vid 9
ruijie# configure
ruijie(config)# ip access-list standard 20
ruijie(config-acl-std)# permit host 1.1.1.3
ruijie(config-acl-std)# 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

```

--	--

RGOS10.1

-	-

### 12.1.15 I2protocol-tunnel

dot1q-tunnel

**I2protocol-tunnel {stp|gvrp}**

**no I2protocol-tunnel {stp|gvrp}**

<b>stp</b>	stp
<b>gvrp</b>	gvrp
<b>no</b>	

## 12.1.16 l2protocol-tunnel *proto-type* enable

**l2protocol-tunnel { stp|gvrp } enable**

**no l2protocol-tunnel { stp|gvrp } enable**

<b>stp</b>	stp
<b>gvrp</b>	gvrp
<b>no</b>	

|

|

|

```
ruijie# configure
ruijie(config)# interface fa 0/1
ruijie(config-if)# l2protocol-tunnel gvrp enable
ruijie(config-if)# end
```

<b>show l2protocol-tunnel { gvrp stp }</b>	-

|

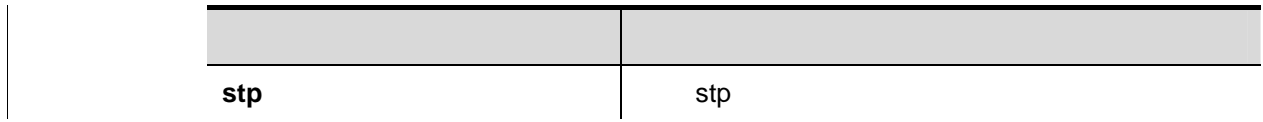
RGOS10.3

-	-

## 12.1.17 l2protocol-tunnel *proto-type* tunnel-dmac *mac-address*

**l2protocol-tunnel { stp|gvrp } tunnel-dmac *mac-address***

**no l2protocol-tunnel { stp|gvrp } tunnel-dmac *mac-address***



┌

┌

```
ruijie# show dot1q-tunnel
Ports  Dot1q-tunnel
-----
Gi0/1  Enable
```

-	-

┌

RGOS10.3

┌

-	-

### 12.2.2 show frame-tag tpid

tpid

**show frame-tag tpid [interface *intf-id*]**

┌

<i>intf-id</i>	

┌

tpid

┌

┌

```
ruijie# show frame-tag tpid
Ports  tpid
-----
Gi0/1  0x9100
```

--	--

QinQ

---

	-	-
--	---	---

RGOS10.1

**show interface [intf-id] dot1q-tunnel**

<i>intf-id</i>	

└───

└───

└───

```
ruijie# show interface dot1q-tunnel
Interface: Gi0/3
Native vlan: 10
Allowed vlan list: 4-6 10 30-60
Tagged vlan list: 4 6 30-60
```

-	-

RGOS10.3

-	-

**12.2.5 show interface intf-name remark**

**show interface intf-name remark**

-	-

└───

└───

└───

```

Ruijie# show interface intf-name remark
Ports          Type          From value  To value
-----
Gi0/1          Cos-To-Cos   3           5
    
```

-	-

RGOS10.1

-	-

### 12.2.6 show interface mac-address-mapping x

MAC

show mac-address-mapping x

-	-

```

ruijie# show mac-address-mapping 1
Ports          Destination-VID  Source-VID-list
-----
Gi0/1          5                1-3
    
```

-	-

RGOS10.1

-	-

### 12.2.7 show registration-table

dot1q-tunnel vid

**show registration-table** [interface *intf-id*]

<i>intf-id</i>	

|

|

|

```
ruijie# show registration-table
Ports          Outer-VID  Inner-VID-list
-----
Gi0/7          5          7-10,15,20-30
```

-	-

|

RGOS10.3

-	-

### 12.2.8 show traffic-redirect

vid

**show traffic-redirect** [interface *intf-id*]

--	--

---

<i>intf-id</i>
----------------

---

```
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

```
-T 66.84 459.26 00.004 .4 re f 66.84 721.52 220.04 0.48 re f 66.84 744.62
```



L2protocol-tunnel : gvrp Disable

-	-

RGOS10.3

-	-

# 13 Share VLAN

## 13.1

### 13.1.1 share

share vlan	
-	-
vlan	
share vlan	no share
	end
	exit
	Ctrl+C
Ruijie(config)#vlan 2	
Ruijie(config-vlan)#share	
-	-
-	-

## 13.2

### 13.2.1 show mac-address-table share

	Status	duplicated share vlan	Status	original	Status
		-		-	

|

|

~

**14**

/

**address-bind install**

**no address-bind install**

	-	-

|

|

|

```

fa 0/1
Ruijie(config)# address-bind uplink fa0/1
Ruijie(config)# address-bind install
    
```

	<b>show address-bind uplink</b>	

RGOS10.1

	-	-

### 14.1.3 address-bind ip-address

ip mac .

**address-bind ip-address mac-address**

**no address-bind ip-address**

	<i>ip-address</i>	IP
	<i>mac-address</i>	mac

|

MAC

┌

┌

┌

┌

┌

┌

IP MAC IP MAC IP IP  
MAC IP MAC

ip 3.3.3.3 mac 00d0.f811.1112  
Ruijie(config)# **address-bind** 3.3.3.3 00d0.f811.1112

[Redacted]	
<b>show address-bind</b>	

S8600 1K.

[Redacted]	
-	-

#### 14.1.4 address-bind ipv6-mode

ip IP

**address-bind ipv6-mode compatible**

**address-bind ipv6-mode loose**

**address-bind ipv6-mode strict**

┌

┌

┌

┌

[Redacted]	
-	-

:

	IPv4
	IPv4+MAC
	IPv4+MAC
	IPv4+MAC

	IPv6	
	ipv6	
	IPv6	
	MAC	MAC IPv6

```

IP      192.168.5.2      00d0.f822.33aa
IPv6
Ruijie# configure t
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# address-bind 00d0.f822.33aa ip 192.168.5.2
Ruijie(config)# address-bind ipv6-mode compatible
    
```

-	-

-	-

### 14.1.5 address-bind uplink

```

ip      mac      .
address-bind uplink intf-id
no address-bind uplink intf-id
    
```

<i>intf-id</i>	

MAC

---



IP

MAC

MAC

IP

MAC

IP

IP

( address-bind install)

```
Ruijie# clear mac-address-table dynamic
```

```
show mac-address-table dynamic
```

```
-
```

```
-
```

### 14.1.7 clear mac-address-table filtering

```
clear mac-address-table filtering [address mac-addr] [vlan vlan-id]
```

```
filtering
```

```
address mac-addr
```

```
vlan vlan-id
```

```
VLAN
```

```
show mac-address-table filtering
```

```
00d0.f800.0c0c
```

```
Ruijie# clear mac-address-table filtering address 00d0.f800.0c0c
```

```
mac-address-table filtering
```

```
show mac-address-table filtering
```

-	-

### 14.1.8 clear mac-address-table static

**clear mac-address-table static** [**address** *mac-addr*] [**interface** *interface-id*] [**vlan** *vlan-id*]

<b>static</b>	
<b>address</b> <i>mac-addr</i>	
<b>interface</b> <i>interface-id</i>	
<b>vlan</b> <i>vlan-id</i>	VLAN

|

|

|

**show mac-address-table static**

|

MAC 00d0.f800.073c

Ruijie# **clear mac-address-table static address 00d0.f800.073c**

|

<b>mac-address-table static</b>	
<b>show mac-address-table static</b>	

|

|

--	--

**no mac-address-table aging-time**

	<i>seconds</i>	

└───

300

└───

└───

**show mac-address-table aging-time**

**show mac-address-table dynamic**

└───

Ruijie(config)# **mac-address-table aging-time 150**

--	--

---

**show mac-address-table filtering**

Ruijie(config)# **mac-address-table filtering** 00d0f8000000 **vlan 1**

<b>clear mac-address-table filtering</b>	
<b>show mac-address-table filtering</b>	

-	-

### 14.1.11 mac-address-table notification

MAC

no

**mac-address-table notification** [interval *value* | history-size *value*]

	EÄGAAga9FžG@Néht...7dJgX6
snmp-server enable traps	trap
show mac-address-table notification	MAC



### 14.1.14 mac-manage-learning uniform learning-synchronization

uniform

MAC

.

**no mac-manage-learning uniform learning-synchronization**

-	-

┌

┌

┌  
uniform                      MAC  
no                              MAC

┌

<b>show mac-address-table mac-manage-learning</b>	MAC

┌  
-

-	-

### 14.1.15 mac-manage-learning dispersive

MAC

dispersive

.

-	-

┌

┌

MAC

dispersive

MAC

<b>show mac-address-table mac-manage-learning</b>	MAC

-

-	-

### 14.1.16 snmp trap mac-notification

MAC

no

**snmp trap mac-notification {added | removed}**

**no snmp trap mac-notification {added | removed}**

<b>added</b>	
<b>removed</b>	

**show mac-address-table notification *interface***

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# snmp trap mac-notification added
```

<b>mac-address-table notification</b>	MAC

	<b>show mac-address-table notification</b>	MAC
	-	
	-	

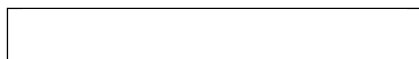
### 14.1.17 mac-address-learning

	/	
	<b>mac-address-learning</b>	
		MAC
	1	
	Ruijie(config-if)# no mac-address-learning	

## 14.2

### 14.2.1 show address-bind

**show address-bind**



|

```
Ruijie# show address-bind uplink
Ports      State
-----
Fa0/1      Disabled
Fa0/2      Disabled
.....
```

|

<b>address-bind uplink</b>	

|

|

-	-

### 14.2.3 show mac-address-table address

MAC

**show mac-address-table** [**address** *mac-addr*] [**interface** *interface-id*] [**vlan** *vlan-id*]

|

<b>address</b> <i>mac-addr</i>	MAC
<b>interface</b> <i>interface-id</i>	
<b>vlan</b> <i>vlan-id</i>	VLAN

|

|

|

```
Ruijie# show mac-address-table address 00d0.f800.1001
Vlan      MAC Address      Type      Interface
-----
1         00d0.f800.1001   STATIC    Gi1/1
```

<b>show mac-address-table static</b>	
<b>show mac-address-table filtering</b>	
<b>show mac-address-table dynamic</b>	
<b>show mac-address-table interface</b>	
<b>show mac-address-table vlan</b>	VLAN
<b>show mac-address-table count</b>	
<b>show mac-address-table static</b>	
<b>show mac-address-table filtering</b>	

└───┘

-	-

### 14.2.4 show mac-address-table aging-time

**show mac-address-table aging-time**

-	-

└───┘

└───┘

└───┘

```
Ruijie# show mac-address-table aging-time
Aging time   : 300
```

--	--

	<b>mac-address-table aging-time</b>	
	-	-

### 14.2.5 show mac-address-table count

**show mac-address-table count**

	-	-

```

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
    
```

<b>show mac-address-table static</b>	
<b>show mac-address-table filtering</b>	
<b>show mac-address-table dynamic</b>	
<b>show mac-address-table address</b>	
<b>show mac-address-table interface</b>	
<b>show mac-address-table vlan</b>	VLAN



-

-

|

|

-	-

### 14.2.7 show mac-address-table filtering

**show mac-address-table static [addr mac-addr] [vlan vlan-id]**

|

<i>mac-addr</i>	MAC
<i>vlan-id</i>	VLAN

|

|

|

|

```
Ruijie# show mac-address-table filtering
Vlan      MAC Address      Type      Interface
-----  -
1         0000.2222.2222  FILTER   Not available
```

|

<b>clear mac-address-table filtering</b>	
<b>mac-address-table filtering</b>	

|

\*üá—•Ð G .`• €g -@`• ~Éd »@ "G æ Gf Tf€Ò Àf Tf†1 Ü ð CGB QÁ"ö ðÁ XQ 5‡fdd G!5

MAC

**show mac-address-table notification [interface[*interface-id*] | history ]**

<b>interface</b> <i>interface-id</i>	MAC
<i>history</i>	MAC

MAC

```
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
```

<b>mac-address-table notification</b>	MAC
<b>snmp trap mac-notification</b>	MAC

-	-
---	---

**14.2.10 show mac-address-table static**

**show mac-address-table static** [**addr** *mac-addr*] [**interface** *interface-id*] [**vlan** *vlan-id*]



<i>vlan-id</i>	VLAN ID

┌

┌

┌

```
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
```

<b>show mac-address-table static</b>	
<b>show mac-address-table filtering</b>	
<b>show mac-address-table dynamic</b>	
<b>show mac-address-table address</b>	
<b>show mac-address-table interface</b>	
<b>show mac-address-table count</b>	

┌

-	-

### 14.2.12 show mac-address-table mac-manage-learning

MAC

--	--

MAC

---

	-	-

Ruijie# show mac-address-learning


# 15 DHCP Snooping

## 15.1 DHCP snooping

### 15.1.1 ip dhcp snooping

```
DHCP Snooping                                no
      DHCP Snooping
```

```
[no] ip dhcp snooping
```

	-	-

```
|
```

```
|
```

```
DHCP Snooping
```

```
show ip dhcp snooping
```

<b>show ip dhcp snooping</b>		DHCP snooping
	-	-

### 15.1.2 ip dhcp snooping bootp-bind

```
DHCP Snooping    Bootp
no               DHCP snooping    Bootp
```

**[no] ip dhcp snooping bootp-bind**

	-	-

```
                DHCP Snooping    Bootp
DHCP Snooping  Bootp            Bootp    DHCP
DHCP Snooping  Bootp            DHCP
```

```
                DHCP Snooping    Bootp
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping bootp-bind
Ruijie(config)# end
Ruijie# show ip dhcp snooping
Switch DHCP snooping status    ENABLE
Verification of hwaddr field status    DISABLE
DHCP snooping database write-delay time: 0 seconds
DHCP snooping option 82 status: ENABLE
DHCP snooping Support Bootp bind status: ENABLE
Interface            Trusted            Rate limit (pps)
-----
```



-----

<b>show ip dhcp snooping</b>	DHCP snooping

-	-

### 15.1.4 ip dhcp snooping database write-to-flash

DHCP Snooping

FLASH

#### ip dhcp snooping database write-to-flash

-	-

DHCP Snooping

FLASH

DHCP

flash

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping database write-to-flash
Ruijie(config)# end
```

--	--

-	-
---	---

### 15.1.5 ip dhcp snooping information option

DHCP                      option82  
no

**[no] ip dhcp snooping information option**

-	-
---	---

└───

└───

	DHCP		option82		DHCP		option82
--	------	--	----------	--	------	--	----------

```

DHCP                      option82
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping information option
Ruijie(config)# end
Ruijie# show ip dhcp snooping
Switch DHCP snooping status    ENABLE
Verification of hwaddr field status    DISABLE
DHCP snooping database write-delay time: 0 seconds
DHCP snooping option 82 status: ENABLE
DHCP snooping Support Bootp bind status: ENABLE
Interface                      Trusted      Rate limit (pps)
-----

```

<b>show ip dhcp snooping</b>	DHCP snooping
------------------------------	---------------

└───

--	--

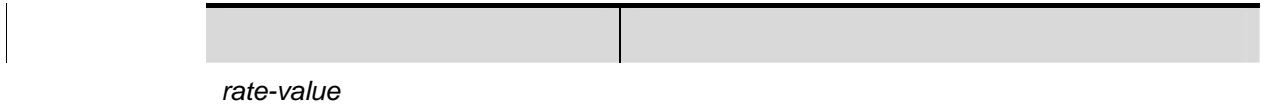




DHCP

no

**[no] ip dhcp snooping limit rate** *rate-value*



-	-

### 15.2.2 ip dhcp snooping suppression

suppression no  
 no suppression

**[no] ip dhcp snooping suppression**

-	-

┌

┌

┌

DHCP

┌

```

        fastethernet 0/2 suppression
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/2
Ruijie(config-if)# ip dhcp snooping suppression
Ruijie(config-if)# end
    
```

┌

-	-

┌

┌

-	-

### 15.2.3 ip dhcp snooping trust

DHCP snooping                      TRUST  
no    UNTRUST

**[no] ip dhcp snooping trust**

-	-

UNTRUST

	DHCP	TRUST
DHCP	UNTRUST	DHCP

```

fastethernet 0/1 TRUST
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip dhcp snooping trust
Ruijie(config-if)# end
Ruijie# show ip dhcp snooping
Switch DHCP snooping status    ENABLE
Verification of hwaddr field status    DISABLE
DHCP snooping database write-delay time: 0 seconds
DHCP snooping option 82 status: ENABLE
DHCP snooping Support Bootp bind status: ENABLE
Interface                            Trusted            Rate limit (pps)
-----
FastEthernet0/1                      YES                unlimited
    
```



## **15.3 DHCP snooping**

### **15.3.1 show ip dhcp snooping**

┌

-	-

### 15.3.2 show ip dhcp snooping binding

DHCP Snooping

**show ip dhcp snooping binding**

-	-

┌

┌

┌

DHCP Snooping

```
Ruijie# show ip dhcp snooping binding
Total number of bindings: 1

MacAddress      IPAddress      Lease(sec)    Type          VLAN  Interface
-----
0000.0000.0001  1.1.1.1       78128         dhcp-snooping 1     FastEthernet 0/1
```

<b>ip dhcp snooping binding</b>	DHCP snooping
<b>clear ip dhcp snooping binding</b>	DHCP snooping

┌

┌

--	--

	-
--	---

## 15.4 DHCP snooping

### 15.4.1 clear ip dhcp snooping binding

DHCP Snooping

**clear ip dhcp snooping binding**

-	-

--

--

--

DHCP snooping

DHCP snooping

```
Ruijie# clear ip dhcp snooping binding
```

```
Ruijie# show ip dhcp snooping binding
```

```
Total number of bindings: 0
```

```
MacAddress IpAddress Lease(sec) Type VLAN Interface
```

```
-----
```

<b>show ip dhcp snooping binding</b>	DHCP snooping

--

-	-

### 15.4.2 debug ip dhcp snooping

DHCP Snooping

**debug ip dhcp snooping {**

# 16 IGMP Snooping

## 16.1

### 16.1.1 deny

	profile	profile	deny
<b>deny</b>			
	<b>deny</b>	profile	
	profile	deny	
	profile		
	profile	range	profile
	profile		
		224.2.2.2	profile
	Ruijie(config)# <b>ip igmp profile 1</b>		
	Ruijie(config-profile)# <b>range 224.2.2.2</b>		
	Ruijie(config-profile)# <b>deny</b>		
	<b>ip igmp profile</b>	profile	
	<b>range</b>		
	-	-	

### 16.1.2 permit

profile profile permit profile

**permit**

<b>permit</b>	profile

profile deny

profile

profile range profile  
profile

224.2.2.2 profile  
Ruijie(config)# **ip igmp profile 1**  
Ruijie(config-profile)# **range 224.2.2.2**  
Ruijie(config-profile)# **permit**

<b>ip igmp profile</b>	profile
<b>range</b>	

-	-

### 16.1.3 range

profile profile range  
no

**range** *low-ip-address* [*high-ip-address*]

**no range** *low-ip-address* [*high-ip-address*]

<i>low-ip-address</i>	

<i>high-ip-address</i>	
------------------------	--

--	--

profile	
---------	--

	profile	deny
profile	profile	

```

                224.2.2.2~224.2.2.244    profile
Ruijie(config)# ip igmp profile 1
Ruijie(config-profile)# range 224.2.2.2 224.2.2.244
    
```

<b>ip igmp profile</b>	profile
<b>deny</b>	profile deny
<b>permit</b>	profile permit

--	--

-	-

### 16.1.4 ip igmp profile

IGMP profile profile profile-number igmp profile

**ip igmp profile** *profile-number*

**no ip igmp profile** *profile-number*

<i>profile-number</i>	profile 1-65535

--	--

--	--

```

IGMP Profiles                               SVGL
IGMP Filtering                               profile
profile
    
```

```

1 profile profile
Ruijie(config)# ip igmp profile 1
Ruijie(config-profile)#
    
```

<b>range</b>	profile	
<b>permit</b>	profile	permit
<b>deny</b>	profile	deny

```

    
```

-	-

### 16.1.5 ip igmp snooping ivgl

```

igmp snooping ivgl ip igmp snooping ivgl
no igmp snooping
    
```

**ip igmp snooping ivgl**

**no ip igmp snooping**

-	-

```

disable
    
```

```

    
```

```

VLAN VLAN VLAN VLAN
VLAN
    
```

```

pim snooping          igmp snooping  IVGL  IVGL-SVGL
no ip igmp snooping  igmp snooping
pim snooping          pim snooping
    
```

```

Ruijie(config)# ip igmp snooping ivgl
    
```

<b>ip igmp snooping svgl</b>		igmp snooping	svgl
<b>ip igmp snooping ivgl-svgl</b>		igmp snooping	

-		-	

### 16.1.6 ip igmp snooping ivgl-svgl

```

igmp snooping          ivgl-svgl          ip igmp snooping
ivgl-svgl              no                  igmp snooping
ip igmp snooping ivgl-svgl
no ip igmp snooping
    
```

-		-	

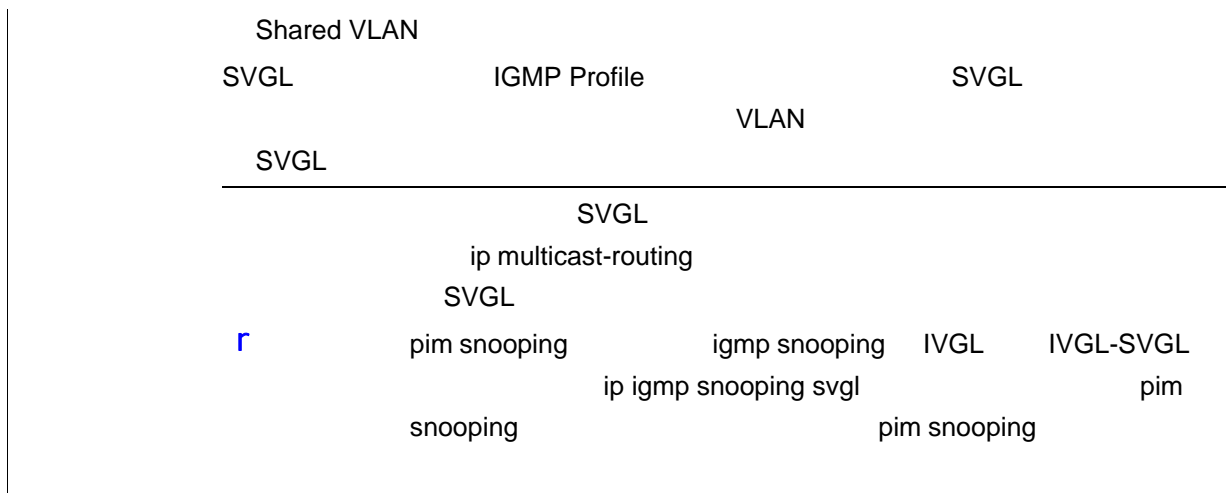
disable

```

IGMP Profile          IVGL  SVGL          IVGL  SVGL
                      IVGL  SVGL
                      VLAN
                      VLAN
    
```

IVGL-SVGL

r



```

Ruijie(config)# ip igmp snooping svgl
Ruijie(config)# ip igmp snooping svgl profile 1
    
```

<b>ip igmp snooping svgl vlan</b>	Shared VLAN
<b>ip igmp snooping svgl profile</b>	SVGL profile

-	-
---	---

### 16.1.8 ip igmp snooping vlan

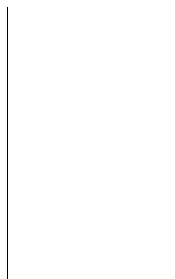
```

vlan          igmp snooping          ivgl          ip igmp
snooping vlan      no          igmp snooping

ip igmp snooping vlan vid
no ip igmp snooping vlan vid
    
```

vid	vlan id
-----	---------

disable



	vlan	IGMP Snooping
	vlan	igmp snooping
	pim snooping	igmp snooping
	no ip igmp snooping vlan	igmp snooping
r	pim snooping	pim snooping
	VLAN	

---

vlan 2 igmp snooping

```

vlan 2  igmp snooping svgl  vlan
Ruijie(config)# ip igmp snooping svgl vlan 2
    
```

<b>ip igmp snooping svgl</b>	igmp snooping svgl
<b>ip igmp snooping ivgl-svgl</b>	igmp snooping

-	-

### 16.1.10 ip igmp snooping svgl profile

```

profile SVGL ip igmp snooping svgl
profile no
ip igmp snooping svgl profile profile-number
no ip igmp snooping svgl profile
    
```

<i>profile-number</i>	profile <1-65536>

```

svgl profile
    
```

```

SVGL IVGL-SVGL
    
```

```

igmp snooping svgl profile 2
Ruijie(config)# ip igmp snooping svgl profile 2
    
```

<b>ip igmp snooping svgl</b>	igmp snooping svgl
<b>ip igmp snooping ivgl-svgl</b>	igmp snooping

-	-

### 16.1.11 ip igmp snooping dyn-mr-aging-time

**ip igmp snooping dyn-mr-aging-time *time***

**no ip igmp snooping dyn-mr-aging-time**

<i>time</i>	, <1-3600>

300s

Hello IGMP PIM

Ruijie(config)# ip igmp snooping dyn-mr-aging-time 100


-	-

### 16.1.12 ip igmp snooping fast-leave enable

**enable**      igmp snooping      no      igmp snooping fast-leave      **ip igmp snooping fast-leave**

**ip igmp snooping fast-leave enable**

**no ip igmp snooping fast-leave enable**

	-	-

disable

IP IGMP

IP IGMP

igmp snooping fast-leave

Ruijie(config)# **ip igmp snooping fast-leave enable**

┌

┌

IGMP

0

IGMP Snooping

IGMP

0

IGMP Snooping

IGMPv3

┌

100s

Ruijie(config)# **ip igmp snooping query-max-response-time 100**

┌


┌

┌

-	-

### 16.1.14 ip igmp snooping source-check default-server

IP IP igmp  
snooping ip snooping source-check  
**default-server** no ip

**ip igmp snooping source-check default-server** *address*

**no ip igmp sooping souce-check**

┌

<i>address</i>	

┌

┌

┌

IP

Server	Server	IP
IP		
		IP

```

Ruijie(config)# ip igmp snooping source-check default-server
192.168.4.243
    
```

<b>ip igmp snooping limit-ipmc</b>	ip
------------------------------------	----

-	-
---	---

### 16.1.15 ip igmp snooping limit-ipmc

**ip igmp snooping limit-ipmc** *vid* *address* *gaddress* *server* *saddress*  
**no ip igmp snooping limit-ipmc** *vid* *address* *gaddress* *server* *saddress*

<i>vid</i>	ip	vlan id
<i>gaddress</i>		
<i>saddress</i>	(	)

```

Ruijie(config)# ip igmp snooping limit-ipmc vlan 1 address 224.0.0.1
    
```

**server** 192.168.4.243

---



---

	-	-
--	---	---

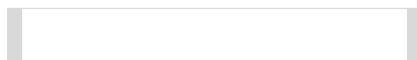
### 16.1.18 ip igmp snooping mrouter learn pim-dvmrp

IGMP Query/Dvmrp/PIM Hello

**ip igmp snooping mrouter learn** no

**ip igmp snooping mrouter learn pim-dvmrp**

**no ip igmp snooping mrouter learn pim-dvmrp**



### 16.1.19 ip igmp snooping vlan mrouter interface

**ip igmp snooping vlan mrouter interface** , no

**ip igmp snooping vlan *vid* mrouter interface *interface-id***

**no ip igmp snooping vlan *vid* mrouter interface *interface-id***

<i>vid</i>	vlan id
<i>interface-id</i>	id

┌

┌

┌

IP

┌

```
Ruijie(config)# ip igmp snooping vlan 1 mrouter interface
fastEthernet 0/1
```

┌

<b>ip igmp snooping source-check port</b>	

┌

┌

-	-

### 16.1.20 ip igmp snooping vlan mrouter learn pim-dvmrp

IGMP Query/Dvmrp/PIM Hello  
**ip igmp snooping vlan mrouter learn** no



<b>-D</b>	
<i>vid</i>	vlan id
<i>ip-addr</i>	
<i>interface-id</i>	id

└───

└───

IGMP Profile

IGMP Report

IGMP Profile

profile

filter

	<b>ip igmp snooping filter</b>	
	-	-

## 16.2

### 16.2.1 show ip igmp snooping

igmp snooping

**Show ip igmp snooping [gda-table | interfaces | mrouter/ statistics [vlan *vlan-id* ]**

		igmp snooping
<b>gda-table</b>		
<b>interfaces</b>		igmp snooping filtering
<b>mrouter</b>		
<b>statistics [vlan <i>vlan-id</i>]</b>		snooping
<b>vlan</b>	vlan	snooping DA. dHBA 15 "6p ©

	-	-

**16.2.2 show ip igmp profile [ profile-number]**

		profile
<i>profile-number</i>		profile

|

| EXEC

**undebg igmp-snp event**

**undebg igmp-snp packet**

**undebg igmp-snp msf**

**undebg igmp-snp warning**

	IGMP Snooping
<b>event</b>	IGMP Snooping
<b>packet</b>	IGMP Snooping
<b>msf</b>	IGMP Snooping
<b>warning</b>	IGMP Snooping

|

| EXEC

|

|

-	-

|

-	-

# 17 PIM-Snooping

## 17.1 PIM-Snooping

### 17.1.1 ip pim snooping

	PIM-Snooping	ip pim snooping	no
PIM-Snooping			
ip pim snooping			
no ip pim snooping			
	-	-	

PIM-Snooping 17

	-	-

### 17.1.2 ip pim snooping

PIM-Snooping            **ip pim snooping**            no  
PIM-Snooping

**ip pim snooping**

**no ip pim snooping**

	-	-

PIM-Snooping

---

PIM-Snooping	IGMP-Snooping		
VLAN	IGMP-Snooping	PIM-Snooping	
	VLAN	IGMP-Snooping	
	PIM-Snooping	VLAN	PIM-Snooping

---

```
Ruijie# configure terminal  
Ruijie(config)# interface vlan 199  
Ruijie(config-if)# ip pim snooping
```



### 17.1.3 show ip pim snooping

PIM-Snooping

**show ip pim snooping**

**show ip pim snooping [ detail ]**

<b>detail</b>	

└───┘

└───┘

└───┘

PIM-Snooping

Ruijie#**show ip pim snooping**

Global runtime mode : Enabled

Global admin mode : Enabled

Number of user enabled VLANs: 2

User enabled VLANs: 199 198

-	-

└───┘

-	-

### 17.1.4 show ip pim snooping neighbor

PIM-Snooping

**show ip pim snooping neighbor**

**show ip pim snooping neighbor**

--	--



|  
|  
|

|  
|

|  
|  
|  
|

PIM-Snooping VLAN199

```
Ruijie#show ip pim snooping vlan 199  
4 neighbors (0 DR priority incapable)  
DR is 214.199.199.4
```



# 18 DHCPV6 Snooping

## 18.1

### 18.1.1 ipv6 dhcp snooping

```

dhcpv6 snooping no dhcpv6
snooping

```

**ipv6 dhcp snooping**

**no ipv6 dhcp snooping**

-	-

┌

┌

```

          dhcpv6 snooping
snooping  dhcpv6 snooping

```

**show ipv6 dhcp**

```

1          dhcpv6 snooping
Ruijie(config)# ipv6 dhcp snooping

```

<b>show ipv6 dhcp snooping</b>	dhcpv6 snooping

┌

10.4	

### 18.1.2 ipv6 dhcp snooping binding-delay

no

**ipv6 dhcp snooping binding-delay *seconds***

**no ipv6 dhcp snooping binding-delay**

<i>time</i>	

┌

┌

┌

IPv6

1 10

Ruijie(config)# **ipv6 dhcp snooping binding-delay 10**


┌

10.4	

### 18.1.3 ipv6 dhcp snooping database write-delay

dhcpv6 snooping

flash

no

**ipv6 dhcp snooping database write-delay *time***

**no ipv6 dhcp snooping database write-delay**

<i>time</i>	flash

┌

|

|

dhcpv6 snooping flash  
IP

|

1 flash 100  
Ruijie(config)# ipv6 dhcp snooping database write-delay 100

|

<b>show ipv6 dhcp snooping</b>	dhcpv6 snooping

|

10.4	

### 18.1.4 ipv6 dhcp snooping database write-to-flash

|

dhcpv6 snooping flash  
**ipv6 dhcp snooping database write-to-flash**

|

-	

|

|

dhcpv6 snooping flash  
flash flash

|

1 dhcpv6 snooping flash  
Ruijie(config)# ipv6 dhcp snooping database write-to-flash

|

--	--

	<b>10.4</b>	

### 18.1.5 ipv6 dhcp snooping filter-dhcp-pkt

	dhcpv6	no
	<b>ipv6 dhcp snooping filter-dhcp-pkt</b>	
	<b>no ipv6 dhcp snooping filter-dhcp-pkt</b>	
	dhcpv6	dhcpv6
	1	fastethernet 0/1
<b>G!5B _</b>	Ruijie(config)# <b>interface fastethernet 0/1</b>	
	Ruijie(config-if)# <b>ipv6 dhcp snooping filter-dhcp-pkt</b>	

no DHCPv6

**ipv6 dhcp snooping ignore dest-not-found**

**no ipv6 dhcp snooping ignore dest-not-found**

--	--

┌

┌

DHCPv6	MAC	MAC	DHCPv6	MAC
DHCPV6_SNOOPING-5-DEST_NOT_FOUND: Could not find destination port.				
Destination MAC [mac-address]		DHCPv6		
	MAC			VLAN

1  
Ruijie(config)# **ipv6 dhcp snooping ignore dest-not-found**

<b>show ipv6 dhcp snooping</b>	dhcpv6 snooping

┌

10.4	

### 18.1.7 ipv6 dhcp snooping link-detection

LINK DOWN no

**ipv6 dhcp snooping link-detection**

**no ipv6 dhcp snooping link-detection**

--	--	--

┌

┌

┌

LINK DOWN  
LINK DOWN

┌

1 LINK DOWN  
Ruijie(config)# **ipv6 dhcp snooping link-detection**

┌

<b>show ipv6 dhcp snooping</b>	dhcpv6 snooping

┌

10.4	

### 18.1.8 ipv6 dhcp snooping trust

dhcpv6 snooping trust no  
untrust

**ipv6 dhcp snooping trust**

**no ipv6 dhcp snooping trust**

┌

--	--

┌

untrust

┌

┌

dhcpv6 trust trust dhcpv6 Server  
untrust dhcpv6 Server

```

1          fastethernet 0/1  trust
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ipv6 dhcp snooping trust
    
```

<b>show ipv6 dhcp snooping</b>	dhcpv6 snooping

<b>10.4</b>	

### 18.1.9 Ipv6 dhcp snooping vlan

```

vlan          dhcpv6 snooping          no
vlan          dhcpv6 snooping
    
```

**ipv6 dhcp snooping** {*vlan-list* | {*vlan-min* [*vlan-max*]}}

**no ipv6 dhcp snooping** {*vlan-list* | {*vlan-min* [*vlan-max*]}}

<i>vlan-list</i>	vlan 1,3-5,7,9-11
<i>vlan-min</i>	vlan id
<i>vlan-max</i>	vlan id

```

dhcpv6 snooping  vlan
    
```

```

dhcpv6 snooping          vlan  dhcpv6 snooping
vlan          dhcpv6 snooping          vlan          dhcpv6 snooping
    
```

```

1  vlan 1          dhcpv6 snooping
Ruijie(config)# no ipv6 dhcp snooping vlan 1
    
```

--	--

	-	-
--	---	---

10.4

### 18.1.11 ipv6 verify source

no

**ipv6 verify source [port-security]**

**no ipv6 verify source**

<b>port-security</b>	MAC + IPV6 IPV6 IPV6
	MAC  IPV6

┌

┌

┌

IPV6

DHCPV6

IPV6

┌  
 Ruijie(config)# interface fastethernet 0/1  
 Ruijie(config-if)# ipv6 verify source port-security

1 fastethernet 0/1 MAC+IPV6

Ruijie(config)# interface fastethernet 0/1

Ruijie(config-if)# ipv6 verify source port-security


┌

10.4	

## 18.2

### 18.2.1 show ipv6 dhcp snooping

dhcpv6 snooping

**show ipv6 dhcp snooping**

	-	-

|

|



<b>vlan</b> <i>vlan_id</i>	VLAN
<b>interface</b> <i>interface_name</i>	

dhcpv6 snooping

```
1 show ipv6 dhcp snooping prefix
```

```
Total number of prefix: 1
```

Mac Address	IPv6 Prefix	Lease(s)	VLAN	Interface
00d0.f801.0101	2001:2002::/64	42368	2	fa 0/1



dhcpv6 snooping

**show ipv6 source binding** [*ipv6-address*] [*mac-address*] [**vlan** *vlan\_id*]  
[**interface** *interface\_name*] [**dhcp-snooping** | **static**]

### 18.3.1 clear ipv6 dhcp snooping binding

dhcpv6 snooping

**clear ipv6 dhcp snooping binding** [*ipv6-address*] [*mac-address*] [**vlan** *vlan\_id*]  
[**interface** *interface\_name*]

<i>ipv6-address</i>	ipv6
<i>mac-address</i>	mac
<b>vlan</b> <i>vlan_id</i>	VLAN
<b>interface</b> <i>interface_name</i>	

dhcpv6 snooping

1 dhcpv6 snooping

Ruijie# **clear ipv6 dhcp snooping binding**


10.4	

### 18.3.2 clear ipv6 dhcp snooping prefix

dhcpv6 snooping

**clear ipv6 dhcp snooping prefix** [*ipv6-prefix*] [*mac-address*] [**vlan** *vlan\_id*]  
[**interface** *interface\_name*]

--	--

<i>ipv6-prefix</i>	ipv6
<i>mac-address</i>	mac
<b>vlan</b> <i>vlan_id</i>	VLAN
<b>interface</b> <i>interface_name</i>	

┌

┌

┌

dhcpv6 snooping

┌  
1 dhcpv6 snooping  
Ruijie# **clear ipv6 dhcp snooping prefix**

┌


┌

┌

<b>10.4</b>	

### 18.3.3 clear ipv6 dhcp snooping statistics

dhcpv6 snooping    dhcpv6

**clear ipv6 dhcp snooping statistics**

┌

-	-

┌

┌

┌

dhcpv6 snooping    dhcpv6




L

	<b>10.4</b>	

# 19 ND Snooping

## 19.1

### 19.1.1 ipv6 nd snooping

IPv6 ND snooping

no

	10.4(2)	

### 19.1.2 ipv6 nd snooping vlan

VLAN	IPv6 ND snooping	no	VLAN
IPv6 ND Snooping			
<b>ipv6 nd snooping vlan</b> {vlan-rng   {vlan-min [vlan-max]}}			
<b>no ipv6 nd snooping vlan</b> {vlan-rng   {vlan-min [vlan-max]}}			
vlan-rng	vlan		
vlan-min	.56 0 Td({Tj}/T2h02 71.75E4C2oping		

	10.4(2)	

### 19.1.3 ipv6 nd snooping trust

	trust	no	untrust
	<b>ipv6 nd snooping trust</b>		
	<b>no ipv6 nd snooping trust</b>		

untrust

\_\_\_\_\_

|

### 19.1.4 ipv6 nd snooping check address-resolution

ND

no

ND

**ipv6 nd snooping check address-resolution [key-node-only ]**

**no ipv6 nd snooping check address-resolution**

<b>key-node-only</b>	ND

### **19.1.5 ipv6 nd snooping detect gateway**

no

<i>vlan-rng</i>	vlan
<i>vlan-min</i>	vlan
<i>vlan-max</i>	vlan

VALN

Ruijie# **configure terminal**

Enter configuration commands, one per line. End with CNTL/Z.

Ruijie(config)# **ipv6 nd snooping detect gateway vlan 8**

<i>ipv6_address/prefix_len</i>	IPv6

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#ipv6 nd snooping key-node 2003::1/128
```

<b>show ipv6 nd snooping key-node</b>	nd snooping

10.4(2)	

### 19.1.8 ipv6 nd snooping monitor stateless-user

no

```
ipv6 nd snooping monitor stateless-user
no ipv6 nd snooping monitor stateless-user
```


ND

```
Ruijie# configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
Ruijie(config)#no ipv6 nd snooping monitor stateless-user
```

<b>show ipv6 nd snooping stateless-user</b>	

10.4(2)	

### 19.1.9 ipv6 nd snooping stateless-user combine-security

no

```
ipv6 nd snooping stateless-user combine-security  
no ipv6 nd snooping stateless-user combine-security
```


802.1X

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# ipv6 nd snooping stateless-user combine-security
```

<b>show ipv6 nd snooping</b>	ipv6 nd snooping

10.4(2)	

### 19.1.10 ipv6 nd snooping stateless-user address-bind

IPv6

no

```
ipv6 nd snooping stateless-user address-bind [strict] [ip-mac]
no ipv6 nd snooping stateless-user address-bind
```

<b>strict</b>	link-local link-local link-local
<b>ip-mac</b>	IP+MAC IP

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# ipv6 nd snooping stateless-user address-bind
    2                                IP+MAC
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#ipv6 nd snooping stateless-user address-bind strict
ip-mac
```

<b>show ipv6 nd snooping</b>	ipv6 nd snooping

10.4(2)	

### 19.1.11 ipv6 nd snooping stateless-user station-move

```
ipv6 nd snooping stateless-user station-move
no ipv6 nd snooping stateless-user station-move
```


Enter configuration commands, one per line. End with CNTL/Z.  
 Ruijie(config)# **ipv6 nd snooping stateless-user station-move**


10.4(2)	

### 19.1.12 ipv6 nd snooping stateless-user limit

**ipv6 nd snooping stateless-user limit *num***  
**no ipv6 nd snooping stateless-user limit**

<i>num</i>	

16

FastEthernet 0/1                      8

Ruijie# **configure terminal**

Enter configuration commands, one per line. End with CNTL/Z.

Ruijie(config)# **interface fastethernet 0/1**

Ruijie(config-if)# **ipv6 nd snooping stateless-user limit 8**

--	--

<b>show ipv6 nd snooping</b>	ipv6 nd snooping
10.4(2)	

### 19.1.13 ipv6 nd snooping stateless-user per-vlan prefix-limit

VLAN      IPv6

**ipv6 nd snooping stateless-user per-vlan prefix-limit *num***  
**no ipv6 nd snooping stateless-user per-vlan prefix-limit**

<i>num</i>	VLAN      IPv6
------------	----------------

2

```

VLAN      4      IPv6
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#ipv6 nd snooping stateless-user per-vlan
prefix-limit 4
    
```

<b>show ipv6 nd snooping</b>	ipv6 nd snooping
10.4(2)	

### 19.1.14 clear ipv6 nd snooping key-node

**clear ipv6 nd snooping key-node [vlan *vid*]**

<i>vid</i>	VLAN

Ruijie# **clear ipv6 nd snooping key-node**


10.4(2)	

### 19.1.15 clear ipv6 nd snooping stateless-user

**clear ipv6 nd snooping stateless-user [vlan *vid*]**

<i>vid</i>	VLAN

|

|

|

```
Ruijie# clear ipv6 nd snooping stateless-user
```

|


|

|

10.4(2)	

### 19.1.16 clear ipv6 nd snooping prefix

VLAN

64 4T1 1 Tf0.1419 Tc 0 Tw164808 0 Tdvlan)2>Tj/TT1 1 Tf0 T591162 0 Td]( )Tj/TT0 1 Tf34987 0 Td( )Tc 10.02 0 0 10.02 129.7



### 19.2.2 show ipv6 nd snooping key-node

**show ipv6 nd snooping key-node**


|

|

|

Ruijie# **show ipv6 nd snooping key-node**


|

10.4(2)	

### 19.2.3 show ipv6 nd snooping stateless-user

```

    ipv6
    show ipv6 nd snooping stateless-user

```


```


```

```


```

```


```

```

    ipv6
    Ruijie# show ipv6 nd snooping stateless-user

```


```


```

```


```

10.4(2)	

### 19.2.4 show ipv6 nd snooping prefix

```

    show ipv6 nd snooping prefix

```


```


```

|

|

|

ipv6

Ruijie# **show ipv6 nd snooping prefix**

|


|

|

10.4(2)	

## 20 MSTP

### 20.1

#### 20.1.1 bpdu src-mac-check

bpdu mac

no

bpdu mac

**bpdu src-mac-check *H.H.H***

**no bpdu src-mac-check**

<i>H.H.H</i>	mac	bpdu
<b>no</b>		bpdu

┌

┌

┌

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# bpdu src-mac-check 00d0.f800.1e2f
```

-	-
---	---

┌

-	-
---	---

#### 20.1.2 clear spanning-tree detected-protocols

RSTP BPDU BPDU

**clear spanning-tree detected-protocols [interface *interface-id*]**

<i>interface-id</i>	

|

|

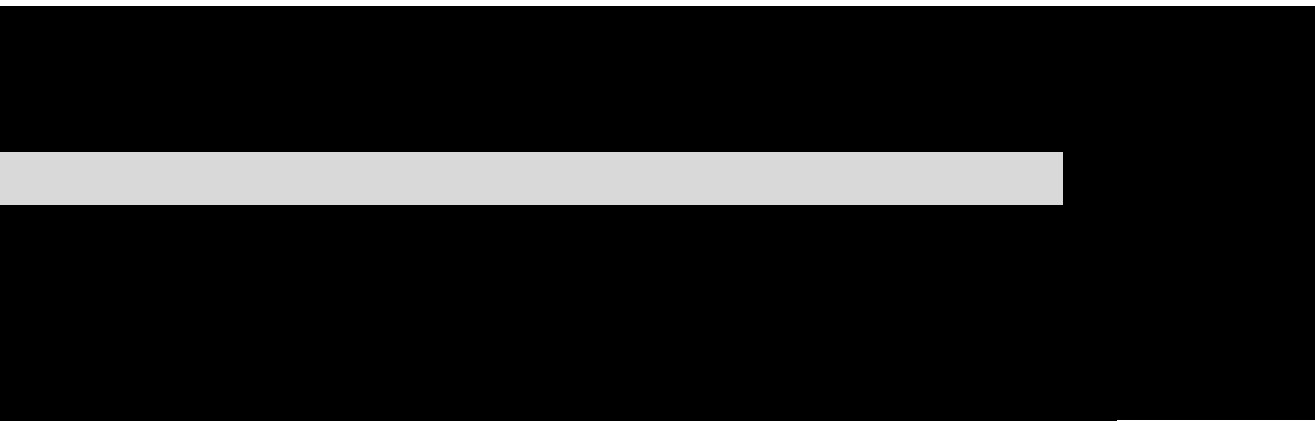
|

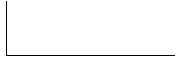
|

Ruijie# **clear spanning-tree detected-protocols**

<b>show spanning-tree interface</b>	STP

|





**forward-time hello-time max-age**



MSTP

---

	-	-
--	---	---

---

## 20.1.6 spanning-tree bpduguard

BPDU Guard    enabled    disabled  
BPDU Guard

**spanning-tree bpduguard [enabled | disabled]**

	<b>enabled</b>	BPDU Guard
	<b>disabled</b>	BPDU Guard

┌

┌

┌

Ruijie(config)# **interface gigabitethernet 1/1**

	-	-
--	---	---

|

|

|

|

Ruijie(config-if)#**spanning-tree compatible enable**



	-	-

┌

	-	-

### 20.1.9 spanning-tree guard none

guard                      no                      guard

**spanning-tree guard none**

**no spanning-tree guard none**

	-	-

┌

guard

┌

┌

┌

Ruijie(config-if)# **spanning-tree guard none**

	-	-

┌

	-	-

### 20.1.10 spanning-tree guard root

root guard

no

root guard

root guard

|

|

|

```
Ruijie(config)# interface gigabitethernet 1/1  
Ruijie(config-if)# spanning-tree link-type point-to-point
```

|

<b>show spanning-tree interface</b>	STP

|

--	--



## 20.1.14 spanning-tree mode

STP no

**spanning-tree mode [stp | rstp | mstp]**

**no spanning-tree mode**

<b>stp</b>	Spanning tree protocol(IEEE 802.1d)
<b>rstp</b>	Rapid spanning tree protocol(IEEE 802.1w)
<b>mstp</b>	Multiple spanning tree protocol(IEEE 802.1s)

MSTP

.

Ruijie(config)# **spanning-tree mode stp**

<b>show spanning-tree</b>	

-	-

## 20.1.15 spanning-tree mst configure

MST MSTP Region no  
name revision vlan map

**spanning-tree mst configuration**

**no spanning-tree mst configuration**

-	-



```

VLAN 3 Instance 1 MST
Ruijie(config-mst)# no instance 1 vlan 3
Instance 1
Ruijie(config-mst)# no instance 1
MST show
    
```

show spanning-tree mst		MST region	
instance instance-id	vlan vlan-range	Vlan	MST Instance
name		MST	
revision		MST	
show		MST	MST

-	-
---	---

### 20.1.16 spanning-tree mst cost

Instance no

**spanning-tree [mst instance-id] cost cost**

**no spanning-tree [mst instance-id] cost**

instance-id	Instance	0	64
cost		1	200 000 000

Instance-ID 0

Interface

- 1000 Mbps—20000
- 100 Mbps—200000
- 10 Mbps—2000000

MSTP

Region

```
Instance 20    Gigabitethernet 1/1           10
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# spanning-tree mst 20 port-priority 0
show spanning-tree mst instance interface interface-id
```

---

**show spanning-tree mst**

MSTP

|

```
Instance 20 8192
Ruijie(config-if)# spanning-tree mst 20 priority 8192
show spanning-tree mst instance interface interface-id
```

|

show spanning-tree mst	MSTP
spanning-tree mst cost	
spanning-tree mst port-priority	Instance

|

|

-	-

### 20.1.19 spanning-tree pathcost method

no

spanning-tree pathcost method [long | short]

no spanning-tree pathcost method

|

long	802.1t	path-cost
short	802.1d	path-cost

|

802.1T Path-cost

|

|

|

```
Ruijie(config-if)# spanning-tree pathcost method long
```

	<b>show spanning-tree interface</b>	STP
	-	-

### 20.1.20 spanning-tree portfast

	Portfast	disabled	Portfast
	<b>spanning-tree portfast [disabled]</b>		
	<b>disabled</b>	Portfast	

**no spanning-tree portfast bpdupfilter default**

	-	-

BPDU filter

```
Ruijie(config)# spanning-tree portfast bpduguard default
```



### 20.1.24 spanning-tree reset

spanning-tree		no	
<b>spanning-tree reset</b>			
	-		-
Ruijie(config)# <b>spanning-tree reset</b>			
	<b>show spanning-tree</b>		STP
	<b>show spanning-tree interface</b>		STP
	-		-

### 20.1.25 spanning-tree tc-guard

tc-guard		no	
<b>spanning-tree tc-guard</b>			
<b>no spanning-tree tc-guard</b>			
	-		-
	tc-guard		

|

|

|

Ruijie(config-if)# **spanning-tree tc-guard**

|

-	-

|

|

-	-

### 20.1.26 spanning-tree tc-protection

tc- protection

no

tc- protection

**spanning-tree tc- protection**

**no spanning-tree tc- protection**

|

-	-

|

tc- protection

|

|

|

Ruijie(config)# **spanning-tree tc- protection**

|

-	-

|



---

<i>tx-hold-count</i>	TxHoldCount	1	10

3

Ruijie(config)# **spanning-tree tx-hold-count 5**

---

**show spanning-tree**

<b>tx-hold-count</b>	TxHoldCount
<b>pathcost method</b>	

|

|

|

|

Ruijie# **show spanning-tree hello-time**

link-type	linktype
-----------	----------



|

|

|

|

```
Ruijie# show spanning-tree interface gigabitethernet 1/5
```

	
<b>spanning-tree bpdudfilter</b>	BPDU filter
<b>spanning-tree portfast</b>	portfast

### 20.2.3 show spanning-tree mst

MST Instance

**show spanning-tree mst** { **configuration** | *instance-id* [ **interface** *interface-id* ] }



# 21 SPAN

## 21.1

### 21.1.1 monitor session

SPAN . no

**monitor session** *session\_number* {**source interface** *interface-id* [**both** | **rx** | **tx**] | **destination interface** *interface-id* { **encapsulation** | **switch** } | **mac** {**source** *mac-addr* | **destination** *mac-addr* } [**both** | **rx** | **tx**] [**acl** *name*]

**no monitor session** *session\_number* [**source interface** *interface-id* [**both** | **rx** | **tx**] | **destination interface** *interface-id* { **encapsulation** | **switch** } ] | **mac** {**source** *mac-addr* | **destination** *mac-addr* } [**both** | **rx** | **tx**] [**acl** *name*]

**no monitor session all**

<i>session_number</i>	SPAN
<b>source interface</b> <i>interface-id</i>	<i>interface-id</i> SVI
<b>destination interface</b> <i>interface-id</i>	<i>interface-id</i> SVI
<b>mac source</b> <i>mac-addr</i>	MAC
<b>mac destination</b> <i>mac-addr</i>	MAC
<b>both</b> <b>acl</b> <i>name</i>	<b>acl</b> <i>name/id</i>
<b>rx</b>	
<b>tx</b>	
<b>all</b>	
<b>encapsulation</b>	tag
<b>switch</b>	

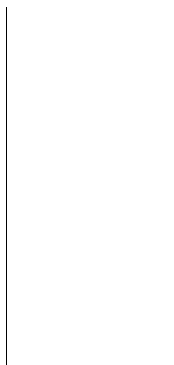


switch port    routed port    AP  
                                       SPAN                                    disabled port            SPAN

```

show monitor                                    SPAN
-----
r                                    session 1                                    SPAN
                                          session 1
-----

```



```

                                          SPAN                                    1
                                                  1                                    gigabitEthernet 1/1
gigabitEthernet 1/8
Ruijie(config)# no monitor session 1
Ruijie(config)# monitor session 1 source interface gigabitEthernet
1/1 both
Ruijie(config)# monitor session 1 destination interface
gigabitEthernet 1/8

```





**22**

```
1/2 //
Ruijie(config)# monitor session 2 destination remote vlan 7
interface gigabitEthernet 1/3Ruijie(config)# 1/3
```

---

	<b>show vlan</b>	Vlan
	SS8600	
	-	-

---

# 23 IP

## 23.1

### 23.1.1 ip address

IP

no



```

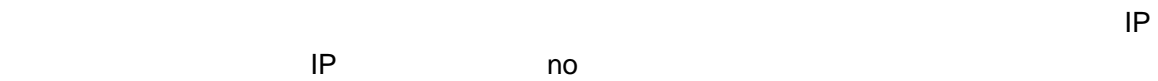
IP      10.10.10.1      255.255.255.0
ip address 10.10.10.1 255.255.255.0
    
```

<b>show interface</b>	

IP secondary

-	-

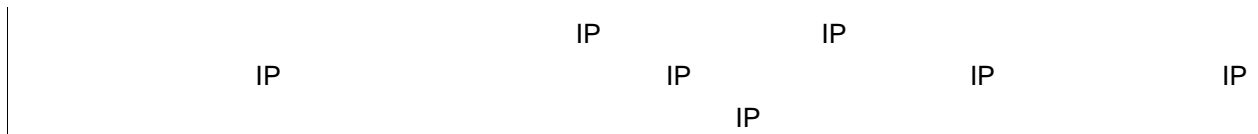
### 23.1.2 ip unnumbered

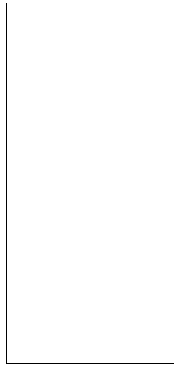


**ip unnumbered** *interface-type interface-number*

**no ip unnumbered** *interface-type interface-number*

<i>interface-type</i>	
<i>interface-number</i>	





SLIP HDLC PPP LAPB Frame-relay

X.25

ping  
SNMP

IP



FastEthernet 0/1

IP

ip unnumbered fastEthernet 0/1



[Redacted]	
<b>show interface</b>	



[Redacted]	
-	-

## 23.2

### 23.2.1 arp

ARP  
MAC

IP

MAC

no

**arp** [*vrf name*] *ip-address* *MAC-address* *type*

**no arp** [*vrf name*] *ip-address*



|

ARP

|

|

RGOS    ARP                    32        IP            48            MAC  
                                  ARP                                    ARP            **clear**  
**arp-cache**                                    ARP

|

                                  ARP  
**arp** 1.1.1.1 4e54.3800.0002 arpa

|

<b>clear arp-cache</b>	ARP

|

|

-	-

### 23.2.2 arp anti-ip-attack

---

<i>Num</i>	ARP <0-100>	IP
	0	ARP IP

---

┌

3

CPU

┌

ARP IP

IP

**arp anti-ip-attack** *num*

ï

ARP

ARP

```

1          SVI 1          ARP
Ruijie(config)# interface vlan 1
Ruijie(config-if)# arp gratuitous-send interval 1

2          SVI 1          ARP
Ruijie(config)# interface vlan 1
Ruijie(config-if)# no arp gratuitous-send
    
```

-	-

-	-

### 23.2.4 arp retry interval

```

ARP          arp          IP          2
              no          1  ARP
    
```

**arp retry interval seconds**

**no arp retry interval**

<i>seconds</i>	<1-3600>,ARP 3600                      1

```

ARP          1
    
```



ARP

ARP

ARP



ARP

30s

arp retry interval 30



<b>Arp retry times</b> <i>number</i>	ARP



	<b>arp retry interval</b> <i>seconds</i>	arp
	-	-

### 23.2.6 arp timeout

ARP ARP no

**arp timeout** *seconds*

**no arp timeout**

	<i>seconds</i>	0-2147483

3600

ARP IP MAC  
 ARP ARP  
 ARP

FastEthernet 0/1 ARP  
 120  
 interface fastEthernet 0/1  
 arp timeout 120

	<b>clear arp-cache</b>	ARP
	<b>show interface</b>	



<i>number</i>	ARP

┌

┌

┌ ARP ARP ARP  
ARP

┌ arp trusted 1000 1000 ARP

<b>service trustedarp</b>	ARP

┌

-	-

### 23.2.9 arp unresolve

8192 ARP no

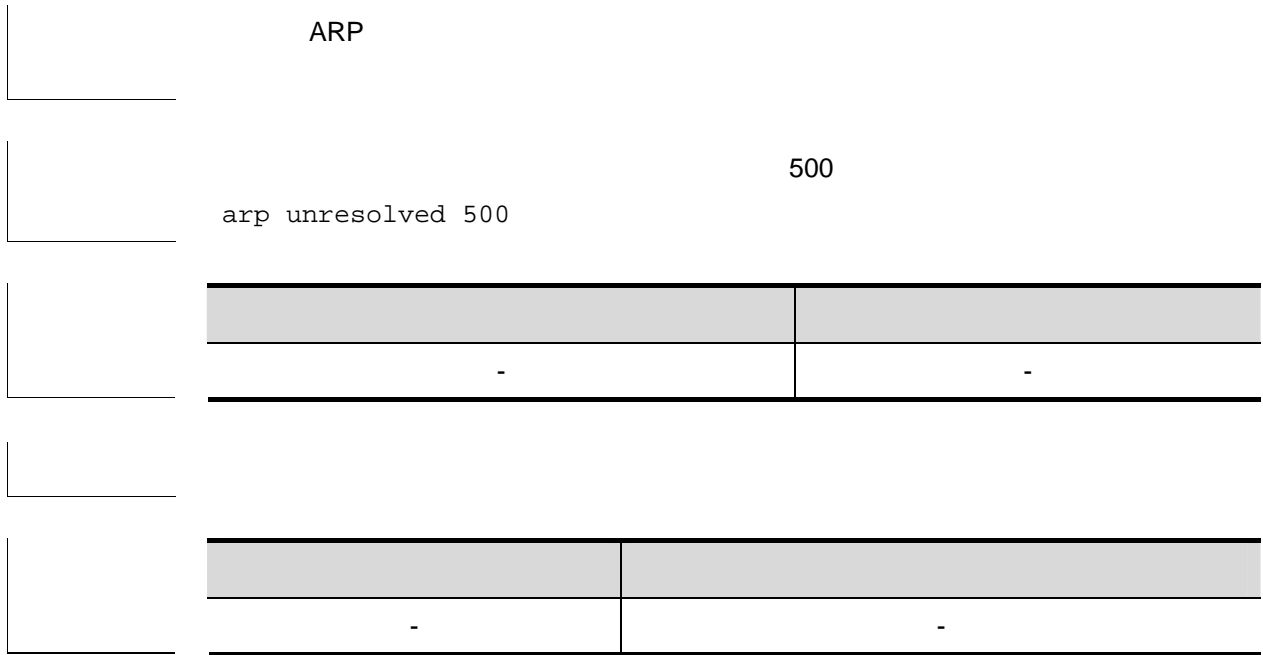
**arp unresolve number**

**no arp unresolve**

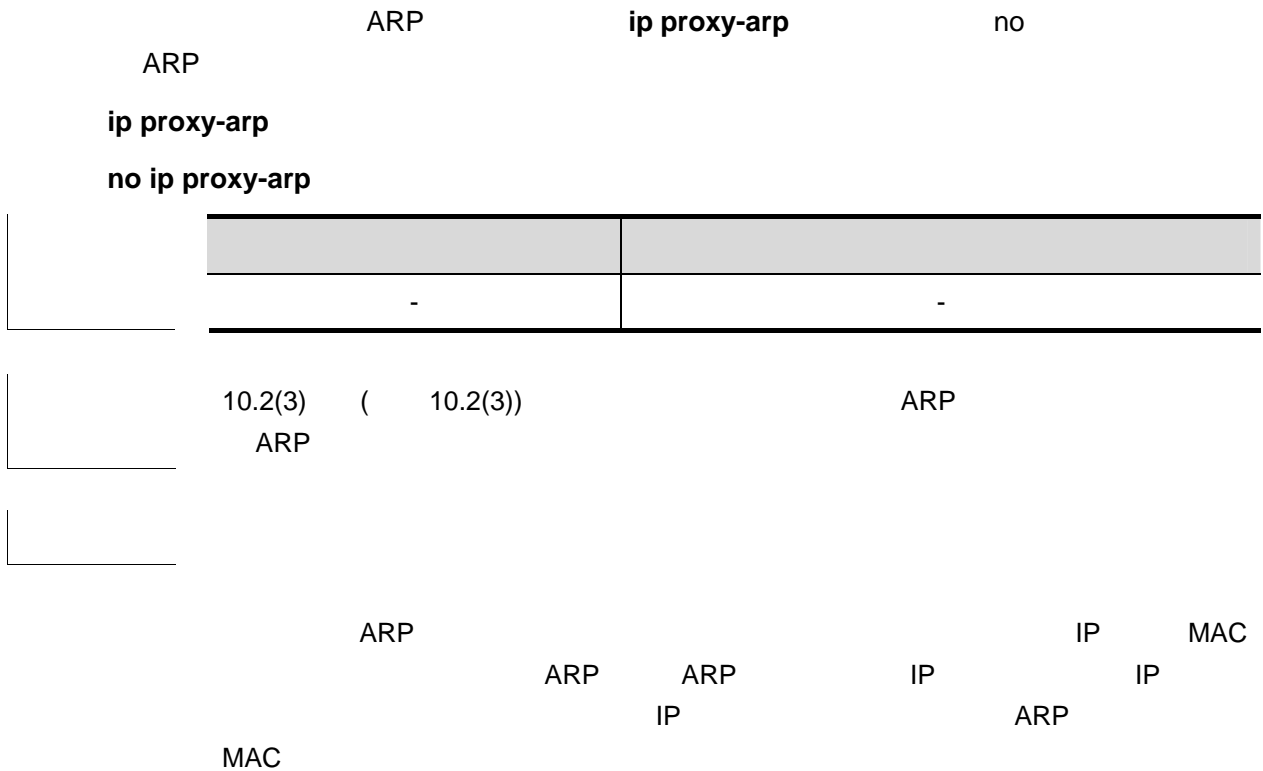
<i>number</i>	ARP < 1-8192 > 8192

┌ ARP 8192

┌



### 23.2.10 ip proxy-arp



	ip proxy-arp	
	-	-
	-	-

### 23.2.11 service trustedarp

	ARP	service trustedarp	no
	ARP		
	service trustedarp		
	no service trustedarp		
	-	-	
	ARP		
	GSN	ARP	GSN
		ARP	
		service trustedarp	
	config		
	service trustedarp		
	-	-	
	-		

---

	-	-

## 23.3

### 23.3.1 ip broadcast-addresss

**ip broadcast-addresss** no

**ip broadcast-addresss** *ip-address*

**no ip broadcast-addresss** *ip-address*

--	--

IP

**ip directed-broadcast**

no

**ip directed-broadcast** [ *access-list-number* ]

**no ip directed-broadcast**

<i>access-list-number</i>	1-199 1300 - 2699 IP

|

|

IP IP IP  
172.16.16.255

IP

IP

1

**no ip directed-broadcast** RGOS

FastEthernet 0/1  
interface fastEthernet 0/1  
ip directed-broadcast

-	-

|

--	--

IP

---

	-	-
--	---	---

## 23.4 IP

### 23.4.1 clear arp-cache

ARP

ARP

clear arp-cache **cle-4**

	<b>arp</b>	ARP
	-	-

### 23.4.2 clear ip route

	IP	IP	clear ip
<b>route</b>			
<b>clear ip route</b> { *   <i>network</i> [ <i>netmask</i> ] }			
	*		
	<i>network</i>		
	<i>netmask</i>		
		192.168.12.0	
		clear ip route 192.168.12.0	
	<b>show ip route</b>	IP	
	-	-	

## 23.4.3 show arp

### ARP

**show arp** [[vrf *vrf-name*] [trusted] ip [mask] | static | complete | incomplete | mac-address ]

<b>vrf</b> <i>vrf_name</i>	VRF VRF ARP
<b>trusted</b>	ARP VRF
<i>ip</i>	IP ARP <i>trusted</i> ARP
<i>mask</i>	IP ARP ; trusted ARP
<b>static</b>	arp
<i>mac-address</i>	mac ARP
<b>complete</b>	arp
<b>incomplete</b>	arp
<b>oob</b>	(interface of mgmt) ARP

```

1      show arp
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 192.168.195.63 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

```

## ARP

Protocol	Internet
Address	IP
Age (min)	ARP “_”
Hardware	IP
Type	ARPA
Interface	IP

2 **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

```

3 **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

```

4 **show arp 001a.a0b5.378d** 1 192.168.195.0 255.

### 23.4.4 show arp counter

ARP

arp

**show arp counter**

	-	-

|

|

|

```
show arp counter  
Ruijie# show arp counter  
The Arp Entry counter:0  
The Unresolve Arp Entry:0
```

	-	-

|

	-	-

### 23.4.5 show arp detail

ARP

	<i>ip mask</i>	ip mask	ARP
	<i>mac-address</i>	mac	ARP
<b>static</b>			arp

Age	ARP
Interface	IP
Port	ARP

-	-

10.4	10.4

### 23.4.6 show arp timeout

ARP

show arp timeout

-	-

show arp timeout

```
Ruijie# show arp timeout
Interface          arp timeout(sec)
-----
VLAN 1             3600
```

-	-

┌

-	-

### 23.4.7 show ip arp

#### ARP

#### show ip arp

-	-

┌

┌

┌

#### show ip arp

```
Ruijie# show ip arp
```

```

Protocol Address      Age(min)Hardware      Type
Interface
Internet 192.168.7.233  23  0007.e9d9.0488  ARPA FastEthernet 0/0
Internet 192.168.7.112  10  0050.eb08.6617  ARPA FastEthernet 0/0
Internet 192.168.7.79   12  00d0.f808.3d5c  ARPA FastEthernet 0/0
Internet 192.168.7.1    50  00d0.f84e.1c7f  ARPA FastEthernet 0/0
Internet 192.168.7.215  36  00d0.f80d.1090  ARPA FastEthernet 0/0
Internet 192.168.7.127  0   0060.97bd.ebee  ARPA FastEthernet 0/0
Internet 192.168.7.195  57  0060.97bd.ef2d  ARPA FastEthernet 0/0
Internet 192.168.7.183  --  00d0.f8fb.108b  ARPA FastEthernet 0/0

```

#### ARP

Protocol	Internet

Address	IP
Age (min)	ARP “_”
Hardware	IP
Type	ARPA
Interface	IP

-	-

-	-

### 23.4.8 show ip interface

IP

**show ip interface** [ *interface-type interface-number* ]

<i>Interface-type</i>	
<i>Interface-number</i>	

└──

└──

```

RGOS                RGOS                RGOS

                UP

                UP
    
```

```

show ip interface
Ruijie# show ip interface FastEthernet 0/1
    
```

IP interface state is: UP  
IP interface type is: BROADCAST  
IP interface metric is: 0  
IP interface MTU is: 1500  
IP address is:  
192.168.5.133/24 (primary)  
IP address negotiate is: OFF  
Forward direct-boardcast is: ON  
ICMP mask reply is: ON  
Send ICMP redirect is: ON  
Send ICMP unreachableled is: ON  
DHCP relay is: OFF  
Fast switch is: ON  
Route horizontal-split is: ON  
Help address is: 0.0.0.0  
Proxy ARP is: ON  
Outgoing access list is not set.  
Inbound access list is not set.





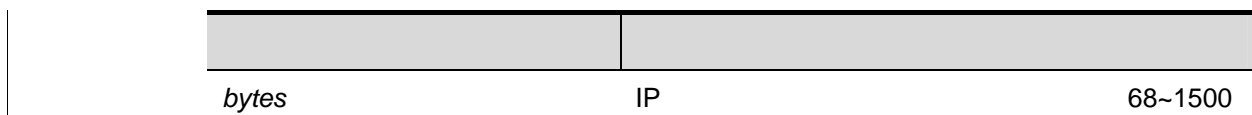


## 24.1.2 ip mtu

IP                      MTU                      **ip mtu**                      no

**ip mtu** *bytes*

**no ip mtu**



	-	-

└───

└───

┌

RGOS IP IP IP  
RFC 791  
ICMP  
RGOS IP

┌  
no ip source-route

-	-

┌

-	-

### 24.1.5 ip unreachables

RGOS ICMP ip unreachables  
no ICMP  
ip unreachables  
no ip unreachables

-	-

┌

┌

RGOS ICMP  
RGOS ICMP



# 25 DHCP

## 25.1 DHCP

### 25.1.1 bootfile

	DHCP	DHCP	bootfile
no			
bootfile	<i>file-name</i>		
no bootfile			
			66jET297.18 0.14 1 0 19.6.64 re141.

## 25.1.2 client-identifier

DHCP  
**client-identifier**                      **no**                      DHCP

**client-identifier** *unique-identifier*

**no client-identifier**

<i>unique-identifier</i>	DHCP 0100.d0f8.2233.b467.6967.6162.6974.4574.6865.726e.6574.302f.31



DHCP

DHCP	DHCP	IP
		MAC
00d0.f822.33b4	GigabitEthernet 0/1	
0100.d0f8.2233.b467.6967.6162.6974.4574.6865.726e.6574.302f.31		01
67.6967.6162.6974.4574.6865.726e.6574.302f.31	GigabitEthernet0/1	

d

┌

┌

-	-

### 25.1.3 client-name

DHCP  
DHCP

DHCP

**client-name**

no

**client-name** *client-name*

**no client-name**

┌

<i>client-name</i>	DHCP ASCII river DHCP river.i-net.com.cn

┌

┌ DHCP

┌ DHCP DHCP

┌ client-name river

<b>host</b>	IP DHCP
<b>ip dhcp pool</b>	DHCP DHCP

┌

┌

-	-

## 25.1.4 default-router

DHCP

DHCP

default-router

no

**default-router** *ip-address* [ *ip-address2...ip-address8* ]

**no default-router**

<i>ip-address</i>	IP
<i>ip-address2...ip-address8</i>	8

<i>ip-address</i>	DNS	IP		
<i>ip-address2...ip-address8</i>		8	DNS	
<b>use-dhcp-client</b> <i>interface-type</i>	RGOS	DHCP		DNS
<i>interface-number</i>	DHCP	DNS		

DNS

DHCP

DNS  
RGOS  
DHCP

DNS DHCP DNS  
DNS  
DHCP DNS

dns-server 192.168.12.3

DHCP DNS 192.168.12.3

9 [REDACTED] 02 8

<i>domain-name</i>	DHCP	

DHCP

DHCP

	DHCP	i-net.com.cn
<i>domain-name</i>	i-net.com.cn	

<b>dns-server</b>	DHCP	DNS
<b>ip dhcp pool</b>	DHCP	DHCP

-	-

### 25.1.7 hardware-address

**DHCP**                      **DHCP**                      **hardware-address**  
**no**

**hardware-address** *hardware-address type*

**no hardware-address**

<i>hardware-address</i>	DHCP      MAC

	<i>type</i>	DHCP  ethernet ieee802  1 10M ethernet 6 IEEE 802 F 0A,HC,4B,5,CF,2A,0e,5 10 1EE ON,3,üE
--	-------------	--



|  
|\_\_\_\_\_

DHCP IP

|  
|\_\_\_\_\_

RGOS	DHCP	IP	DHCP				
1	DHCP	1	2	DHCP 3			
3	DHCP	6	DNS	4	DHCP	15	DHCP
44	WINS						
RGOS		PPP	FR	HDLC		dhcp	





```
ping 600ms
ip dhcp ping timeout 600
```

<b>clear ip dhcp conflict</b>	DHCP
<b>ip dhcp ping packets</b>	DHCP ping
<b>show ip dhcp conflict</b>	DHCP

<b>host</b>	IP DHCP
<b>ip dhcp excluded-address</b>	DHCP IP
<b>network</b> DHCP	DHCP

┌

-	-

### 25.1.14 lease

DHCP  
**no**

DHCP

**lease**

**lease** { *days* [ *hours* ] [ *minutes* ] | **infinite** }

**no lease**

<i>days</i>	
<i>hours</i>	
<i>minutes</i>	
<b>infinite</b>	

DHCP 1  
lease 0 0 1

<b>ip dhcp pool</b>	DHCP DHCP

	<b>ip dhcp pool</b>	DHCP DHCP
	-	-

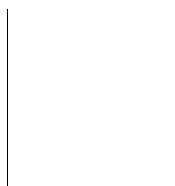
### 25.1.16 netbios-node-type

	DHCP	NetBIOS	DHCP
<b>netbios-node-type</b>	<b>no</b>	NetBIOS	
<b>netbios-node-type</b> <i>type</i>			
<b>no netbios-node-type</b>			

		NetBIOS
		0~FF

*type*



Hybrid

WINS

WINS  
NetBIOS



DHCP

NetBIOS

netbios-node-type h-node

```
show ip dhcp binding                                show ip
dhcp conflict
```

```
                DHCP                192.168.12.0    255.255.255.240
network 192.168.12.0 255.255.255.240
```

<b>ip dhcp excluded-address</b>	DHCP IP
<b>ip dhcp pool</b>	DHCP DHCP

-	-

### 25.1.18 next-server

```
DHCP                                DHCP
next-server                        no
next-server ip-address [ ip-address2...ip-address8 ]
no next-server
```

	p-addrv5a Xh P BAG AP C F554122163
--	------------------------------------

```

DHCP
next-server 192.168.12.4
192.168.12.4
```

```

HCP option 31
1 19 HCP
IP 0 IP 1 IP HCP
IP
option 19 hex 1
2 33 CP
P
2.01 68.12.12
6.02 68.12.16
option 33 ip 172.16.12.0 192.168.12.12 172.16.16.0 192.168.12.16
```

<b>ip dhcp pool</b>	CP
	CP

┌

-	-

### 25.1.20 service dhcp

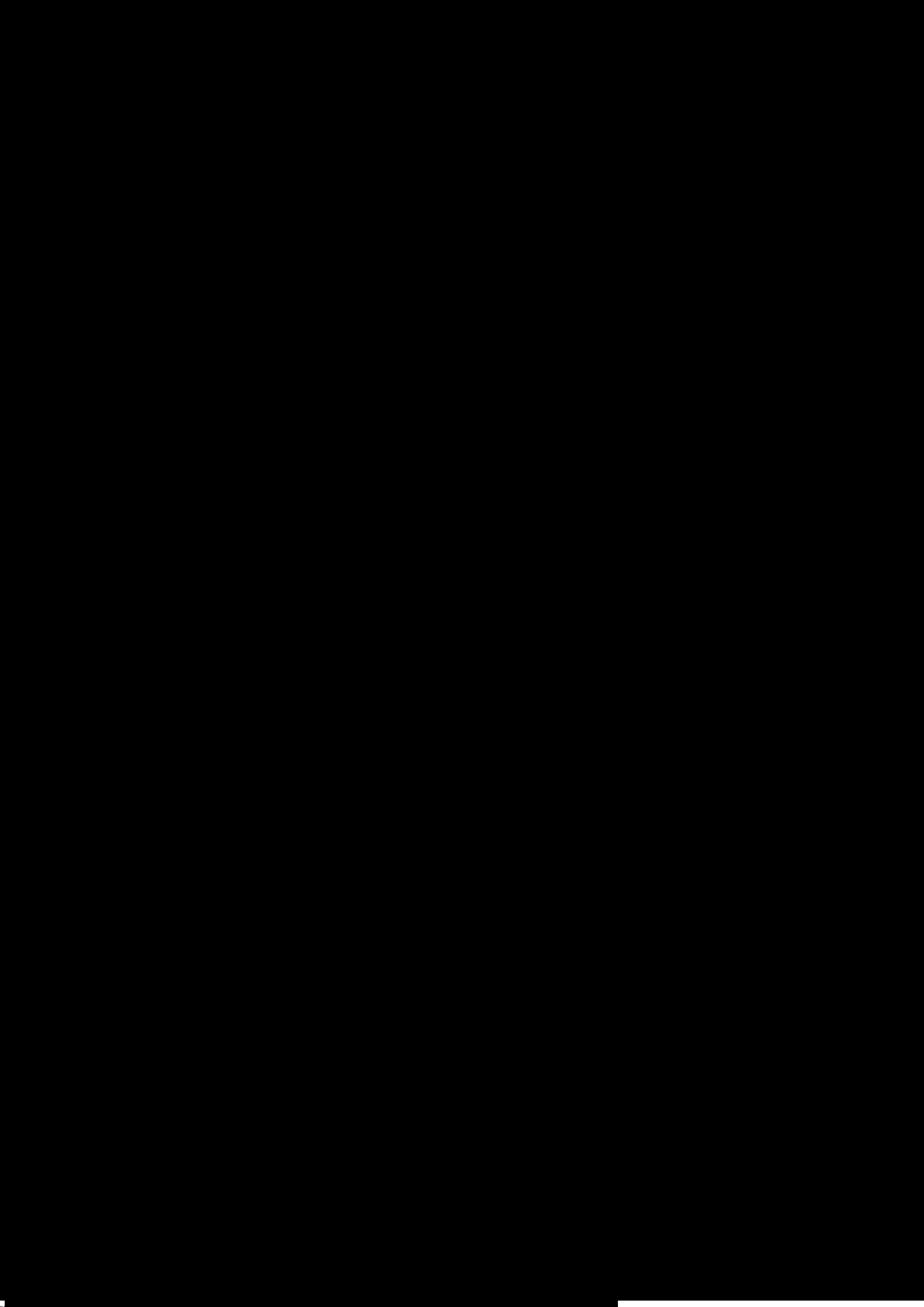
```
no
p
no service dhcp
```

-	-

┌ P

┌

```
CP IP S
P CP HCP
P HCP
```



<b>show ip dhcp binding</b>		DHCP
	-	-

## 25.2.2 clear ip dhcp conflict

DHCP

**clear ip dhcp conflict****clear ip dhcp conflict { \* | *ip-address* }**

*	DCHP
<i>ip-address</i>	IP

### 25.2.3 clear ip dhcp server statistics

	DHCP		clear ip dhcp server statistics
	clear ip dhcp server statistics		
	-	-	
		DHCP	
	DHCP		clear ip dhcp server statistics
	DHCP		
	clear ip dhcp server statistics		
	show ip dhcp server statistics		DHCP
	-	-	

### 25.2.4 debug ip dhcp client

	DHCP Client		debug ip dhcp client
	debug ip dhcp client		
	no debug ip dhcp client		
	-	-	



dhcp client



DHCP

---

	-	-
--	---	---

## 25.2.7 show ip dhcp binding

```
          DHCP          EXEC    show ip dhcp binding
show ip dhcp binding
```

-	-

### 25.2.8 show ip dhcp conflict

DHCP EXEC show ip dhcp conflict

show ip dhcp conflict

-	-

└───

└───

└───

DHCP

show ip dhcp conflict

```
Ruijie# show ip dhcp conflict
IP address      Detection Method
192.168.12.1    Ping
dhcpd excluded ipaddress
192.168.12.100
```

IP address	DHCP IP
Detection Method	
dhcpd excluded ipaddress	

└───

clear ip dhcp conflict	DHCP

└───

└───

-	-



Manual bindings	
Expired bindings	
Malformed messages	DHCP
Message Received or Sent	DHCP

<b>clear ip dhcp server statistics</b>	DHCP

--

-	-

# 26 DHCP Relay

## 26.1

### 26.1.1 ip dhcp relay check server-id

DHCP Relay check server-id no  
DHCP Relay check server-id

[no] ip dhcp relay check server-id

	-	-

┌

┌

DHCP Relay DHCP option server-id  
DHCP DHCP DHCP DHCP

DHCP Relay option dot1x no

**[no] ip dhcp relay information option dot1x**

	-	-

|

|

|

DHCP

802.1x

LOG!<(\$hAm6K4\_

|

---

|

---

ACL

ACL ACE

dhcp option dot1x acl

Ruijie# **configure terminal**

	<b>ip dhcp relay information option dot1x</b>	DHCP option dot1x
	-	-

### 26.1.4 ip dhcp relay information option82

DHCP Relay option82 no

[no] ip dhcp relay information option82

	-	-

option dot1x

DHCP option82

Ruijie# **configure terminal**

Ruijie(config)# **Ip dhcp relay information option82**

	<b>Service dhcp</b>	DHCP
	<b>ip dhcp relay information option dot1x</b>	DHCP option dot1x

	-	-

DHCP Relay                  DHCP Relay Aware VRF  
no

-	-

┌

┌

option82    option dot1x

DHCP                          DHCP Relay Aware VRF

Ruijie# **configure terminal**  
Ruijie(config)#**ip dhcp relay information option vpn**

<b>ip dhcp relay information option82</b>	DHCP option82
<b>ip dhcp relay information option dot1x</b>	DHCP option dot1x

┌

-	-

### 26.1.6 ip dhcp relay suppression

DHCP Relay                          no  
DHCP relay

**[no] ip dhcp relay suppression**

-	-

┌

┌

DHCP

1 DHCP relay

```
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip dhcp relay suppression
Ruijie(config-if)# exit
Ruijie(config)#
```

service dhcp	DHCP

-	-

### 26.1.7 ip helper-address

DHCP no  
DHCP

**[no] ip helper-address [vrf vrf-name]A.B.C.D**

-	-

/

20 DHCP  
DHCP DHCP Relay DHCP  
DHCP DHCP Relay  
vrf vrf vrf  
vrf vrf

```

1          192.168.1.1
2      vrf  dep1      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
    
```

<b>service dhcp</b>	DHCP

-	-

### 26.1.8 service dhcp

DHCP no

**[no] service dhcp**

-	-

```

DHCP          DHCP          DHCP          DHCP
  DHCP        DHCP
    
```

```

          DHCP
Ruijie# configure terminal
Ruijie(config)# service dhcp
    
```

<b>ip helper-address [vrf] A.B.C.D</b>	DHCP

L

L

-	-

# 27 DNS

## 27.1

### 27.1.1 ip domain-lookup

DNS	no	DNS
ip domain-lookup		
no ip domain-lookup		
	-	-
	DNS	T#2010@U2KA

**ip name-server** {*ip-address* | *ipv6-address*}

**no ip name-server** [*ip-address* | *ipv6-address*]

<i>ip-address</i>	IP
<i>ipv6-address</i>	IPV6

┌

┌

DNS Server	IP/IPv6	DNS Server	DNS Server
Server		Server	DNS
6	DNS Server	ip-address	ipv6-address
	DNS		

```
Ruijie(config)# ip name-server 192.168.5.134
Ruijie(config)# ip name-server
2001:0DB8::250:8bff:fee8:f800 2001:0DB8:0:f004::1
```

<b>show hosts</b>	DNS

┌

-	-

	<i>ip-address</i>	IP
	<b>no ip host host-name ip-address</b>	
	Ruijie(config)# <b>ip host switch</b> 192.168.5.243	
	<b>show hosts</b>	DNS
	-	-

### 27.1.4 ipv6 host

	IPV6	no
	<b>ipv6 host</b> <i>host-name ipv6-address</i>	
	<b>no ipv6 host</b> <i>host-name ipv6-address</i>	
	<i>host-name</i>	
	<i>ipv6-address</i>	IPV6
	<b>no ipv6 host host-name ipv6-address</b>	
	Ruijie(config)# <b>ipv6 host</b> ruijie 2001:0DB8:700:20:1::12	



## 27.2.2 show hosts

DNS

**show hosts** [*hostname*]

-	-

└───┘

└───┘

└───┘

DNS

└───┘

```
Ruijie# show hosts
Name servers are:
static
host          type      address
switch        static    192.168.5.243
www.ruijie.com dynamic    192.168.5.123
```

└───┘

<b>ip host</b>	IP
<b>ipv6 host</b>	IPV6
<b>ip name-server</b>	DNS

└───┘

└───┘

-	-

# 28 SNTP

## 28.1

### 28.1.1 sntp enable

	SNTP	no	—Disable
[no] sntp enable			
	-	-	
	SNTP	Disable	
	<b>show sntp</b>	SNTP	
Ruijie(config)# sntp enable			
<b>show sntp</b>		SNTP	
<b>clock update-calendar</b>			
<b>clock set</b>			
	RGOS10.0		
	-	-	

### 28.1.2 sntp interval

SNTP Client                      NTP/SNTP Server

**sntp interval** *seconds*



|

|

**show sntp**          SNTP

|

Ruijie(config)# **sntp server** 192.168.4.12

|

<b>show sntp</b>	SNTP
<b>sntp enable</b>	SNTP

|

RGOS10.0

|

-	-

## 28.2

show sntp

### 28.2.1 show sntp

|

SNTP

-	-

|

|

|

**show sntp**          SNTP

|

```
Ruijie# show sntp
SNTP state      : Enable
SNTP server     : 192.168.4.12
```

SNTP

---

SNTP sync interval : 60  
Time zone : +8

<b>sntp enable</b>	SNTP
<b>show sntp</b>	SNTP

RGOS10.0

-	-

# 29 NTP

## 29.1 NTP

### 29.1.1 no ntp

ntp	ntp	
no ntp	-	
	NTP	
	NTP	NTP NTP
	no ntp	NTP
	ntp server	NTP
	-	

### 29.1.2 ntp access-group

NTP no

**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**

<b>peer</b>	NTP
<b>serve</b>	NTP
<b>serve-only</b>	NTP
<b>query-only</b>	NTP
<i>access-list-number</i>	IP 1 99 1300 1999
<i>access-list-name</i>	IP

NTP

NTP  
NTP  
NTP

peer serve serve-only query-only

r

1  
2

Ruijie(config)# **ntp access-group peer 1**

Ruijie(config)# **ntp access-group serve-only 2**

<b>ip access-list</b>	IP

	-	-

### 29.1.3 ntp authenticate

NTP          NTP

**ntp authenticate**

**no ntp authenticate**

	-	-

NTP

**ntp authentication-key   ntp trusted-key**

NTP

NTP

**ntp authentication-key** *key-id md5 key-string [enc-type]*

**no ntp authentication-key** *key-id md5 key-string [enc-type]*

<i>key-id</i>	ID
<i>key-string</i>	
<i>enc-type</i>	0 7

--

--

**ntp trusted-key** md5 key-id  
1024

ID 6  
ntp authentication-key 6 md5 woooooop

<b>ntp authenticate</b>	
<b>ntp trusted-key</b>	
<b>ntp server</b>	NTP

--

-	-

### 29.1.5 ntp disable

NTP

**ntp disable**

--	--

NTP

-	-
---	---

NTP

	NTP	
		NTP
r		IP

no ntp

NTP

-	-

-	-

### 29.1.6 ntp master

no NTP  
NTP

**ntp master** [*stratum*]

**no ntp master**

<i>stratum</i>	8 1 15

NTP





┌

┌

NTP

Ntp synchronize

┌

<b>ntp server</b>	NTP

┌

┌

-	-

### 29.1.9 ntp trusted-key

ID

**ntp trusted-key** *key-id*

**no ntp trusted-key** *key-id*

┌

<i>key-id</i>	ID

┌

┌

┌

NTP

ID

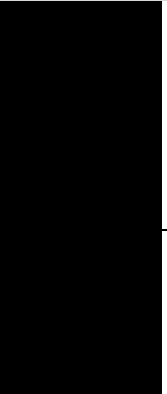
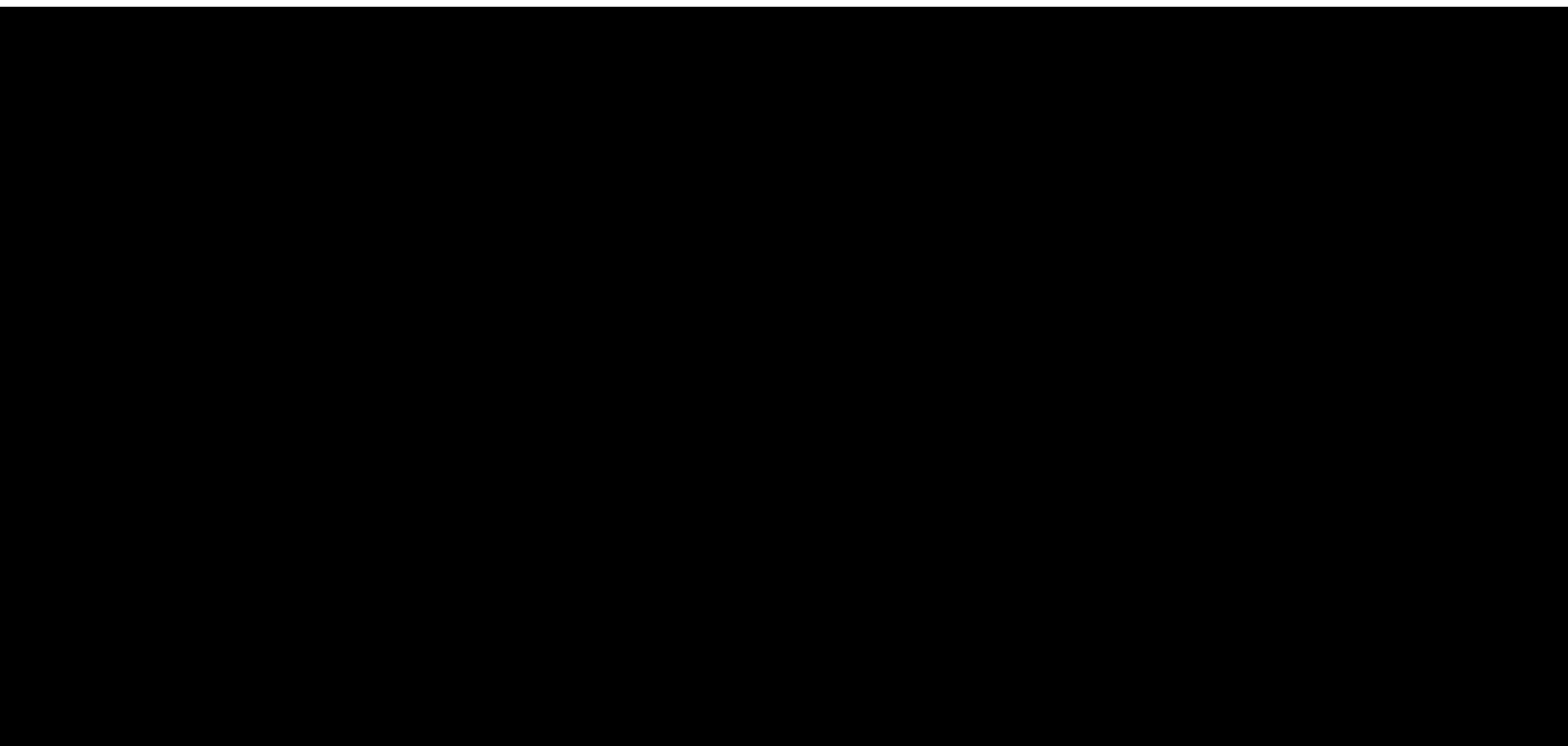
┌

```
ntp authentication-key 6 md5 woooooop
ntp trusted-key 6
ntp server 192.168.210.222 key 6
```

┌

--	--





NTP

---

	-	-

|

|

|

NTP

NTP

|

NTP

show ntp status

	-	-

|

	-	-

# 30 FTP Server

## 30.1

### 30.1.1 debug ftpserver

FTP no

**debug ftpserver**

**no debug ftpserver**

	-	-

|

|

|

**debug ftpserver** FTP

1

Ruijie# **debug ftpserver**

FTPSRV\_DEBUG:(RECV) SYST

FTPSRV\_DEBUG:(REPLY) 215 RGOS Type: L8

FTPSRV\_DEBUG:(RECV) PORT 192,167,201,82,7,120

FTPSRV\_DEBUG:(REPLY) 200 PORT Command okay.

2

Ruijie# **no debug ftpserver**

|

	-	-

|

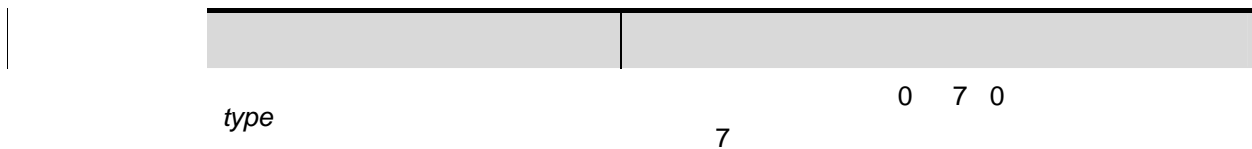
|

--	--	--

	-	-
--	---	---

**ftp-server password** [*type*] *password*

**no ftp-server password**



## 30.1.4 ftp-server topdir

FTP





FTP

IP Port

IP Port

FTP

```
Ruijie# show ftp-server
ftp-server information
=====
enable : Y
topdir : /
timeout: 20min
username config : Y
password config : Y
type: BINARY
control connect : Y
ftp-server: ip=192.167.201.245 port=21
ftp-client: ip=192.167.201.82 port=4978
port data connect : Y
ftp-server: ip=192.167.201.245 port=22
ftp-client: ip=192.167.201.82 port=4982
passive data connect : N
```

-	-

# 31 UDP-Helper

## 31.1

### 31.1.1 ip forward-protocol

UDP

no

UDP

**ip forward-protocol udp** [*port* | **tftp** | **domain** | **time** | **netbios-ns** | **netbios-dgm** | **tacacs**]

**no ip forward-protocol udp** [*port* | **tftp** | **domain** | **time** | **netbios-ns** | **netbios-dgm** | **tacacs**]

Td<002 135.36 491.7209 Tm( )Tj

```
Ruijie(config)# ip forward-protocol udp 134
```

<b>udp-helper enable</b>	UDP
<b>ip forward-protocol</b>	UDP

RGOS10.1

-	-

### 31.1.2 ip helper-address

UDP

no

UDP

**ip helper-address** *address*

**no ip helper-address** *address*

<i>address</i>	UDP 20

UDP

, 20 UDP-Helper UDP

**no ip helper-address**

UDP :



RGOS10.1



SNMP

SNMP

no snmp

123456:

over chassis-id 123456

SNMP

---

<i>aclnumber</i>	1-99 MIB ipv4 NMS
<i>aclname</i>	MIB ipv4 NMS
<i>ipv6_aclname</i>	ipv6 MIB ipv6 N 0 T02C4>]TJ N 0 T02C4>]TJ N 9 0 0 766.84

SNMP

**snmp-server host**

## SNMP

```
Ruijie(config)# snmp-server enable traps snmp
```

```
Ruijie(config)# snmp-server host 192.168.12.219 public snmp
```

<b>snmp-server host</b>	SNMP

-	-

**32.1.6 snmp-server group**

SNMP

**snmp-server group**

no

**snmp-server group** *groupname* {**v1** | **v2c** | **v3** {**auth** | **noauth** | **priv**}} [**read** *readview*][**write** *writeview*] [**access** {[**ipv6** *ipv6\_aclname*] [**aclnum** | **aclname**]num | name}]

**no snmp-server group** *groupname* {**v1** | **v2c** | **v3** }

<b>v1</b>   <b>v2c</b>   <b>v3</b>	SNMP
<b>auth</b>	v3
<b>noauth</b>	v3
<b>priv</b>	v3
<i>readview</i>	
<i>writeview</i>	
<i>aclnum</i>	MIB ipv4 NMS
<i>aclname</i>	MIB ipv4 NMS

	<i>ipv6_aclname</i>	ipv6 MIB    ipv6 NMS
--	---------------------	-------------------------

---



|

|

|

Ruijie(config)# **snmp-server location** start-technology-city 4F of A Buliding

|

<b>snmp-sever contact</b>	SNMP

|

|

-	-

### 32.1.9 snmp-server packetsiz

SNMP  
no

**snmp-sever packetsize**

**snmp-server packetsize** *byte-count*

**no snmp-server packetsize**

|

<i>byte-count</i>	484 17876

|

1500

|

|

|

SNMP 1492  
Ruijie(config)# **snmp-server packetsize** 1492

|

--	--

	<b>snmp-server queue-length</b>	SNMP
	-	-

### 32.1.10 snmp-server queue-length

#### snmp-server queue-length

**snmp-server queue-length** *length*

	<i>length</i>	1 1000
	10	

SNMP

no

SNMP

**snmp-server system-shutdown**

**snmp-server system-shutdown**

**no snmp-server system-shutdown**

-	-

SNMP

SNMP

RGOS

reload/reboot

NMS

SNMP

Ruijie(config)# **snmp-server system-shutdown**

-	-

-	-

### 32.1.12 snmp-server trap-source

SNMP

**snmp-server trap-source**

no

**snmp-server trap-source** *interface*

**no snmp-server trap-source**

<i>interface</i>	SNMP

SNMP

IP

┌

┌

SNMP

IP  
IP SNMP

┌

0 IP SNMP

Ruijie(config)# **snmp-server trap-source fastethernet 0**

┌

<b>snmp-server enable traps</b>	
<b>snmp-server enable host</b>	NMS

┌

┌

-	-

### 32.1.13 snmp-server trap-timeout

no

**snmp-server trap-timeout**

**snmp-server trap-timeout** *seconds*

**no snmp-server trap-timeout**

┌

seconds	1 – 1000

┌

30

┌

┌

┌

60

Ruijie(config)# **snmp-server trap-timeout 60**

<b>snmp-server queue-length</b>	
<b>snmp-server enable host</b>	NMS
-	-

### 32.1.14 snmp-server user

SNMP **snmp-server user** no

**snmp-server user** *username groupname* {**v1** | **v2** | **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** }

<i>username</i>	
<i>groupname</i>	
<b>v1</b>   <b>v2</b>   <b>v3</b>	SNMP v3
<b>encrypted</b>	16 MD5 16 SHA 20
<b>auth</b>	
<b>md5</b>	MD5 sha SHA
<i>auth-password</i>	32
<b>priv</b>	des56 56 DES
<i>priv-password</i>	32



|

default

MIB

|

|

|

MIB-2 oid 1.3.6.1

Ruijie(config)# **snmp-server view mib2 1.3.6.1 include**

|

<b>show snmp view</b>	SNMP

|

|

-	-

### 32.1.16 snmp trap link-status

## 32.2

### 32.2.1 show snmp

SNMP

show snmp

**show snmp [mib | user | view | group| host]**

|

-	-

|

|

|

**show snmp**

SNMP

```

show snmp mib                snmp mib
show snmp user             snmp
show snmp view            snmp
show snmp group          snmp
show snmp host

```

## SNMP

```

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 1500)
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

```

<b>snmp-server chassis-id</b>	SNMP

-	-



### 33.1.2 rmon collection history

**no**

**rmon collection history** *index* [**owner** *ownername*] [**buckets** *bucket-number*] [**interval** *seconds*]

**no rmon collection history** *index*



	--	-

|

|

|



trap

Ruijie(config)# **rmon event**

Event type : log-and-trap  
Community : public  
Last time sent : 0d:0h:0m:0s  
Owner : zhangsan  
Log : 1  
Log time : 0d:0h:37m:47s  
Log description : ipttl  
Log : 2  
Log time : 0d:0h:38m:56s  
Log description : ipttl



**rmon alarm**

```
Ruijie# show rmon event
Alarm : 1
Interval : 1
Variable : 1.3.6.1.2.1.4.2.0
Sample type : absolute
Last value : 64
Startup alarm : 3
Rising threshold : 10
Falling threshold : 22
Rising event : 0
Falling event : 0
Owner : zhangsan
```

---

--	--

**rmon event** *number* [**log**] [

```

Ruijie# show rmon history
Entry : 1
Data source : Gi1/1
Buckets requested : 65535
Buckets granted : 10
Interval : 1
Owner : zhangsan
Sample : 198
Interval start : 0d:0h:15m:0s
DropEvents : 0
Octets : 67988
Pkts : 726
BroadcastPkts : 502
MulticastPkts : 189
CRCAlignErrors : 0
UndersizePkts : 0
OversizePkts : 0
Fragments : 0
Jabbers : 0
Collisions : 0
Utilization : 0
    
```

<b>rmon collection history</b> <i>index</i> [owner ownername] [buckets bucket-number] [interval seconds]	


-	-

Ruijie# **show rmon statistics**

```

Statistics : 1
Data source : Gil/1
DropEvents : 0
Octets : 1884085
Pkts : 3096
BroadcastPkts : 161
MulticastPkts : 97
CRCAlignErrors : 0
UndersizePkts : 0
OversizePkts : 1200
Fragments : 0
Jabbers : 0
Collisions : 0
Pkts64Octets : 128
Pkts65to127Octets : 336
Pkts128to255Octets : 229
Pkts256to511Octets : 3
Pkts512to1023Octets : 0
Pkts1024to1518Octets : 1200
Owner : zhangsan
    
```

<b>rmon collection stats</b> <i>index</i> [owner <i>owner-string</i> ]	



## 34 DHCPv6 Client

### 34.1

#### 34.1.1 ipv6 dhcp client pd

DHCPv6 client  
no

**ipv6 dhcp client pd**

**ipv6 dhcp client pd** *prefix-name* [rapid-commit]

**no ipv6 dhcp client pd**



	-	-

## 34.2

### 34.2.1 clear ipv6 dhcp client

DHCPv6

**clear ipv6 dhcp client**

**clear ipv6 dhcp client** *interface-type interface-number*

	<i>interface-type interface-number</i>	

**clear ipv6 dhcp client**

DHCPv6

DHCPv6

Ruijie# **clear ipv6 dhcp client vlan 1**

---

# 35 DHCPv6 Relay Agent

## 35.1

### 35.1.1 ipv6 dhcp relay destination

DHCPv6 Relay Agent  
no Relay Agent

**ipv6 dhcp relay destination** *ipv6-address* [*interface-type interface-number*]

**no ipv6 dhcp relay destination** *ipv6-address* [*interface-type interface-number*]

<i>ipv6-address</i>	Relay Agent
<i>interface-type</i>	
<i>interface-number</i>	

Dhcpv6 Relay

DHCPv6

---

DHCPv6 Relay Destination

**r** Destination Relay Agent Destination 20

---

# Interface VLAN 1 DHCPv6 Relay 3001::2

Ruijie#**configure terminal**

Enter configuration commands, one per line. End with CNTL/Z.

Ruijie(config)#**interface vlan 1**

Ruijie(config-if)#**ipv6 dhcp relay destination 3001::2**

Ruijie(config-if)#**end**

---

--	--

<b>show ipv6 dhcp relay destination { all   interface <i>interface-type interface-number</i> }</b>	Relay
-	
10.4	

## 35.2

### 35.2.1 show ipv6 dhcp relay destination

DHCPv6 Relay Agent

**show ipv6 dhcp relay destination**

<b>all</b>	
<b>interface <i>interface-type interface-number</i></b>	

Relay Agent	Relay	DHCPv6
1	Relay	

```
Ruijie# show ipv6 dhcp relay destination all
Interface: Vlan1 // Relay
Destination address(es)          Output Interface
3001::2
FF02::1:2                        Vlan2
//                                //
```

-	-
---	---

|

-

|

10.4	

### 35.2.2 show ipv6 dhcp relay statistics

DHCPv6 Relay

**show ipv6 dhcp relay statistics**

|

-	-

|

|

|

DHCPv6 Relay

DHCPv6 Relay Agent

Ruijie# **show ipv6 dhcp relay statistics**

```

Packets dropped          : 2 //
  Error                  : 2 //
  Excess of rate limit   : 0 //
Packets received        : 28 //      DHCPv6
  SOLICIT                : 0
  REQUEST                : 0
  CONFIRM                : 0
  RENEW                  : 0
  REBIND                 : 0
  RELEASE                : 0
  DECLINE                : 0

```

```

RECONFIGURE          : 0
REPLY                 : 8
RELAY-FORWARD        : 8
RELAY-REPLY          : 0

```

<b>clear ipv6 dhcp relay statistics</b>	

-

10.4	

### 35.2.3 clear ipv6 dhcp relay statistics

DHCPv6 Relay

**clear ipv6 dhcp relay statistics**

-	-

DHCPv6 Relay

DHCPv6 Relay Agent

0

Ruijie#**clear ipv6 dhcp relay statistics**

<b>show ipv6 dhcp relay statistics</b>	

-



# 36 IPFIX

## 36.1 IPFIX

### 36.1.1 cache

```
IPFIX , cache
no
```

**cache** {**entries** number | **timeout** {**active** minutes | **inactive** seconds}}

**no cache** {**entries** | **timeout** {**active** | **inactive**}}

<b>entries</b> <i>number</i>	1024	131072.	
<b>timeout</b>			
<b>active</b> <i>minutes</i>	1	60	30
<b>inactive</b> <i>seconds</i>	600	15	10

```
4096
30
15
```

```
IPFIX
```

```
IPFIX
```

```
Ruijie(config)# ip flow-aggregation cache protocol-port
Ruijie(config-flow-cache)# cache entries 2046
Ruijie(config-flow-cache)# cache timeout inactive 199
```

```
Ruijie(config-flow-cache)# cache timeout active 45
Ruijie(config-flow-cache)# enabled
```

show ip flow cache	
show ip flow cache aggregation	

-	-

### 36.1.2 cache-timeout

top-talker

**cache-timeout** *milliseconds*

**no cache-timeout**

<i>milliseconds</i>	top-talker 1 ~ 3,600,000 1 1

5,000ms

top-talker

top-talker

```
Ruijie(config-flow-top-talkers)#cache-timeout 300
```

-	-

IPFIX

**enabled**

**no enabled**

	-	-

|

| IPFIX

|

IPFIX

1

0

0

)



```
Ruijie(config-flow-cache)# export template timeout-rate 120
Ruijie(config-flow-cache)# enabled
```

<b>ip flow-aggregation cache</b>	
<b>cache</b>	
<b>export destination (aggregation cache)</b>	
<b>mask (IPv4)</b>	
<b>show ip flow cache aggregation</b>	

-	-

### 36.1.6 flow-sampler

no

**flow-sampler** *sampler-map-name* [**egress**]

**no flow-sampler** *sampler-map-name* [**egress**]

<i>sampler-map-name</i>	
<b>egress</b>	egress

ingress

egress

IPFIX                    **ip flow ingress**   **ip flow egress**  
 ingress   service-policy  
**ip flow {ingress | egress}**

**flow-sampler**  
**service-policy.**

2/2

```
Ruijie# config terminal
Ruijie(config)# flow-sampler-map my_sampler
Ruijie(config-sampler)# mode random one-out-of 666
Ruijie(config-sampler)# exit
Ruijie(config)# interface gi 2/2
Ruijie(config-if)# flow-sampler my_sampler
Ruijie(config-if)# exit
```

<b>flow-sampler-map</b>	
<b>mode random one-out-of</b>	

-	-

### 36.1.7 flow-sampler-map

no

**flow-sampler-map** *sampler-map-name*  
**no flow-sampler-map** *sampler-map-name*

<i>sampler-map-name</i>	

**flow-sampler**  
**service-policy.**

2/2

```
Ruijie# config terminal
Ruijie(config)# flow-sampler-map my_sampler
Ruijie(config-sampler)# mode random one-out-of 666
Ruijie(config-sampler)# exit
Ruijie(config)# interface gi 2/2
Ruijie(config-if)# flow-sampler my_sampler
Ruijie(config-if)# exit
```

<b>flow-sampler</b>	
<b>mode random one-out-of</b>	

-	-

### 36.1.8 ip flow egress

**ip flow egress**

no

**ip flow egress**

**no ip flow egress**

-	-

egress      ip flow Ingress      IPFIX      ip flow      IPFIX

```
1/1 IP
Ruijie(config)# interface gigabitEthernet 1/1
Ruijie(config-if)# ip flow egress
```

```
Ruijie(config)# interface gigabitEthernet 1/1
Ruijie(config-if)# ip flow ingress
```

<b>ip flow-aggregation cache</b>	
<b>cache</b>	
<b>export destination (aggregation cache)</b>	
<b>mask (IPv4)</b>	

-	-

### 36.1.10 ip flow layer2-switched

```
VLAN / IP ipflow layer2-switched VLAN
no VLAN IP
```

```
ip flow layer2-switched {ingress | egress} [sampler gUad` Yf! aUd! bUaY]
```

```
no ip flow layer2-switched {ingress | egress} [sampler gUad` Yf! aUd! bUaY]
```

ingress	VLAN IP
egress	VLAN IP
sampler	1:1

VLAN

VLAN

1. ip flow layer2-switched {ingress | egress} VLAN

2.

r



show ip flow cache	IPV6
show ip cache flow	IPV4
show ip interface	IPFIX

r

IPFIX

**no enabled**

1 **destination-prefix**

0xFFFF0000

Ruijie(config)# **ip flow-aggregation cache destination-prefix**

Ruijie(config-flow-cache)# **mask destination minimum 16**

Ruijie(config-flow-cache)# **enabled**

2 **source-prefix**

0xFFFF0000

Ruijie(config)# **ip flow-aggregation cache source-prefix**

Ruijie(config-flow-cache)# **mask source minimum 16**

Ruijie(config-flow-cache)# **enabled**

3 **protocol-port**

*number*

580000.

65536 (64K)

1024

**ip flow-cache timeout** [**active** *minutes* | **inactive** *seconds*]

**no ip flow-cache timeout** [**active** | **inactive**]

--	--

**active**

**ip flow-export****no****ip flow-export** { **destination** { { *ip-address* | *hostname* | **ipv6** *ipv6\_address* } *udp-port* [**vrf**  
*vrf-name*] } | }

|  
/ 20 10 VRF

```
Ruijie(config)# ip flow-export interface-type port  
Ruijie(config)# no ip flow-export interface-type
```

<b>ip flow ingress</b>	
<b>ip flow egress</b>	
<b>ip flow-cache timeout</b>	

```
show ip flow cache
```

	-	-

┌

	-	-

Source prefix TOS ( )

1 **source-prefix**

Ruijie(config)# **ip flow-aggregation cache source-prefix**

Ruijie(config-flow-cache)# **mask source minimum 8**

2 **destination-prefix**

Ruijie(config)# **ip flow-aggregation cache destination-prefix**

Ruijie(config-flow-cache)# **mask destination minimum 32**

<b>ip flow ingress</b>	
<b>ip flow egress</b>	
<b>ip flow-cache timeout</b>	
<b>show ip flow cache</b>	
<b>show ip flow interface</b>	IPFIX

-	-

### 36.1.18 match

top-talker

no

**match** { **byte-range** {*max-byte-number min-byte-number* | **max** *max-byte-number* | **min** *min-byte-number*} | **destination** {**address** *ip-address* [*mask* | */nn*] | **as** *as-number* | **port** {*max-port-number min-port-number* | **max**

<b>byte-range</b>	IP
<i>max-byte-number</i>	IP
<i>min-byte-number</i>	1-4294967295
<b>max</b> <i>max-byte-number</i>	

<b>min</b> <i>min-packets</i>	IP	1-4294967295
<b>protocol</b>		
<i>protocol-number</i>		0-255
<b>tcp</b>	tcp	
<b>udp</b>	udp	
<b>source address</b>	IP	
<i>ip-address</i>	IP	
<i>mask</i>	IP	10 255.255.255.0
<i>/nn</i>	CIDR	IP mask 255.255.255.0 /24
<b>source as</b>		
<i>as-number</i>		
<b>source port</b>		
<i>max-port-number</i>		
<i>min-port-number</i>	0-65535	
<b>max</b> <i>max-port-number</i>		0-65535
<b>min</b> <i>min-port-number</i>		0-65535
<b>tos</b>	TOS	
<i>tos-byte</i>	tos	
<b>dscp</b> <i>dscp</i>	TOS	dscp
<b>precedence</b> <i>precedence</i>	TOS	precedence

sort-by

ip flow-top-talker

```
Ruijie(config-flow-top-talks)# match input-interface fa 0/1
```

-	-

IPFIX

top talker

no

**sort-by [bytes | packets]**

**no sort-by [bytes | packets]**

	<b>bytes</b>	
	<b>packets</b>	

|

| top-talker

|

| Ruijie(config-flow-top-talks)#**sort-by bytes**

	-	-

```

top-talker .
.
.
top
Ruijie(config-flow-top-talks)#top 150

```

-	-

-	-

## 36.2 IPFIX

### 36.2.1 show flow-sampler

**show flow-sampler** [*sampler-map-name*]

<i>sampler-map-name</i>	flow-sampler-map

```

.
.
.

```

```

Ruijie# show flow-sampler my_sampler
Sampler : my_sampler, id : 1, packets matched : 10, mode : random
sampling mode

```

	-	-

┌

	-	-

### 36.2.2 show ip flow cache

show ip flow cache

show ip flow cache

	-	-

┌

┌

┌

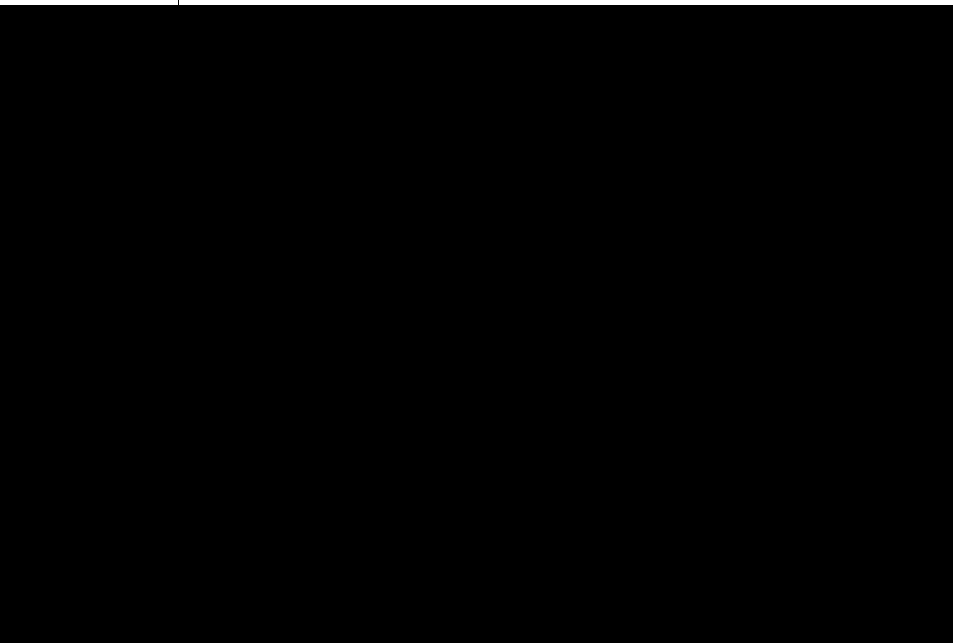
IP

```
Ruijie(config)# show ip flow cache
IP Flow Switching Cache, 4456448 bytes
3 active, 65533 inactive, 820628747 added
0 flow alloc failures
Exporting flows to 1.1.15.1 (2057)
820563238 flows exported in 34485239 udp datagrams, 0 failed
Last clearing of statistics 00:00:03
Protocol    Total      Flows  Packets  Bytes  Packets  Active(Sec)
Idle(Sec)
-----
      Flows      /Sec    /Flow    /Pkt    /Sec      /Flow
/Flow
TCP-BGP      71      0.0     1      49     0.0     2.5     15.8
UDP-other   17      0.0     1     328     0.0     0.0     15.7
ICMP     18966     6.7    10      28    72.9     0.1     22.9
Total:    19054     6.7    10      28    72.9     0.1     22.9
```

```

SrcIf   SrcIPAddress DstIf   DstIPAddress Pr TOS Flgs Pkts
Port Msk AS          Port Msk AS  NextHop
B/Pk Active
Et1/1   52.52.52.1    Fd4/0    42.42.42.1   01 55 10  3748
0000 /8 50                0000 /8 40 202.120.130.2
28 17.8
Et1/2           52.52.52.1    Fd4/0          42.42.42.1
01 CC 10 3568
0000 /8 50                0000 /8 40 202.120.130.2 28 17.8
Et1/2   10.1.3.2    Fd4/0    42.42.42.1   01 C0 10  1124
0000 /0 0                0000 /8 40 202.120.130.2
28 17.8
...

```



IPFIX

-





```
Template refresh rate = 15
Option Template ID = 259
Option Template timeout = 30
Option Template refresh rate = 10
40 flows exported in 20 udp datagrams
0 flows failed to export
0 messages failed to export
Cache for protocol-port aggregation:
Exporting flows to 172.16.20.4 (991) 172.30.0.1 (991)
Exporting using source IP address 172.16.6.2
Version 9 flow records
Template ID = 260
Template timeout = 120
Template refresh rate = 25
40 flows exported in 20 udp datagrams
0 flows failed to export
0 messages failed to export
Cache for source-prefix aggregation:
Exporting flows to 172.16.20.4 (991) 172.30.0.1 (991)
Exporting using source IP address 172.16.6.2
Version 9 flow records
Template ID = 261
Template timeout = 120
Template refresh rate = 25
40 flows exported in 20 udp datagrams
0 flows failed to export
0 messages failed to export
Total:
160 flows exported in 80 udp datagrams
0 flows failed to export
0 messages failed to export
6 Templates added
6 Templates active
2 Option templates added
2 Option templates active
```

|

|

-	-

### 36.2.5 show ip flow interface

**show ip flow interface**      IPFIX

**show ip flow interface**

|

-	-

|

|

|

IP

```
Ruijie# show ip flow interface
FastEthernet 0/1
ip flow ingress
```

|

-	-

|

|

-	-

### 36.2.6 show ip flow top-talkers

(            match)            sort-by

**show ip flow top-talkers**

-	-

└───

└───

└───

Ruijie# **show ip flow top-talkers**

SrcIf	SrcIPaddress	DstIf	DstIPaddress	Pr	SrcP	DstP	Bytes
Gi1/1	10.10.18.1	Gi1/2	172.16.10.232	11	00A1	00A1	144K
Gi1/1	10.10.19.1	Gi1/2	172.16.10.2	11	00A2	00A2	144K
Gi1/1	172.30.216.196	Gi1/2	172.16.10.2	06	0077	0077	135K
Gi1/1	10.162.37.71	Gi1/2	172.16.10.2	06	0050	0050	125K
Gi1/1	10.92.231.235	Gi1/2	172.16.10.2	06	0041	0041	115K
172.16.1264A72M30r5 proc PredET66.84 610.5403 84 20.64143.0f66.84 610.5403							

# 37 IPV6 IPFIX

## 37.1

### 37.1.1 cache

IPV6 , cache  
no

**cache** {**entries** number | **timeout** {**active** minutes | **inactive** seconds}}

**no cache** {**entries** | **timeout** {**active** | **inactive**}}

<b>entries</b> number	1024 131072
<b>active</b> minutes	<b>active</b> <i>minutes</i> 1 60 30
<b>inactive</b> seconds	<b>inactive</b> <i>seconds</i> 10 600 15

(\$- \*  
' \$  
%)

IPV6

IPFIX

Ruijie(config)# **ipv6 flow-aggregation cache**

**protocol-port**

```
Ruijie(config-flow-cache)# cache entries 2046
```

```
Ruijie(config-flow-cache)# cache timeout inactive 199
```

```
Ruijie(config-flow-cache)# cache timeout active 45
```

```
Ruijie(config-flow-cache)# enabled
```

---

```
show ipv6 flow cache
```

--	--

5,000ms

Ipv6 top-talkers

ipv6 top-talkers

Ruijie(config-flow-top-talkers)#**cache-timeout** 300

┌

┌

┌

┌

┌

┌

IPV6 IPFIX IPV6 show ipv6 cache flow  
 IPV6 clear ipv6 flow stats ,

ipv6  
 Ruijie# clear ipv6 flow stats

show ipv6 flow cache	IPV6
show ipv6 flow cache aggregation	IPV6
clear ip flow stats	ipv4

S8600

10.4	10.4

### 37.1.4 enable

ipv6                      **enabled**                      no

**enabled**

**no enabled**

┌

-	-

---

ipv6

**protocol-port** :

Ruijie(config)# **ipv6 flow-aggregation cache**

**protocol-port**

Ruijie(config-flow-cache)# **enabled**

**protocol-port** :

Ruijie(config)# **ipv6 flow-aggregation cache**

**protocol-port**

Ruijie(config-flow-cache)# **no enabled**



show ipv6 flow cache

**export** { **destination** { { *ip-address* | *hostname* } *udp-port* } | **version** | **template**  
{ [**refresh-rate** | **timeout-rate** ] }



```

protocol-port
Ruijie(config-flow-cache)# export destination
10.41.41.1 9992
Ruijie(config-flow-cache)# export destination
172.16.89.1 9992
Ruijie(config-flow-cache)# enabled

```

**protocol-port**

```

Ruijie(config)# ipv6 flow-aggregation cache
protocol-port
Ruijie(config-flow-cache)# export template
refresh-rate 100
Ruijie(config-flow-cache)# export template
timeout-rate 120
Ruijie(config-flow-cache)# enabled

```

show ipv6 flow cache	IPV6
show ipv6 flow cache aggregation	IPV6
ipv6 flow-aggregation cache	IPV6
cache	
mask	
cache	
enable	ipv6

S8600

10.4	10.4

### 37.1.6 flow-sampler-map

no

**flow-sampler-map** *sampler-map-name*

**no flow-sampler-map** *sampler-map-name*

### 37.1.7 ipv6 flow

**ipv6 flow** / IPV6 1 1  
 no / IPV6 1 1

**ipv6 flow {ingress | egress}**

**no ipv6 flow {ingress | egress}**

ingress	IPV6 1 1
egress	IPV6 1 1

5 í íy

1.			IPFIX	IPV6		
2.	ipv6 flow ingress				SVI	
3.	ipv6 flow egress					
	ipv6 flow egress				SVI	
	SVI	ipv6 flow egress				
		SVI	ipv6 flow egress		SVI	SVI
					SVI	
	ipv6 flow egress					
4.	SVI	ipv6 flow egress			SVI	
	ipv6 flow egress					
5.	SVI					
	SVI					SVI
6.	S8600	S9600	SPAN	IPFIX		
					IPFIX	
			/			
	IPFIX	/			IPFIX	
<hr/>						
<hr/>						
	Ingress	egress				
<hr/>						

```

1/1    ipv6
Ruijie(config)# interface gigabitEthernet 1/1
Ruijie(config-if)# ipv6 flow egress

```



--	--	--

### 37.1.8 ipv6 flow layer2-switched

```

VLAN
 / IPV6
no VLAN / IPV6
    
```

**ipv6 flow layer2-switched** {ingress | egress} [sampler *gUad` Yf! aUd! bUaY*]

**no ipv6 flow layer2-switched** {ingress | egress} [sampler *gUad` Yf! aUd! bUaY*]

ingress	VLAN	IPV6
egress	VLAN	IPV6
sampler	1:1	

VLAN

VLAN



|

|

show ipv6 flow cache	IPV6
show ip cache flow	IPV4
show ip interface	IPFIX

|

S8600

|

10.4	10.4 2b1

5. VLAN VLAN VLAN VLAN

6. VLAN  
VLAN

7. Ipv6 flow layer2-switched enable  
ipv6 flow ingress ipv6 flow-sampler  
VLAN  
VLAN

r

VLAN VLAN  
VLAN

8. ~~Yp|A|Pt|S|B|A~~  
VLAN 4095 V L

**ipv6 flow-aggregation cache**      ipv6  
ipv6      **no**  
ipv6      **no**  
**enabled**

**ipv6 flow-aggregation cache { as | as-tos | destination-prefix |  
destination-prefix-tos | prefix | prefix-port | prefix-tos | prefix-port**

```

destination-prefix destination-prefix-tos
prefix
no enabled enabled

```

```

destination-prefix 64
Ruijie(config)# ipv6 flow-aggregation cache
destination-prefix
Ruijie(config-ipv6-flow-cache)# mask destination minimum 64
Ruijie(config-ipv6-flow-cache)# enabled
source-prefix 32
Ruijie(config)# ipv6 flow-aggregation cache
source-prefix
Ruijie(config-ipv6-flow-cache)# mask source minimum 32
Ruijie(config-ipv6-flow-cache)# enabled
protocol-port
Ruijie(config)# ipv6 flow-aggregation cache
protocol-port
Ruijie(config-ipv6-flow-cache)# export destination
172.17.24.65 9991
Ruijie(config-ipv6-flow-cache)# export destination
172.16.10.2 9991
Ruijie(config-ipv6-flow-cache)# enabled

```

show ipv6 flow cache aggregation	IPV6
export destination	ipv6
export version	ipv6
export template	
cache entries	
cache timeout	
enabled	ipv6



```

no ipv6 flow-cache entries
IPFIX IPV6
flow ingress ipv6 flow egress
IPFIX IPV6
IPFIX no ipv6 flow ingress no
ipv6 flow egress IPFIX
IPFIX ipv6 flow ingress IPFIX
    
```

```

ipv6 131,072 (128K):
Red-Giant(config)# ipv6 flow-cache entries 131072
    
```

show ipv6 flow cache	IPV6
ipv6 flow ingress	ipv6
ipv6 flow egress	ipv6

ipv6 flow-cache timeout

<b>active minutes</b>	
<b>inactive seconds</b>	1 60 30 300

10.4	10.4

### 37.1.13 ipv6 flow-export

**ipv6 flow-export**                  ipv6  
**no**

**ipv6 flow-export** { **destination** { { **ipv6** *ipv6\_addr* | *ip-address* | *hostname* } *udp-port* [**vrf** *vrf-name*] } | **source** { *interface-name* } | **version** { **9** | **10** } | **template** { [ **refresh-rate** *packets* | **timeout-rate** *minutes* | **options** { [ **export-stats** | **refresh-rate** *packets* | **timeout-rate** *minutes* ] } ] } | **interface-type** { **port** | **vlan** }

**no ipv6 flow-export** { **destination** { { *ip-address* | *hostname* } *udp-port* } | **source** | **version** | **template** { [ **refresh-rate** | **timeout-rate** ] } | **options** { [ **export-stats** | **refresh-rate** | **timeout-rate** ] } } [ **vrf** *vrf-name* ]

<b>destination</b> { <b>ipv6</b> <i>ipv6_addr</i>   <i>ip-address</i>   <i>ip-address</i>   <i>hostname</i> <i>udp-port</i> }	IPV6 Ip		
<b>source</b> <i>interface-name</i>	IP	VRF	
<b>version</b> <b>9</b>			IPFIX

<b>export-stats</b>	IPFIX	IPFIX
<b>refresh-rate</b> <i>packets</i>	1 600	20
<b>timeout-rate</b> <i>minutes</i>	10	1 3600
] bhYf ZUW! hmØY' odcf h' p' j ` Ubq	interface-type IPFIX port / vlan / vlan 10.4 2b1	ipv6 flow-export ipv6

VRF

Version 10

/

```

IPV4  IPV6,
IPV6
source  IPV6
IPV4  source  IPV4
    
```

IPFIX

```

Ruijie(config)# ipv6 flow-export destination
10.42.42.1 9991
    
```

IPFIX

```

Ruijie(config)# ip flow-export destination
10.42.42.1 9991
Ruijie(config)# ipv6 flow-export destination ipv6
1111::1111 9991
    
```

```

Ruijie(config)# ipv6 flow-export template refresh-rate 100
Ruijie(config)# ipv6 flow-export template timeout-rate 60
    
```

```

Ruijie(config)# ipv6 flow-export interface-type port
Ruijie(config)# no ipv6 flow-export interface-type
    
```

show ipv6 flow cache	IPV6
ipv6 flow ingress	ipv6
ipv6 flow egress	ipv6
show ipv6 flow export	

### 37.1.14 ipv6 flow-sampler

no

**ipv6-sampler** / IPV6  
 sampler-map no  
 / IPV6

**ipv6 flow-sampler** *sampler-map-name* [**egress**]

**no ipv6 flow-sampler** *sampler-map-name* [**egress**]

<i>sampler-map-name</i>	
<b>egress</b>	egress

egress ingress

1. ipv6 flow ipv6-sampler ipv6 flow  
     1 ipv6-sampler
2. flow-sampler ipv6 flow ingress ipv6 flow-sampler ipv6  
     ipv6 flow-sampler

1. ipv6 flow ingress ipv6 flow-sampler AP AP

2. egress ipv6 flow egress SVI ipv6 flow-sampler egress SVI SVI

SVI ipv6 flow-sampler egress SVI ipv6 flow egress SVI  
 egress ipv6 flow-sampler egress SVI ipv6 flow

3. SVI ipv6 flow egress ipv6 flow-sampler  
 egress SVI ipv6 flow egress

r

4. SVI ipv6 flow egress SVI SVI SVI SVI



match	ipv6 top-talkers
sort-by	ipv6 top-talkers
top	ipv6 top-talkers
show ipv6 flow-top-talkers	ipv6 top-talkers

S8600

10.4	10.4
------	------

### 37.1.16 mask

ipv6 mask  
no

**mask** {[destination | source] minimum *value*}

**no mask** {[destination | source] minimum }

destination	
source	
minimum	
<i>value</i>	1 128

0 mask

Ipv6

IPV6

```

(
TOS (
Prefix-port (
Prefix-TOS (
Source prefix (
Source prefix TOS (

```

```

source-prefix :
Ruijie(config)# ipv6 flow-aggregation cache
source-prefix
Ruijie(config-ipv6-flow-cache)# mask source minimum 96
destination-prefix :
Ruijie(config)# ipv6 flow-aggregation cache
destination-prefix
Ruijie(config-ipv6-flow-cache)# mask destination
minimum 64

```

ipv6 flow-aggregation cache	ipv6
enable	ipv6
show ipv6 flow cache aggregation	IPV6

S8600

10.3(4)	10.3(4)
10.4	10.4 1 128

### 37.1.17 match

ipv6 top-talkers no

**match** { **byte-range** {*max-byte-number min-byte-number* | **max** *max-byte-number* | **min** *min-byte-number*} | **destination** {**address** *ipv6-address* [*mask* | */nn*] | **as** *as-number* | **port** {*max-port-number min-port-number* | **max** *max-port-number* | **min** *min-port-number*}} | **direction** {**egress** | **ingress**} | **input-interface** *interface-type interface-number* | **nexthop-address** *ipv6-address* [*mask* | */nn*] | **output-interface** *interface-type interface-number* | **packet-range** {*max-packets min-packets* | **max** *max-packets* | **min** *min-packets*} | **protocol** {*protocol-number* | **tcp** | **udp**} | **source** { **address** *ipv6-address* [*mask* | */nn*] | **as** *as-number* | **port** {*max-port-number min-port-number* | **max** *max-port-number* | **min** *min-port-number*}} | **tos** {*tos-byte* | **dscp** *dscp* | **precedence** *precedence*}}

**no match** { **byte-range** | **destination** [**address** | **as** | **port**] | **direction** | **flow-sampler** | **input-interface** | **nexthop-address** | **output-interface** | **packet-range** | **protocol** | **source** [**address** | **as** | **port**] | **tos**}

<b>byte-range</b>	IP	
<i>max-byte-number</i>		
<i>min-byte-number</i>		
	IP	1-4294967295
<b>max</b> <i>max-byte-number</i>	IP	
1-4294967295		
<b>min</b> <i>min-byte-number</i>	IP	
1-4294967295		
<b>destination</b> { <b>address</b> <i>ipv6-address</i> [ <i>mask</i>   <i>/nn</i> ]   <b>as</b> <i>as-number</i>   <b>port</b> { <i>max-port-number min-port-number</i>   <b>max</b> <i>max-port-number</i>   <b>min</b> <i>min-port-number</i> }}		
<b>destination address</b>	IPV6	
<i>ip-address</i>	IPV6	
<i>mask</i>	IPV6	
<i>/nn</i>	CIDR	IPV6
<b>destination as</b>		
<i>as-number</i>		
<b>destination port</b>		
<i>max-port-number</i>		
<i>min-port-number</i>		
		0-65535
<b>max</b> <i>max-port-number</i>		0-65535
<b>min</b> <i>min-port-number</i>		0-65535
<b>direction egress</b>		



ipv6 flow-top-talkers

Ruijie(config-ipv6-flow-top-talks)#**match input-interface** fa 0/1

sort-by	ipv6 top talker
top	ipv6 top-talkers
show ipv6 flow-top-talkers	ipv6 top-talkers

S8600

10.3(4)	10.3(4)
10.4	10.4 <b>destination source</b> ipv6 address

### 37.1.18 mode

no

**mode random one-out-of** *packet-interval*

<i>packet-interval</i>	<i>packet-interval</i>

2/2

```
Ruijie# config terminal
Ruijie(config)# flow-sampler-map my_sampler
Ruijie(config-sampler)# mode random one-out-of 666
Ruijie(config-sampler)# exit
Ruijie(config)# interface gi 2/2
Ruijie(config-if)# flow-sampler my_sampler
Ruijie(config-if)# exit
```

ipv6 flow-sampler	
flow-sampler-map	

S8600

10.3(4)	10.3(4)

### 37.1.19 sort-by

ipv6 top talker

no

**sort-by [bytes | packets]**

**no sort-by [bytes | packets]**

bytes	
packets	

Ipv6 flow-top-talker

Ruijie(config-flow-top-talks)#**sort-by bytes**

-	-

S8600

10.3(4)	10.4

### 37.1.20 top

ipv6 top-talker

no

top-talker

**top number**

no top

<i>number</i>	top-talker 1-200

top-talker





0 active, 580000 inactive, 0 added

0 flow alloc failures

Exporting flows to 192.168.196.14 (9996)

21 ipv6 flows exported in 7 udp datagrams, 0 failed

Last clearing of statistics 0 Days 00:08:32

SrcIf	SrcIPAddress	DstIf	DstIPAddress	Pr	Tos	Flg
-------	--------------	-------	--------------	----	-----	-----





```

                Last clearing of statistics 0 Days 00:09:07
Src If   SRC AS   Dst If   Dst AS   TOS   Flows   Pkts   B/Pk
Active
<NULL>   0           VLAN 10   0         17    33153   33214  110
39
    
```

```

Ruijie#show ipv6 flow cache aggregation destination-prefix
        IPV6 Flow Switching Cache, 0 bytes
        0 active, 4096 inactive, 0 added
        0 flow alloc failures
    
```

```

                Last clearing of statistics 0 Days 00:09:19
Dst If   Dst Prefix   Msk   Flows   Pkts   B/Pk   Active
VLAN 10  0.0.0.0      /0    44848   44909   110    51
    
```

```

Ruijie#show ipv6 flow cache aggregation destination-prefix-tos
        IPV6 Flow Switching Cache, 0 bytes
        0 active, 4096 inactive, 0 added
        0 flow alloc failures
    
```

```

                Last clearing of statistics 0 Days 00:09:35
Dst If   Dst Prefix   Msk AS   TOS   Flows   Pkts   B/Pk   Active
VLAN 10  0.0.0.0      /0  0       17    61109   61170   110    67
    
```

```

Ruijie#show ipv6 flow cache aggregation prefix
        IPV6 Flow Switching Cache, 0 bytes
        0 active, 4096 inactive, 0 added
        0 flow alloc failures
    
```

```

                Last clearing of statistics 0 Days 00:10:34
Src If   Src Prefix   Dst If   Dst Prefix   Tos Flows   Pkts
        Port   Msk           Port   Msk           Pr   B/Pk
Active
<NULL>   0.0.0.0      VLAN 10  0.0.0.0      17  123178
123239
        69     /0           69     /0           17  110
137
    
```

```

Ruijie#show ip flow cache aggregation prefix-tos
        IPV4 Flow Switching Cache, 176 bytes
        1 active, 4095 inactive, 2 added
        0 flow alloc failures
    
```

```

    IPV6 Flow Switching Cache, 0 bytes
    0 active, 4096 inactive, 0 added
    0 flow alloc failures
    Last clearing of statistics 0 Days 00:10:52
  Src If      Src Prefix  Dst If  Dst Prefix  Tos  Flows      Pkts
            Msk AS                Msk AS                B/Pk
  Active
  <NULL>     0.0.0.0      VLAN 10  0.0.0.0      17  130079
  130140
            /0  0                /0  0                110
  144
  
```

Ruijie#show ipv6 flow cache aggregation protocol-port

```

    IPV6 Flow Switching Cache, 0 bytes
    0 active, 4096 inactive, 0 added
    0 flow alloc failures
    Last clearing of statistics 0 Days 00:11:35
  Prot Src Port Dst Port Flows      Pkts      B/Pk Active
  17  69      69      170760    170821    110  188
  
```

Ruijie#show ipv6 flow cache aggregation protocol-port-tos

```

    IPV6 Flow Switching Cache, 0 bytes
    0 active, 4096 inactive, 0 added
    0 flow alloc failures
    Last clearing of statistics 0 Days 00:11:42
  Prot Src If  Src Port Dst If  Dst Port TOS Flows  Pkts  B/Pk Active
  17  <NULL>  69      VLAN 10  69      17  176767  176828  110
  194
  
```

Ruijie#show ipv6 flow cache aggregation source-prefix

```

    IPV6 Flow Switching Cache, 0 bytes
    0 active, 4096 inactive, 0 added
    0 flow alloc failures
    Last clearing of statistics 0 Days 00:12:17
  Src If      Src Prefix  Msk AS  Flows      Pkts      B/Pk Active
  <NULL>     0.0.0.0      /0  0    210329    210390    110  230
  
```

Ruijie#show ipv6 flow cache aggregation source-prefix-tos

```

    IPV6 Flow Switching Cache, 0 bytes
  
```

0 active, 4096 inactive, 0 added

0 flow alloc failures

Last clearing of statistics 0 Days 00:12:22

Src If	Src Prefix	Msk
--------	------------	-----

Exporting flows to 192.168.196.14 (9996)  
Exporting using source IP address 192.168.196.44  
Version 9 flow records  
IPV6 Template ID = 263  
    Template timeout = 1 Minute(s)  
    Template refresh rate = 600  
6 flows exported in 2 udp datagrams  
0 flows failed to export  
0 messages failed to export



Exporting flows to

-	-

Ruijie# **show ip flow interface**

GigabitEthernet 3/1

Ipv6 flow ingress

Ip flow egress

3/1 ,ipv4 ipv6 1:1

GigabitEthernet 3/2

Ipv6 flow egress

Ipv6 flow ingress

Ip flow egress

Ip flow ingress

3/2 ,ipv4 ipv6 1:1

-	-

S8600

10.3(4)	10.3(4)
10.4	ipv6

IPV6 IPFIX

--	--	--

# 38 TCP

## 38.1 TCP

### 38.1.1 ip tcp path-mtu-discovery

TCP	(PMTU)	ip tcp
path-mtu-discovery	no	
ip tcp path-mtu-discovery [age-timer {minutes   infinite}]		
no ip tcp path-mtu-discovery [age-timer {minutes   infinite}]		



age-timer *minutes*

show tcp pmtu		TCP	PMTU
RGOS 10.4			
RGOS 10.4			

## 38.2 TCP

### 38.2.1 show tcp pmtu

H7D DAH

show tcp pmtu

--	--

TCP PMTU show tcp pmtu

show tcp pmtu

Ruijie# show tcp pmtu

No.	Local Address	Foreign Address	PMTU
[1]	2002::1.18946	2002::2.23	1440
[2]	192.168.195.212.23	192.168.195.112.13560	1440

No.	
Local Address	“.” “2002::2.23” “192.168.195.212.23” “23”



# 39 RIP

## 39.1

### 39.1.1 address-family RIP

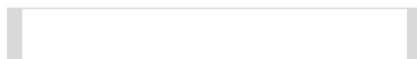
RIP

**address-family**

**no**

**address-family ipv4 vrf *vrf-name***

**no address-family ipv4 vrf *vrf-name***



	<b>exit-address-family</b>	
	<b>ip vrf</b>	VRF



	-	-

### 39.1.2 auto-summary (RIP)

RIP

**auto-summary**

**no**

**auto-summary**

**no auto-summary**

	-	-



RIP  
 RIPv1    RIPv2  
 RIP

RIP

RIP

```
Ruijie(config-router)# version 2
Ruijie(config-router)# no auto-summary
```

<b>version</b>	RIP                    v1   v2 v1&v2

-	-

### 39.1.3 bfd all-interfaces (RIP)

```

RIP                    BFD                    RIP                    bfd
all-interfaces                    no
bfd all-interfaces
no bfd all-interfaces

```



	<b>router rip</b>	RIP
	<b>ip rip bfd [disable]</b>	RIP BFD
	-	-

### 39.1.4 default-metric (RIP)

RIP default-metric no

**default-metric** *metric-value*

**no default-metric**

	<i>metric-value</i>	1 16 <i>metric-value</i>	
		16 RGOS	

1

**redistribute**

RIP

RIP

RIP

default-metric

default-metric

default-metric

1

RIP

OSPF

RIP

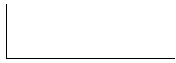
3

```
Ruijie(config)# router rip
```

```
Ruijie(config-router)# default-metric 3
```

```
Ruijie(config-router)# redistribute ospf 100
```

<b>redistribute</b>	



-	-

### 39.1.5 default-information originate (RIP)

RIP default-information  
**originate** **no**  
**default-information originate** [**always**] [**metric** *metric-value*] [**route-map** *map-name*]  
**no default-information originate** [**always**] [**metric**] [**route-map** *map-name*]

<b>always</b>	RIP
<b>metric</b> <i>metric-value</i>	1-15 <span style="float: right;"><i>metric-value</i></span>
<b>route-map</b> <i>map-name</i>	route-map , route-map



metric 1



RIP

**default-information originate**  
**always** RIP **show**  
**ip rip database** RIP  
RIP **route-map** **set**  
**metric**  
**metric** **route-map**  
**set metric** **metric** RIP

```

RIP
r ip default-network
default-information originate RIP

```

```

RIP
Ruijie(config-router)# default-information originate always

```

<b>ip rip default-information</b>	
<b>redistribute</b>	RIP

```


```

-	-

### 39.1.6 distance

RIP **distance** **no**

**distance** *distance* [*ip-address wildcard*]

**no distance** [*distance ip-address wildcard*]

G [REDACTED] H7@ (2P1s"X"Ö.u)Ü(w äX1u)ÜÄE"G!5Pyq]5P6<16360EE1350

|

RIP

|

```
          RIP          160,      192.168.12.1
          123
Ruijie(config)# router rip
Ruijie(config-router)# distance 160
Ruijie(config-router)# distance 123 192.168.12.1 0.0.0.0
```

|

-	-

|

|

-	-

### 39.1.7 distribute-list in

```

RIP      FastEthernet 0/0
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)#access-list 10 permit 172.16.0.0 0.0.255.255

```

<b>access-list</b>	
<b>prefix-list</b>	

-	-

### 39.1.8 distribute-list out RIP

#### distribute-list out

no

**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**]

<i>access-list-number</i>   <i>name</i>	
<b>prefix</b> <i>prefix-list-name</i>	
<i>interface</i>	( )
<b>bgp</b>	( ) bgp

---

<b>connected</b>	( )
<b>isis</b> [ <i>area-tag</i> ]	( ) isis <i>area-tag</i> isis
<b>ospf</b> <i>process-id</i>	( ) ospf <i>process-id</i> ospf
<b>rip</b>	( ) rip
<b>static</b>	( )

### 39.1.9 exit-address-family

exit-address-family	
-	-
<b>exit</b>	
<pre>Ruijie(config-router)# address-family ipv4 vrf vpn1 Ruijie(config-router-af)# exit-address-family</pre>	
<b>address-family</b>	
-	-

### 39.1.10 ip rip authentication key-chain

RIP	RIP	ip rip authentication
<b>key-chain</b>	<b>no</b>	
<b>ip rip authentication key-chain</b> <i>name-of-keychain</i>		
<b>no ip rip authentication key-chain</b>		
<i>name-of-keychain</i>	RIP	

┌

┌

┌

**key chain**

RIPv1      RIP      RIPv2

┌

```

Serial 0      RIP      ripchain
Ruijie(config)# interface serial 0/0
Ruijie(config-if)# ip rip authentication key-chain
ripchain
    
```

┌

<b>ip rip authentication mode</b>	RIP
<b>ip rip authentication text-password</b>	RIP      RIP RIPv2      RIP
<b>ip rip receive version</b>	RIP RIP
<b>ip rip send version</b>	RIP RIP
<b>key chain</b>	

┌

┌

-	-

### 39.1.11 ip rip authentication mode

RIP      **ip rip authentication mode**      no  
RIP

**ip rip authentication mode {text | md5}**

**no ip rip authentication mode**

--	--

<b>text</b>	RIP
<b>md5</b>	RIP MD5

┌

┌

RIP	RIP	RIP
RIP		
		MD5
RIPv1	RIP	RIPv2

```

Serial 0      RIP      MD5
Ruijie(config)# interface serial 0/0
Ruijie(config-if)# ip rip authentication mode md5
    
```

<b>ip rip authentication key-chain</b>	RIP	RIP	RIP
		RIPv2	
<b>ip rip authentication text-password</b>	RIP	RIP	RIP
		RIPv2	
<b>key chain</b>			

┌

-	-
---	---

### 39.1.12 ip rip authentication text-password

RIP                      RIP                      **ip rip authentication**  
**text-password**                      **no**

**ip rip authentication text-password** *password-string*

**no ip rip authentication text-password**

<i>password-string</i>	1 16

┌

┌

┌

┌

```

RIP
RIPv1      RIP          RIPv2
Serial 0   RIP          ruijie
Ruijie(config)# interface serial 0/0
Ruijie(config-if)# ip rip authentication text-password ruijie
    
```

┌

<b>ip rip authentication mode</b>	RIP
<b>ip rip authentication key-chain</b>	RIP          RIP RIPv2    RIP

┌

┌

10.4(1)	

**39.1.13 ip rip bfd**

```

RIP          BFD          ip rip
bfd [disable] no          ip rip bfd
ip rip bfd [disable]
no ip rip bfd
    
```

┌

<b>disable</b>	RIP

RIP

---



RIP

BFD

┌

┌

```

ip rip default-information RIP default-information
originate
r ip rip default-information RIP
    
```

┌

```

ethernet0/0
Ruijie(config)# interface ethernet 0/0
Ruijie(config-if)# ip rip default-information only
    
```

┌

default-information originate	RIP

┌

┌

-	-

### 39.1.15 ip rip receive enable

RIP  
no

RIP

RIP

ip rip receive enable

ip rip receive enable

no ip rip receive enable

┌

-	-

┌

RIP

┌

┌

RIP

default no RIP

Fastethernet 0/0                      RIP

Ruijie(config)# **interface fastethernet 0/0**

Ruijie(config-if)# **no ip rip receive enable**



	<b>version</b>	RIP
	-	-

### 39.1.17 ip rip send enable

	RIP	RIP	RIP	ip rip send enable
	no	RIP	RIP	
	<b>ip rip send enable</b>			
	<b>no ip rip send enable</b>			
		RIP		
		RIP	default	no RIP
		Fastethernet 0/0	RIP	
	Ruijie(config)# <b>interface fastethernet 0/0</b>			
	Ruijie(config-if)# <b>no ip rip send enable</b>			
	<b>ip rip receive enable</b>			RIP
	<b>passive-interface</b>			RIP



### 39.1.19 ip rip send version

RIP    RIP    ip rip receive

**version                          no**

**ip rip send version [1] [2]**

**no ip rip send version**

<b>1</b>	RIPv1
<b>2</b>	RIPv2

**version**

**no ip rip split-horizon**

-	-

┌

┌

```

IP
X.25
IP
RIP
show ip rip neighbor
RIP

```

```

Fastethernet 0/0 RIP
Ruijie(config)# interface fastethernet 0/0
Ruijie(config-if)# no ip rip split-horizon

```

<b>neighbor RIP</b>	RIP IP
<b>Validate-update-source</b>	RIP

┌

-	-

**39.1.21 ip rip summary-address**

```

RIP ip rip
summary-address

```

<i>ip-address</i>	IP
<i>ip-network-mask</i>	IP

RIP

**ip rip summary-address**

RIP

```

RIPv2
172.16.0.0/16
FastEthernet 1/0
Ruijie(config)# interface FastEthernet 1/0
Ruijie(config-if)# ip rip summary-address 172.16.0.0 255.255.0.0
Ruijie(config-if)# 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
    
```

<b>auto-summary</b>	RIP

--	--



└───

└───

└───

RIP                      *network-number*   *wildcard*

*wildcard*              RGOS

                                        RIP

                                        RIP

RIP

RIP

RIP

192.168.12.0/24

1 -â

R   I   P

```
RIPv1      IP      255.255.255.255      RIPv2
          224.0.0.9
                                passive-interface
                                RIP
          passive
```

```
                                RIP      192.168.1.2
Ruijie(config)# router rip
Ruijie(config-router)# passive-interface default
Ruijie(config-router)# neighbor 192.168.1.2
```

```

offset
RIP
RIP offset-list offset-list metric offset-list
acl 7 RIP metric 7
Ruijie(config-router)# offset-list 7 out 7
fastEthernet1/0 acl 8 RIP
metric 7
Ruijie(config-router)# offset-list 7 in 7
Ruijie(config-router)# offset-list 8 in 7 fastEthernet 1/0

```

-	-

-	-

### 39.1.26 output-delay

```

RIP
output-delay no
output-delay delay
no output-delay

```

<i>delay</i>	<8-50>

```

RIP 512 25

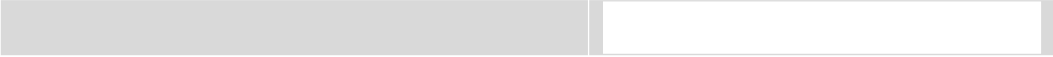
```

25

**output-delay**

```
rip receive enable
```

```
passive ethernet0/0 passive  
Ruijie(config-router)# passive-interface default  
Ruijie(config-router)# no passive-interface ethernet 0/0
```



<b>metric</b> <i>metric-value</i>	metric	metric	metric-value
<b>route-map</b> <i>route-map-name</i>		1-16	

```

        OSPF
        ISIS          level-2
                metric 1
        route-map

```

RIP

RIP

1<sub>i</sub> Ú Ôž T x

### 39.1.29 router rip

	RIP	router rip
no	RIP	
router rip		
no router rip		
	-	-
	RIP	
	RIP	<b>async default routing</b>
	Ruijie(config)# <b>router rip</b> Ruijie(config-router)#	RIP
	<b>network (RIP)</b>	RIP
	-	-

### 39.1.30 timers basic

	RIP	timers basic	no
	<b>timers basic</b> <i>update invalid flush</i>		
	<b>no timers basic</b>		

	<i>update</i>		<i>update</i>	<i>invalid</i>	<i>flush</i>
			30		

*invalid*

RIP

-	-
---	---

### 39.1.31 validate-update-source

RIP

**validate-update-source no**

**validate-update-source**

**no validate-update-source**

-	-
---	---

└──

└──

RIP

IP

RIP

RIP

**validate-update-source**

ip unnumbered RIP

**validate-update-source**

└──  
└──

Ruijie(config)# **router rip**

Ruijie(config-router)# **no validate-update-source**

<b>ip rip split-horizon</b>	RIP
<b>ip unnumbered</b>	IP
<b>neighbor (RIP)</b>	RIP IP

└──

-	-
---	---

### 39.1.32 version (RIP)

RIP

version

no

version {1 | 2}

no version

1	RIP	1
2	RIP	2

RIPv1 RIPv2 RIPv1

RIP ip rip receive version ip rip send  
**version** RIP RIP

RIP 2  
 Ruijie(config)# **router rip**  
 Ruijie(config-router)# **version 2**

<b>ip rip receive version</b>	RIP RIP
<b>ip rip send version</b>	RIP RIP
<b>show ip rip</b>	<b>rip</b>

-	-
---	---

## 39.2

## 39.2.1 show ip rip

RIP

show ip rip

show ip rip [vrf vrf-name]

vrf vrf-name	VRF	RIP
--------------	-----	-----

```

┌
└

```

```

┌
└

```

rip	RIP	metric	distance	rip
VRF	VRF	VRF	VRF-id	

```

1
RIP
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 1/1    2     2
FastEthernet 1/0    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)

2
vrf          RIP
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

```



```

192.168.1.0/24    auto-summary
192.168.1.0/30    directly connected, Loopback 3
192.168.1.8/30   directly connected, FastEthernet 0/0
192.168.121.0/24 auto-summary
192.168.121.0/24 redistributed
[1] via 192.168.2.22, FastEthernet 0/1
    2                RIP                192.168.121.0/24

```

```

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
    3                RIP

```

```

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

```

<b>show ip rip</b>	

-	-

### 39.2.3 show ip rip external

RIP

**show ip rip external**

```

show ip rip external [bgp | connected | isis [process-name] | ospf <1-65535> | static]
[vrf vrf-name]

```

<b>bgp   connected   isis   ospf   static</b>	

<i>vrf vrf-name</i>	VRF	RIP
<i>process-name</i>		ISIS
<1-65535>		OSPF

## RIP

```
Ruijie# show ip rip external connected
```

```
Protocol connected route:
```

```
[connected] 1.0.0.0/8 metric=0
```

```
nhop=0.0.0.0, if=2
```

```
[connected] 3.0.0.0/8 metric=0
```

```
nhop=0.0.0.0, if=16391
```

```
[connected] 4.4.0.0/16 metric=0
```

```
nhop=0.0.0.0, if=16388
```

```
[connected] 5.0.0.0/8 metric=0
```

```
nhop=0.0.0.0, if=16386
```

```
[connected] 192.168.195.0/24 metric=0
```

```
nhop=0.0.0.0, if=1
```

<b>vrf vrf-name</b>	VRF RIP

RIP

RIP

## RIP

```

Ruijie# show ip rip interface
FastEthernet 1/0 is up, line protocol is up
  Routing Protocol: RIP
    Receive RIPv2 packets only
    Send RIPv2 packets only
    Passive interface: Disabled
    Split horizon: Enabled
    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
      RIP   BFD           BFD   :

```

```

Ruijie#show ip rip interface
VLAN 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
    Passive interface: Disabled
    Split horizon: Enabled

```

```
BFD: Enabled
V2 Broadcast: Disabled
Multicast registe: Registered
Interface Summary Rip:
  Not Configured
IP interface address:
  2.2.2.111/24
```

<b>show ip rip</b>	

-	-

# 40 OSPF

## 40.1

### 40.1.1 area

```
no OSPF
area 4 0
```

## OSPF

---

	10.4(1)	

### 40.1.2 area authentication

OSPF  
OSPF

**area authentication**

**no**

**area** *area-id* **authentication** [*message-digest*]

**no area** *area-id* **authentication**

5	<i>area-id</i>	2	OSPF	IP

## OSPF

---

<b>ip ospf authentication-key</b>	OSPF
<b>ip ospf message-digest-key</b>	OSPF MD5
<b>area virtual-link</b>	

```
Ruijie(config-router)# area 1 default-cost 50
```

<b>area stub</b>	OSPF
<b>area nssa</b>	OSPF      NSSA

-	-

#### 40.1.4 area filter-list

ABR

area filter-list efix-name]m[680.48 ref66066.64 0 (in)FE>Tj/TT1 1 Tf-0.003 Tc 0302

	-	-
	-	-

### 40.1.5 area nssa

OSPF NSSA NSSA NSSA **area nssa** **no**

**area** *area-id* **nssa** [ **no-redistribution**] [ **default-information-originate** [ **metric** *value* | **metric-type** <1-2>]] [ **no-summary**]

**no area** *area-id* **nssa** [ **no-redistribution**] [ **default-information-originate**] [ **no-summary**]

<i>area-id</i>	NSSA
<b>no-redistribution</b>	NSSA ABR NSSA
<b>default-information-originate</b>	7 LSA NSSA NSSA ABR ASBR
<b>metric</b> <i>value</i>	LSA metric 0-16777214
<b>metric-type</b> <1-2>	LSA E-1 E-2
<b>no-summary</b>	nssa (ABR) summary LSAs Type-3 LSA

NSSA

**default-information-originate** Type-7 LSA NSSA  
ABR ASBR ABR Type-7

LSA	ASBR	(	ABR)			Type-7
LSA						
<b>no-redistribution</b>	ASBR		OSPF	redistribute		
NSSA			NSSA	ASBR	ABR	
			NSSA			
	NSSA			LSA	ABR	
no-summary		ABR	NSSA	summary LSAs	Type-3 LSA	
<b>area default-cost</b>			NSSA	ABR		
		NSSA				NSSA
	1					



```

OSPF
no
area area-id stub [no-summary]
no area area-id stub [no-summary]
    
```

area-id	STUB
no-summary	ABR ABR

```

|
|
|
    
```

```

OSPF          area stub      ABR
(LSA) 1      1      LSA 2    2      LSA 3    3
LSA          OSPF
ABR          OSPF
          ABR      area stub      no-summary
          ABR
OSPF          area stub  area default-cost
          area stub      area default-cost      ABR
area default-cost
    
```

```

1
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
    
```

area default-cost	STUB OSPF

```

|
|
    
```

--	--



# OSPF

<b>message-digest</b>	MD5
<b>null</b>	

**dead-interval** 40  
**hello-interval** 10  
**retransmit-interval** 5  
**transmit-delay** 1

OSPF

ABR ABR Stub Area  
NSSA  
*router-id* OSPF *router-id* **show ip ospf**  
**neighbor** Loopback  
**area virtual-link** OSPF  
**area authentication**

1 1 2.2.2.2

Ruijie(config)# **router ospf 1**

Ruijie(config-router)# **area 0.0.0.0** **authentication** **md5** **key-chain TC2\_(ro/C253.j/T10-rout**

**OSPF**



### 40.1.11 clear ip ospf process

OSPF

**clear ip ospf [*process-id*] process**

process-id	OSPF OSPF OSPF

┌

RFC2328

┌

┌

OSPF

┌

OSPF 1

Ruijie# **clear ip ospf 1 process**

┌

-	-

┌

┌

-	-

### 40.1.12 compatible rfc1583

AS

RFC1583

RFC2328

**compatible rfc1583**

**no compatible rfc1583**

--	--

## OSPF

	-	-
	RFC1583	
	rfc 2328	
	Ruijie(config)# <b>router ospf 1</b>	
	Ruijie(config-router)# <b>no compatible rfc1583</b>	
	<b>show ip ospf</b>	ospf
	-	-

### 40.1.13 default-information originate OSPF

**originate**                      OSPF                      **default-information**  
**no**

**default-information originate** [always] [metric *metric*] [metric-type *type*] [route-map *map-name*]

**no default-information originate** [always] [metric] [metric-type *type*] [route-map *map-name*]

<b>always</b>	OSPF
<b>metric</b> <i>metric</i>	0-16777214

<b>metric-type</b> <i>type</i>	2	1	OSPF	1
--------------------------------	---	---	------	---

|

|

-	-

### 40.1.14 default-metric

OSPF default-metric  
no

**default-metric** *metric*

**no default-metric**

|

<i>metric</i>	OSPF 1-16777214

|

20

|

|

**default-metric** **redistribute**  
**default-metric** **default-information originate** OSPF

|

OSPF 50

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 192.168.12.0
Ruijie(config-router)# version 2
Ruijie(config-router)# exit
Ruijie(config)# router ospf
Ruijie(config-router)# network 172.16.10.0 0.0.0.255 area 0
Ruijie(config-router)# default-metric 50
Ruijie(config-router)# redistribute rip subnets
```

|

--	--

<b>redistribute</b>	
<b>show ip ospf</b>	ospf
-	

### 40.1.15 discard-route

discard                      no                      discard

**discard-route {internal|external}**

**no discard-route {internal|external}**

<b>internal</b>	discard	area range
<b>external</b>	summary-address	discard

discard

ABR ASBR discard

area range discard

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# no discard-route internal
```

<b>area range</b>	OSPF
<b>summary-address</b>	OSPF

|

|

-	-

### 40.1.16 distance ospf

OSPF

**distance** {*distance* | **ospf** { *intra-area distance* | *inter-area distance* | **external distance** }}

**no distance** [**ospf**]

|

<i>distance</i>	1-255
<b>intra-area distance</b>	1-255
<b>inter-area distance</b>	1-255
<b>external distance</b>	1-255

|

```

110
      110
      110
      110
    
```

|

OSPF

|

OSPF

|

```

                                OSPF                160
Ruijie(config)# router ospf 1
Ruijie(config-router)# distance ospf external 160
    
```

--	--



## 40.1.18 distribute-list out

### redistribute

**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**]

<i>access-list-number</i>   <i>name</i>	acl
<b>prefix</b> <i>prefix-list-name</i>	prefix-list
<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>	

```

distribute-list out redistribute route-map OSPF
redistribute
ACL prefix-list
ACL , prefix-list

```

```

Ruijie(config)# router ospf 1
Ruijie(config-router)# redistribute static subnets
Ruijie(config-router)# distribute-list 22 out static
Ruijie(config-router)# distribute-list prefix jjj out static
% Access-list filter exists, please de-config first

```

<b>distribute-list in</b>	LSA
<b>redistribute</b>	



### 40.1.20 enable traps

OSPFv2                      16    TRAP                      4  
 TRAP    no    TRAP

**enable traps** [error [ifauthfailure | ifconfigerror | ifrxbadpacket | virtifauthfailure | virtifconfigerror | virtifrxbadpacket] | lsa [lsdbapproachoverflow | lsdboverflow | maxagelsa | originatelsa] | retransmit [iftxretransmit | virtiftxretransmit] | state-change [ifstatechange | nbrstatechange | virtifstatechange | virtnbrstatechange]]

**no enable traps** [error [ifauthfailure | ifconfigerror | ifrxbadpacket | virtifauthfailure | virtifconfigerror | virtifrxbadpacket] | lsa [lsdbapproachoverflow | lsdboverflow | maxagelsa | originatelsa] | retransmit [iftxretransmit | virtiftxretransmit] | state-change [ifstatechange | nbrstatechange | virtifstatechange | virtnbrstatechange | restartstatuschange | nbrrestarthelperstatuschange | virtnbrrestarthelperstatuschange]]

<b>error</b>	error traps error traps <b>ifauthfailure</b> <b>ifconfigerror</b> <b>ifrxbadpacket</b> <b>virtifauthfailure</b> <b>virtifconfigerror</b> <b>virtifrxbadpacket</b>
<b>lsa</b>	lsa traps lsa traps <b>lsdbapproachoverflow</b> LSA <b>lsdboverflow</b> LSA <b>maxagelsa</b> LSA <b>originatelsa</b> LSA
<b>retransmit</b>	retransmit traps retransmit traps <b>iftxretransmit</b> <b>virtiftxretransmit</b>



OSPF (graceful restart GR) graceful-restart  
 graceful-restart grace-period grace period  
 no

graceful-restart [grace-period *grace-period*]

no graceful-restart [grace-period]

<b>grace-period</b>	grace-period
<i>grace-period</i>	GR OSPF 1-1800

GR Restart  
 Grace-period 120s

OSPF OSPF OSPF OSPF GR  
 OSPF OSPF  
**graceful-restart GR 120 graceful-restart grace-period**

OSPF 1 GR GR  
 Ruijie(config)# **router ospf 1**  
 Ruijie(config-router)# **graceful-restart**  
 Ruijie(config-router)# **graceful-restart grace-period 60**

<b>graceful-restart helper</b>	OSPF

-	-

### 40.1.22 graceful-restart helper

OSPF (GR helper) graceful-restart helper  
no

**graceful-restart helper {disable | {strict-lsa-checking | internal-lsa-checking}}**

**no graceful-restart helper {disable | {strict-lsa-checking | internal-lsa-checking}}**

<b>disable</b>		
<b>strict-lsa-checking</b>	GR Helper	types 1-5,7 LSA
	GR Helper	
<b>internal-lsa-checking</b>	GR Helper	types 1-3 LSA
	GR Helper	

types 1- 6Ñ ođ!À™1 w q 1 •7U ~ý„Zø^cđ À 8'c ÄÄ on ðÀl@Ñi0KÈEà”z5\$  
Ä 5%Y }hñ ja~A Ä

<b>graceful-restart</b>	OSPF
-	-

### 40.1.23 ip ospf authentication

no

**ip ospf authentication [message-digest | null]**

**no ip ospf authentication**

<b>message-digest</b>	MD5
<b>null</b>	

,

,

**no**

**null**

FastEthernet 0/0 OSPF MD5

```
Ruijie(config)# interface fastethernet 0/0
Ruijie(config-if)# ip address 172.16.10.0 255.255.255.0
Ruijie(config-if)# ip ospf authentication message-digest
```

<b>area authentication</b>	OSPF
<b>ip ospf authentication-key</b>	OSPF
<b>ip ospf message-digest-key</b>	OSPF MD5

┌

┌

-	-

### 40.1.24 ip ospf authentication-key

OSPF  
no

**ip ospf authentication-key**

**ip ospf authentication-key** *key*

**no ip ospf authentication-key**

┌

<i>Key</i>	8

┌

┌

**ip ospf authentication-key**

OSPF

OSPF

OSPF

**area authentication**

**ip ospf authentication**

,

┌  
Ruijie(config)#  
Ruijie(config-if)#  
Ruijie(config-if)#

FastEthernet 0/0

OSPF

ospfauth

**interface fastethernet 0/0**

**ip address 172.16.10.0 255.255.255.0**

**ip ospf authentication-key ospfauth**

┌

<b>area authentication</b>	OSPF
<b>ip ospf authentication</b>	

┌

┌

-	-

### 40.1.25 ip ospf bfd

```

      OSPF          BFD          ip
ospf bfd [disable]  no          ip ospf bfd
ip ospf bfd [disable]
no ip ospf bfd
    
```

┌

<b>disable</b>	OSPF      BFD

┌

OSPF                  BFD

┌

**bfd all-interfaces**

"

OSPF

	-	-
--	---	---

### 40.1.26 ip ospf cost

OSPF	OSPF	ip ospf cost
no		
ip ospf cost cost		
no ip ospf cost		
cost	OSPF	

/Bandwidth	100Mbps
------------	---------

--	--	--

OSPF	100Mbps/Bandwidth	Bandwidth
bandwidth		
OSPF		
64K	cost	1562
E1	cost	48
10M	cost	10
100M	cost	1
ip ospf cost	OSPF	

0\_0 1 Tf0 Tc 2.958 0 006651C4>Tj/TT1 1 Tf1 0 Td( )Tj/C2\_0 1 TTT3.0016 Tc 7.20021 T

OSPF

40.1.27 ip

no

OSPF  
no

ip ospf dead-interval

ip ospf dead-interval *seconds*

no ip ospf dead-interval

<i>seconds</i>	1-65535

ip ospf hello-interval 4

```

OSPF          Hello          OSPF
Hello         4              hello
                OSPF
                hello
    
```

```

                serial 1/0      OSPF          30
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip address 172.16.10.1 255.255.255.0
Ruijie(config-if)# encapsulation ppp
Ruijie(config-if)# ip ospf dead-interval 30
    
```

ip ospf hello-interval	OSPF Hello

-	-

### 40.1.29 ip ospf disable all

ospf



```

    10
  PPP HDLC      10
                10
                X.25  30
  
```

```

hello          hello          OSPF
                        hello
                        hello
  
```

```

                serial 1/0      OSPF      Hello          15
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip address 172.16.10.1 255.255.255.0
Ruijie(config-if)# encapsulation ppp
Ruijie(config-if)# ip ospf hello-interval 15
  
```

<b>ip ospf dead-interval</b>	OSPF

-	-

### 40.1.31 ip ospf message-digest-key

```

    OSPF      MD5          ip ospf message-digest-key
no          OSPF      MD5
  
```

```

ip ospf message-digest-key key-id md5 key
no ip ospf message-digest-key
  
```

<i>key</i>	16
<i>key-id</i>	

MD5

**ip ospf message-digest-key**

OSPF

OSPF

OSPF

**area authentication  
ip ospf authentication**

RGOS

MD5  
OSPF MD5

OSPF

FastEthernet 0/0

OSPF

hello5

Ruijie(config)# **interface Serial 1/0**

Ruijie(config-if)# **ip address 172.16.24.2 255.255.255.0**

Ruijie(config-if)# **ip ospf authentication message-digest**

Ruijie(config-if)# **ip ospf message-digest-key 10 md5 hello10**

Ruijie(config-if)# **ip ospf message-digest-key 5 md5 hello5**

Ruijie(config)# **interface Serial1/0**

Ruijie(config-if)# **no ip ospf message-digest-key 10 md5 hello10**

<b>area authentication</b>	OSPF
<b>ip ospf authentication</b>	

-	-

**OSPF**

**OSPF**

```

                                X.25                                IP
broadcast

1
Ruijie(config)# interface Serial1/0
Ruijie(config-if)# ip address 172.16.24.4 255.255.255.0
Ruijie(config-if)# encapsulation frame-relay
Ruijie(config-if)# ip ospf network broadcast

2

Ruijie(config)# interface Serial1/0
Ruijie(config-if)# ip address 172.16.24.4 255.255.255.0
Ruijie(config-if)# encapsulation frame-relay
Ruijie(config-if)# ip ospf network point-to-multipoint

3                                DR/RDR

                                DR/BDR
Ruijie(config)# interface Serial1/0
Ruijie(config-if)# ip address 172.16.24.4 255.255.255.0
Ruijie(config-if)# encapsulation frame-relay
Ruijie(config-if)# ip ospf network broadcast
Ruijie(config-if)# ip ospf priority 0
    
```

<b>dialer map ip</b>	IP	
<b>frame-relay map</b>	IP	DLCI
<b>neighbor OSPF</b>	IP	NBMA
<b>X25 map</b>	IP	X.25

-	-

### 40.1.34 ip ospf priority

OSPF

**ip ospf priority**

**no**

LSU  
**retransmit-interval**                      **no**                      **ip ospf**  
**ip ospf retransmit-interval** *seconds*  
**no ip ospf retransmit-interval**

	LSU	1-65535
<i>seconds</i>		

┌  
└

┌  
└

5

LSU                      LSU                      **ip ospf**  
**retransmit-interval**                      LSU                      LSU  
LSU                      area virtual-link

**no ip ospf transmit delay**

<i>seconds</i>	OSPF LSU 1-65535

1

LSU LSAs Age  
ip ospf transmit delay LSU  
area virtual-link transmit-delay  
RGOS Age 3600 LSA  
LSA

serial1/0 5

Ruijie(config)# **interface serial 1/0** ,Xng@Ag^@a08116E67>6<14iiA

```

                                detail                                Full                                Full

```

```


```

```


```

```

Ruijie(config)# router ospf 1
Ruijie(config-router)# log-adj-changes detail

```

show ip ospf	ospf

```


```

-	-

### 40.1.38 max-concurrent-dd

```

                                DD
max-concurrent-dd <1-65535>
no max-concurrent-dd

```

<1-65535>	DD

```

5

```

```


```

```

                                DD                                OSPF

```

```

                                DD                                4
Ruijie(config)# router ospf 10

```

**OSPF**

```

Hello      OSPF      Hello      Hello
           OSPF      DR/BDR     0         Hello
           0         DR/BDR     DR/BDR     DR/BDR
           Hello
           ,
           ,
           ,
           cost
    
```

```

           OSPF      IP      172.16.24.2
           1         150
Ruijie(config)# router ospf 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
    
```

<b>ip ospf priority</b>	OSPF
<b>ip ospf network</b>	OSPF

-	-

### 40.1.40 network area

```

           OSPF      OSPF      network area
           no       OSPF
network ip-address wildcard area area-id
no network ip-address wildcard area area-id
    
```

<i>ip-address</i>	IP
<i>wildcard</i>	IP            0            1
<i>area-id</i>	OSPF            OSPF            OSPF



## OSPF

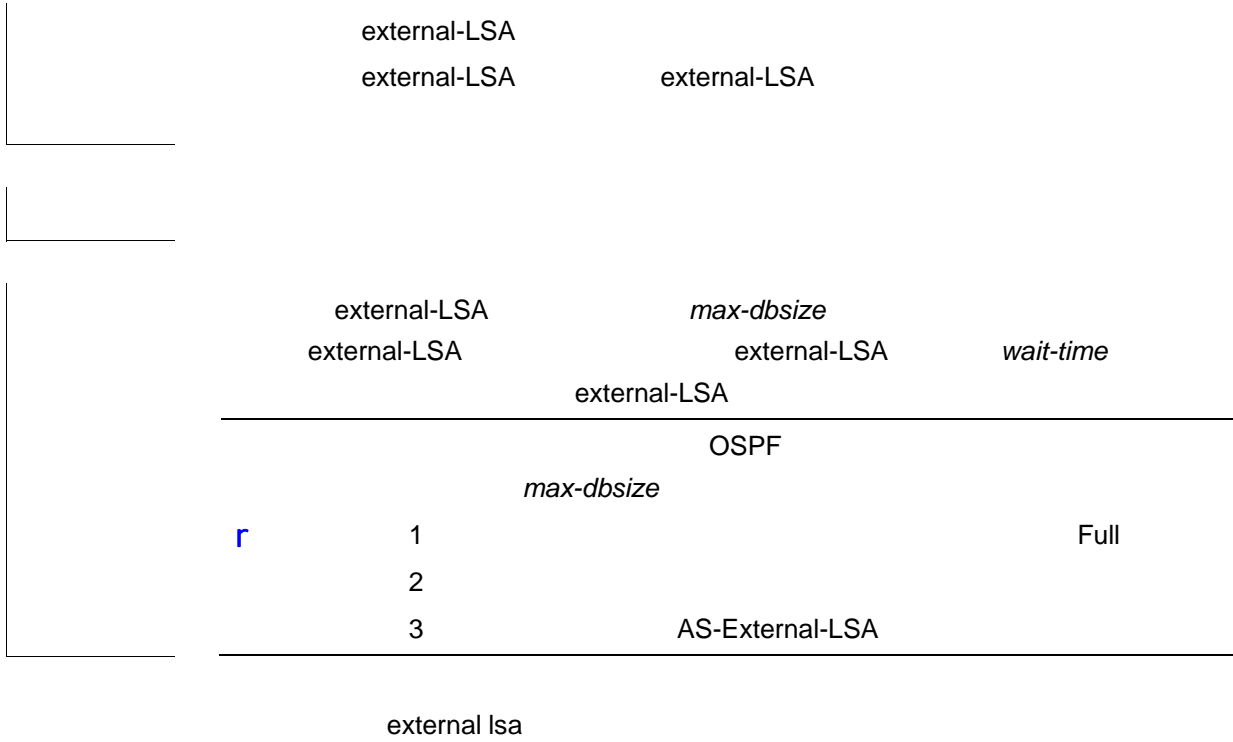
<b>hard   soft</b>	hard LSA	soft LSA	OSPF
	OSPF	LSA	
soft	OSPF	hard	OSPF
	LSA 10	OSPF 10	
	<pre>Ruijie# config terminal Ruijie(config)# router ospf 10 Ruijie(config-router)# overflow database 10 hard</pre>		
	-	-	
	-	-	

### 40.1.42 overflow database external

external LSA

OSPF

---



**OSPF**

---

	no		OSPF	OVERFLOW
		OSPF	OVERFLOW	
	OSPF	OVERFLOW		



**OSPF**

<b>isis</b> <i>[area-tag]</i>	isis	<i>area-tag</i>	isis
<b>ospf</b> <i>process-id</i>	ospf	<i>process-id</i> 1-65535	ospf
<b>rip</b>	rip		
<b>static</b>			
<b>level-1   level-1-2   level-2</b>	level IS-IS	IS-IS	level-2
<b>match</b>		OSPF	OSPF
<b>metric</b> <i>metric-value</i>	OSPF external 2 LSA metric-value	metric	metric 0-16777214
<b>metric-type</b> {1 2}		E-1 E-2	
<b>route-map</b> <i>route-map-name</i>			
<b>subnets</b>			
<b>tag</b> <i>tag-value</i>	OSPF 0-4294967295		tag

OSPF  
 ISIS level-2  
 BGP metric 1 LSA metric 20  
 metric-type E-2  
 route-map

```

                                OSPF  ISIS
                                route-map
                                match
level

```

```

1                                ospf 2  isis isis-001      OSPF
Ruijie(config)# router ospf 1
Ruijie(config-router)# redistribute ospf 2 subnets
Ruijie(config-router)# redistribute ospf 2 match
external 1 internal
Ruijie(config-router)# redistribute isis isis-001
Ruijie(config-router)# redistribute isis isis-001 level-1

2 Show run
router ospf 1
redistribute ospf 2 match external 1 internal subnets
redistribute isis isis-001 level-1-2

```

<b>summary-address</b>	OSPF
<b>default-metric</b>	OSPF

-	-

### 40.1.46 router ospf

```

                                OSPF
                                OSPF
                                router ospf
no                                OSPF

router ospf
router ospf process-id [vrf vrf-name]
no router ospf process-id

```

<i>process-id</i>	OSPF 1
<i>vrf-name</i>	VRF OSPF VRF

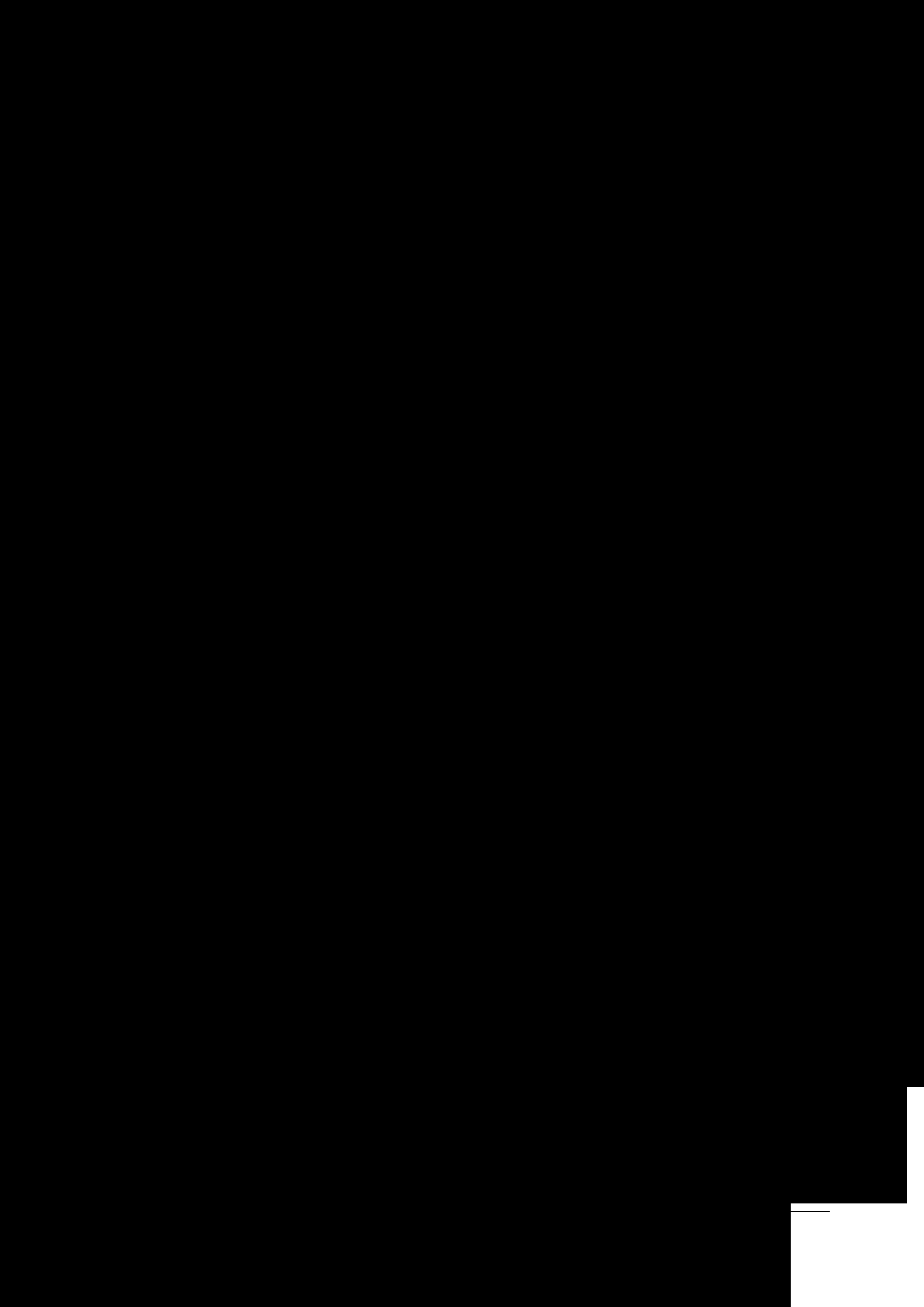
```

    OSPF
    RGOS10.1 OSPF OSPF
    Ruijie(config)# router ospf 10 vrf vpn_1
    show ip protocols
    show ip ospf
    -
    -
  
```

### 40.1.47 router-id

```

    ID, no Router ID
    Router ID
    router-id router-id
    no router-id
    router-id ID, IP
    OSPF IP loopback IP
    IP loopback OSPF IP
  
```





```

LSA (LSA age) LSA LSA
CPU CPU LSA
4
LSA LSA
CPU LSA
LSA 10000 LSA
40 100 10~20
    
```

```

120
Ruijie(config)#router ospf 20
Ruijie(config-router)#timers lsa-group-pacing 120
    
```

<b>show ip ospf</b>	ospf

-	-

### 40.1.50 timers spf

```

OSPF SPF SPF
timers spf no
timers spf spf-delay spf-holdtime
no timers spf
    
```

<i>spf-delay</i>	SPF 0-214748364 ( ) OSPF SPF
<i>spf-holdtime</i>	SPF 0-214748364 ( ) SPF

1 RGOS 10.4 timers throttle spf  
timers spf 5 10

2 RGOS 10.4 timers throttle spf timers spf  
SPF **timers throttle spf** timers  
throttle spf

*spf-delay* *spf-holdtime* OSPF  
CPU

---

r timers spf timers throttle spf

---

OSPF

<i>spf-delay</i>	SPF 1-600000 OSPF SPF <i>spf-delay</i>
<i>spf-holdtime</i>	SPF 1-600000
<i>spf-max-waittime</i>	SPF 1-600000

*spf-delay* 1000  
*spf-holdtime* 5000  
*spf-max-waittime* 10000

*spf-delay* SPF SPF *spf-holdtime* SPF  
SPF *spf-max-waittime*  
SPF  
SPF  
*spf-holdtime*  
*spf-delay* *spf-holdtime* *spf-max-waittime*  
SPF



**show ip ospf**

```
This router is an ASBR (injecting external routing information)
SPF schedule delay 5 secs, Hold time between two SPFs 10 secs
LsaGroupPacing: 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
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 elected
    OSPF   BFD   ,                "BFD is enabled",
Ruijie# show ip ospf
Routing Process "ospf 1" with ID 1.1.1.1
Process uptime is 4 minutes
Process bound to VRF default
Conforms to RFC2328, and RFC1583Compatibility flag is enabled
Supports only single TOS(TOS0) routes
Supports opaque LSA
```

Supports Graceful Restart  
 This router is an ASBR (injecting external routing information)  
 SPF schedule delay 5 secs, Hold time between two SPFs 10 secs  
 LsaGroupPacing: 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 is 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 elected

Router ID	
Process uptime	OSPF router-id 0.0.0.0
Bound to VRF	OSPF VRF

Conforms to RFC2328	RFC2328
RFC1583Compatibility flag	RFC2328 RFC1583 ASBR
Support Tos	TOS0
Supports opaque LSA	opaque-LSA
Graceful-restart	RFC3623 Graceful Restart GR Restart
Graceful-restart helper	RFC3623 Graceful Restart GR Help
Router Type	OSPF normal ABR ASBR
SPF Delay	SPF
SPF-holdtime	SPF
LsaGroupPacing	LSA
Incomming current DD exchange neighbors	exstart incomming
Outgoing current DD exchange neighbors	exstart outgoing
Number of external LSA	LSA
External LSA Checksum Sum	LSA
Number of opaque LSA	opaque-LSA
Opaque LSA Checksum Sum	opaque-LSA
Number of non-default external LSA	external-LSA
External LSA database limit	external-LSA
Exit database overflow state interval	overflow
Database overflow state	®

Number of interfaces in this area							
Number of fully adjacent neighbors in this area	Full						
Number of fully adjacent virtual neighbors through this area	Full						
Area authentication							
SPF algorithm last executed	SPF						
SPF algorithm executed times	SPF						
Number of LSA	LSA						
Checksum Sum	LSA						
NSSA Translator State	<table border="0"> <tr> <td></td> <td>NSSA LSA</td> <td>External LSA</td> </tr> <tr> <td></td> <td>NSSA</td> <td>ABR OSPF</td> </tr> </table>		NSSA LSA	External LSA		NSSA	ABR OSPF
	NSSA LSA	External LSA					
	NSSA	ABR OSPF					
BFD is enabled	OSPF BFD						

-	-



-	-

### 40.2.2 show ip ospf border-routers

```

ABR/ASBR OSPF show ip ospf
border-routers
show ip ospf [process-id] border-routers

```

<i>process-id</i>	ospf



```

show ip route
          ABR  ASBR      OSPF      OSPF
          OSPF      OSPF
    
```

**show ip ospf border-routers**

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

Codes	i I
I	
1.1.1.1	OSPF
[2]	cost
via 10.0.0.1	
FastEthernet 0/1	
ABR, ASBR	ABR ASBR
Area 0.0.0.1	
select	ASBR select

-	-

Ä

LSAs

**show ip ospf** [*process-id area-id*] **database** [*adv-router ip-address* | {*asbr-summary* | *external* | *network* | *nssa-external* | *opaque-area* | *opaque-as* | *opaque-link* | *router* | *summary*} [*link-state-id*] [{*adv-router ip-address* | *self-originate*}] | **database-summary** | *max-age* | *self-originate*]

<i>area-id</i>	
<b>adv-router</b>	
<i>link-state-id</i>	OSPF
<b>self-originate</b>	
<b>max-age</b>	LSA
<b>router</b>	OSPF
<b>network</b>	OSPF
<b>summary</b>	OSPF
<b>asbr-summary</b>	ASBR
<b>external</b>	OSPF
<b>nssa-external</b>	OSPF
<b>opaque-area</b>	LSA
<b>opaque-as</b>	LSA
<b>opaque-link</b>	LSA
<b>database-summary</b>	OSPF LSA

OSPF  
OSPF

```

1      show ip ospf database
Ruijie# show ip ospf database
OSPF Router with ID (1.1.1.1) (Process ID 1)
    
```

Router Link States (Area 0.0.0.0)

Link ID	ADV Router	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 Router	Age	Seq#	CkSum
---------	------------	-----	------	-------

Link ID	
ADV Router	
Age	
Seq#	LSA
Cksum	
Link-Count	
Route	LSA
Tag	

2            **show ip ospf database asbr-summary**

Ruijie# **show ip ospf database asbr-summary**

OSPF Router with ID (1.1.1.35) (Process ID 1)

ASBR-Summary Link States (Area 0.0.0.1)

LS age: 47

Length	
Network Mask	
TOS	TOS 0
Metric	

**3 show ip ospf database external**

```
Ruijie# show ip ospf database external
OSPF Router 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 Router: 1.1.1.1
LS Seq Number: 8000000a
Checksum: 0x7627
Length: 36
```

Network Mask	
Metric Type	
TOS	TOS 0
Metric	
Forward Address	0.0.0.0 IP
External Route Tag	OSPF 32 OSPF

4 **show ip ospf database network**

```
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
```

**show ip ospf database network**

Checksum	
Length	
Network Mask	
Attached Router	

**5 show ip ospf database router**

```
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
```

**show ip ospf database router**

	OSPF
OSPF Router with ID	
Router Link States	
LS age	
Options	
Flag	router
LS Type	
Link State ID	
Advertising Router	
LS Seq Number	
Checksum	

---

Length

Number of Links

TOS	TOS	0
Metric		

**7 show ip ospf database nssa-external**

```
Ruijie# show ip ospf database nssa-external
OSPF Router 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 Router: 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
```

**show ip ospf database nssa-external**

OSPF Router with ID	OSPF
NSSA-external Link States	
LS age	
Options	
LS Type	
Link State ID	
Advertising Router	
LS Seq Number	
Checksum	
Length	
Network Mask	
Metric Type	

TOS	TOS	0
Metric		
NSSA:Forward Address	0.0.0.0	IP
External Route Tag	OSPF	32
	OSPF	

**8 show ip ospf database external**

```
Ruijie# show ip ospf database external
OSPF Router 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 Router: 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
```

**show ip ospf database external**

OSPF Router with ID	OSPF
Type-7 AS External Link States	
LS age	
Options	
LS Type	
Link State ID	
Advertising Router	

**OSPF**

---

LS Seq Number	
Checksum	
Length	
Network Mask	

|

|

-	-

### 40.2.4 show ip ospf interface

OSPF

**show ip ospf interface**

**show ip ospf interface** [*interface-type interface-number*]

|

<i>interface-type</i>	

*interface-number*

BFD :

```
Ruijie# show ip ospf interface fa 1/0
FastEthernet 1/0 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
```

**show ip ospf interface serial 1/0**

	UP	Down
FastEthernet 0/0 State		
Internet Address	IP	
Area	OSPF	
MTU	MTU	
Matching network config	OSPF	network area
Process ID		
Router ID	OSPF	
Network Type	OSPF	
Cost	OSPF	
Transmit Delay is	OSPF	
State	DR/BDR	
Priority		
Designated Router(ID)	DR	
DR's Interface address	DR	

Backup designated router(ID)	BDR
BDR's Interface address	BDR
Time intervals configured	Hello Dead Wait Retransmit
Hello due in	HELLO
Neighbor count	
Adjacent neighbor count	Full
Crypt Sequence Number	md5
Hello received send	HELLO
DD received send	DD
LS-Req received send	LS
LS-Upd received send	LS
LS-Ack received send	LS
Discard	OSPF

-	-

-	-

### 40.2.5 show ip ospf neighbor

OSPF

**show ip ospf neighbor**

**show ip ospf** [*process-id*] **neighbor** [[*detail*] | [[*interface-type interface-number*] [*neighbor-id*]]]

<i>detail</i>	
<i>interface-type interface-number</i>	
<i>neighbor-id</i>	

## OSPF

**show ip ospf neighbor**

```
Ruijie# show ip ospf neighbor
```

```
OSPF process 1, 1 Neighbors, 1 is Full:
```

Neighbor ID	Pri	State	Dead Time	Address	Interface
3.3.3.3	1	Full/BDR	00:00:32	192.88.88.72	FastEthernet 1/0

```
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 1/0
```

```
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
```

```
" BFD session state up"
```

```
Ruijie# show ip ospf neighbor
```

```
OSPF process 1, 1 Neighbors, 1 is Full:
```

Neighbor ID	Pri	State	Dead Time	Address	Interface
3.3.3.3	1	Full/BDR	00:00:32	192.88.88.72	FastEthernet 1/0

```
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 1/0
```

```
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
show ip ospf neighbor
```



OSPF

---

BDR	BDR	BDR	( Hello
	BDR )		
Options	Hello E	0	STUB
		STUB	

**OSPF**

<b>count</b>	<b>OSPF</b>
--------------	-------------

--

--

--

OSPF                      count                      OSPF

Ruijie# **show ip ospf route**

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 1/0

C 192.88.88.0/24 [1] is directly connected, FastEthernet 1/0, Area 0.0.0.1

**show ip ospf route**

codes	
100.0.0.0/24	
[1]	cost
via	

--	--

**show ip ospf [*process-id*] summary-address**

<i>process-id</i>	OSPF	OSPF

└───┘

└───┘

└───┘

NSSA ABR

**show ip ospf summary-address**



OSPF

---

	-	-
--	---	---

--

	-	-



## 41.1.2 address-family ipv4 vrf

```

address-family IPv4 VRF BGP vrf
no
exit-address-family BGP
address-family ipv4 vrf vrf-name
no address-family ipv4 vrf vrf-name

```

vrf-name	vrf

vrf

BGP

<b>unicast</b>	IPv6
<b>multicast</b>	IPV6

BGP

```

    BGP IPv6
IPv6          BGP          BGP IPv6
                IPv6          IPv6

    multicast          BGP          IPV6
      RPF
      BGP          exit-address-family
    
```

```

Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family ipv6
    
```

<b>exit-address-family</b>	

-	-

#### 41.1.4 address-family vpnv4

```

    PE          VPN          address-family VPN
exit-address-family
    
```

BGP

vpn PE vpn  
BGP exit-address-family

```
Ruijie(config)# router bgp 65000  
Ruijie(config-router)# address-family vpnv4
```

<b>exit-address-family</b>	

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# aggregate-address 10.0.0.0 255.0.0.0 as-set
```

<b>router bgp</b>	BGP

-	-

### 41.1.6 aggregate-address IPv6

BGP IPv6 **no**

**aggregate-address** *ipv6-network/length* {**as-set**|**summary-only**}

**no aggregate-address** *ipv6-network/length* {**as-set**|**summary-only**}

<i>ipv6-network</i>	
<i>length</i>	
<b>as-set</b>	AS
<b>summary-only</b>	

BGP IPv6

BGP  
**aggregate-address summary-only**

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family ipv6
Ruijie(config-router-af)# aggregate-address 2008::/90 as-set
```

<b>router bgp</b>	BGP

```

┌
└

```

-	-

### 41.1.7 bgp always-compare-med

BGP Multi Exit Discriminator MED **no**

**bgp always-compare-med**

**no bgp always-compare-med**

```

┌
└

```

-	-

```

┌
└

```

AS MED

```

┌
└

```

BGP

```

┌
└

```

AS MED  
AS MED AS MED  
MED IGP

```

┌
└

```

```

Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp always-compare-med

```

<b>show ip bgp</b>	BGP
<b>bgp bestpath med confed</b>	AS MED
<b>bgp bestpath med missing-as-worst</b>	MED
<b>bgp deterministic-med</b>	AS

L

L

-	-

### 41.1.8 bgp bestpath as-path ignore

AS

no

ASPATH

ASPATH

**no**

**bgp bestpath compare-confed-aspash**

**no bgp bestpath compare-confed-aspash**

|



	-	-

EBGP peers

BGP

EBGP peers

router ID

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp bestpath compare-routerid
```

<b>show ip bgp</b>		BGP
<b>bgp router-id</b>		BGP Router ID

	-	-

### 41.1.11 bgp bestpath med confed

no

AS MED

**bgp bestpath med confed [missing-as-worst]**

**no bgp bestpath med confed [missing-as-worst]**

<b>missing-as-worst</b>		MED

AS MED

BGP

AS MED

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp bestpath med confed
```

<b>show ip bgp</b>	BGP		
<b>bgp bestpath always-compare-med</b>	AS	MED	
<b>bgp bestpath med missing-as-worst</b>			MED
<b>bgp deterministic-med</b>			AS

-	-		
---	---	--	--

### 41.1.12 bgp bestpath med missing-as-worst

MED

no

**bgp bestpath med missing-as-worst**

**no bgp bestpath med missing-as-worst**

-	-		
---	---	--	--

MED MED 0

BGP

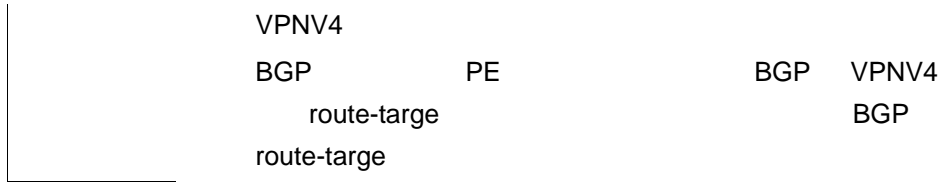
MED

MED

MED

MED

0



	<b>bgp cluster-id</b>	
	<b>neighbor route-reflector-client</b>	
	-	-

### 41.1.15 bgp cluster-id

no

**bgp cluster-id** *cluster-id*

**no bgp cluster-id** [*cluster-id*]

	<i>cluster-id</i>	IP 4 ( ip )

router-id

BGP

router ID

ID

Ruijie(config)# **router bgp** 65000

Ruijie(config-router)# **bgp cluster-id** 10.0.0.1

	<b>bgp client-to-client reflection</b>	
	<b>neighbor route-reflector-client</b>	

┌

-	-

### 41.1.16 bgp confederation identifier

AS no

**bgp confederation identifier** *as-number*

**no bgp confederation identifier**

┌

<i>as-number</i>	AS 1..65535

┌

┌ BGP

┌

IBGP

ID( AS )  
AS

AS BGP speakers

IBGP BGP speaker EBGP MED

BGP speakers EBGP

┌

Ruijie(config-router)# **bgp confederation identifier** 65000

┌

<b>bgp confederation peers</b>	AS AS

┌

┌

-	-

### 41.1.17 bgp confederation peers

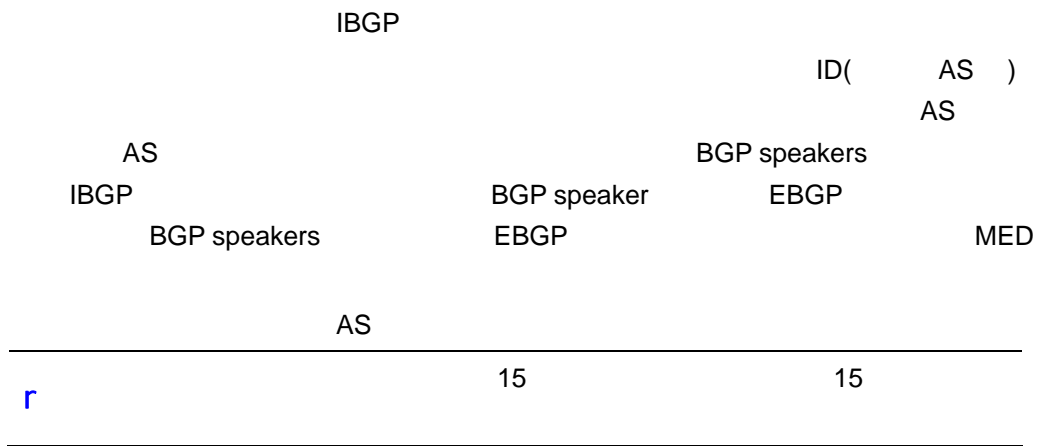
AS AS no AS

**bgp confederation peers as-number [as-number,...]**

**no bgp confederation peers as-number [as-number,...]**

<i>as-number</i>	AS 1..65535

BGP



Ruijie(config-router)# **bgp confederation peers 65000 65100**

<b>bgp confederation identifier</b>	

-	-

### 41.1.18 bgp default ipv4-unicast

address family IPv4 no

**bgp default ipv4-unicast**

**no bgp default ipv4-unicast**

	-	-

ipv4-unicast

BGP

BGP address family ipv4

Ruijie(config-router)# **bgp default ipv4-unicast**

<b>address-family ipv4</b>	IPv4

-	-

**41.1.19 bgp default local-preference**

local-preference no

**bgp default local-preference value**

**no bgp default local-preference**

<i>value</i>	0..4294967295

100

BGP

BGP Local preference IBGP peers  
 Local preference  
 BGP speaker IBGP peers

```
Ruijie(config-router)# bgp default local-preference 200
```

<b>show ip bgp</b>	BGP
<b>bgp bestpath always-compare-med</b>	AS MED
<b>bgp bestpath medconfed</b>	AS MED
<b>bgp bestpath med missing-as-worst</b>	MED

<b>show ip bgp</b>	BGP
<b>bgp bestpath always-compare-med</b>	AS MED
<b>bgp bestpath med confed</b>	AS MED
<b>bgp bestpath med missing-as-worst</b>	MED

-	-

### 41.1.21 bgp enforce-first-as

	AS_PATH	AS	UPDATE
<b>no</b>			
<b>bgp enforce-first-as</b>			
<b>no bgp enforce-first-as</b>			

-	-

BGP	
UPDATE	AS
Ruijie(config-router)# <b>bgp enforce-first-as</b>	

<b>show ip bgp</b>	BGP

BGP

---

	-	-

### 41.1.22 bgp fast-external-fallover

```
BGP                EBGP peer
                   no
```

	-	-

**bgp graceful-restart restart-time** *restart-time*

**no bgp graceful-restart restart-time**

<i>restart-time</i>	GR Restarter	GR Helper	GR Restarter
	1	3600	

120

BGP

	GR Restarter	GR Helper	GR Restarter	GR Helper
GR Restarter			GR Helper	
GR Restarter	BGP	Established	BGP	
BGP				
BGP	Open	GR		GR

```
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
```

<b>bgp graceful-restart</b>	BGP

<b>10.4(2)</b>	

### 41.1.25 bgp graceful-restart stalepath-time

BGP  
 stalepath-time no stalepath-time

bgp graceful-restart

**bgp graceful-restart stalepath-time** *time*

**no bgp graceful-restart stalepath-time**

<i>time</i>	GR stale
	1 3600

360

BGP

```

GR Helper      stalepath-time  GR Helper      GR
Restarter      Restarter  EOR              GR Helper
GR Restarter   Restarter      Stale
GR Helper      GR Restarter
Stale          stalepath-time  Stale
GR Helper      GR
Restarter  EOR
    
```

```

Ruijie(config)# router bgp 500
Ruijie(config-router)# bgp graceful-restart
Ruijie(config-router)# bgp graceful-restart stalepath-time 240
Ruijie(config-router)# no bgp graceful-restart stalepath-time
    
```

<b>bgp graceful-restart</b>	BGP

<b>10.4(2)</b>	

### 41.1.26 bgp log-neighbor-changes

```

debug          BGP          no

bgp log-neighbor-changes
no bgp log-neighbor-changes
    
```

	-	-



BGP

A~

!

!

|

|

Ruijie(config-router)# **bgp nexthop trigger delay 30**

|

<b>bgp nexthop trigger enable</b>	nexthop

|

|

-	-

### 41.1.28 bgp nexthop trigger enable

no

**bgp nexthop trigger enable**

**no bgp nexthop trigger enable**

|

-	-

|

|

BGP            BGP    IPv4/IPv6/VPNv4                            BGP    IPv4 VRF

|

BGP

|

Ruijie(config-router)# **bgp nexthop trigger enable**

|

<b>bgp nexthop trigger delay</b>	

|

-	-

### 41.1.29 bgp redistribute-internal

BGP IBGP IGP RIP OSPF ISIS

**bgp redistribute-internal**

**no bgp redistribute-internal**

-	-

IBGP	IGP	IGP	IGP

BGP	BGP	IPv4/IPv6	BGP	IPv4 VRF	BGP

IBGP	IGP	IGP	IGP

Ruijie(config-router)# **bgp redistribute-internal**

<b>redistribute</b>	

-	-

-	-

### 41.1.30 bgp router-id

BGP ID IP no  
IP

**bgp router-id** *ip-address*

**no bgp router-id** *ip-address*

<i>ip-address</i>	IP

```
Ruijie(config-router)# bgp scan-rib disable
```

<b>bgp scan-time</b>	BGP
-	-

### 41.1.32 bgp scan-time

BGP

**bgp scan-time** *time*

**no bgp scan-time** [*time*]

<i>time</i>	5..60

60

BGP BGP IPv4/IPv6/VPNv4 BGP IPv4 VRF

BGP bgp scan-rib enable

```
Ruijie(config-router)# bgp scan-time 30
```

<b>bgp scan-rib enable</b>	BGP
-	-

### 41.1.33 bgp update-delay

BGP Speaker  
**update-delay** no **bgp update-delay** **bgp**

BGP

**bgp update-delay** *delay-time*

no **bgp update-delay**

	BGP Speaker		
<i>delay-time</i>		0 3600	120
	BGP EOR		1 3600

120

BGP

BGP

1 2 0

**bgp update-delay**



└───

└───

-	-

### 41.1.34 clear bgp all

BGP

**clear bgp all** [*as-number*]

**clear bgp all peer-group** *peer-group-name* [[**soft**] [**in** | **out**]]

<i>as-number</i>	AS
<i>peer-group-name</i>	
<b>in</b>	<b>soft</b>
<b>out</b>	<b>soft</b> BGP speaker
<b>soft</b>	
<b>soft in</b>	
<b>soft out</b>	

2      y

	-	-

### 41.1.35 clear bgp ipv4 unicast

	BGP IPv4	clear ip bgp
	clear ip bgp	clear ip bgp
	clear ip bgp	
	clear ip bgp	BGP IPv4
	-	-

### 41.1.36 clear bgp ipv4 unicast dampening

**clear bgp ipv4 unicast dampening** [*address* [*mask*]]

	<i>address</i>	IP
	<i>mask</i>	

|

|

BGP  
BGP

|

Ruijie# **clear bgp ipv4 unicast dampening 192.168.0.0 255.255.0.0**

|

<b>show ip bgp dampening dampened-paths</b>	
<b>bgp dampening</b>	

|

|

-	-

### 41.1.37 clear bgp ipv4 unicast external

EBGP

**clear bgp ipv4 unicast external [[soft] [in | out]]**

|

<b>in</b>	soft
<b>out</b>	soft BGP speaker
<b>soft</b>	
<b>soft in</b>	
<b>soft out</b>	

|

|

|

BGP

```
Ruijie# clear bgp ipv4 unicast external in
```

<b>clear ip bgp</b>	BGP
<b>show ip bgp neighbors</b>	BGP

-	-

### 41.1.38 clear bgp ipv4 unicast flap-statistics

**clear bgp ipv4 unicast flap-statistics** [*address* [*mask*]]

<i>address</i>	IP
<i>mask</i>	

**dampening**

**clear ip bgp**

```
Ruijie# clear bgp ipv4 unicast flap-statistics
```

<b>bgp dampening</b>	
<b>show ip bgp</b>	BGP

	-	-

### 41.1.39 clear bgp ipv4 unicast peer-group

**clear bgp ipv4 unicast peer-group** *peer-group-name* **[[soft] [in | out]]**

<i>peer-group-name</i>		
<b>in</b>	soft	
<b>out</b>	soft	BGP speaker
<b>soft</b>		
<b>soft in</b>		

BGP IPv6

**clear bgp ipv4 unicast**

<b>clear bgp ipv4 unicast</b>	<b>clear bgp ipv4 unicast</b>

**clear bgp ipv4 unicast**

**clear bgp ipv4 unicast**

<b>clear bgp ipv4 unicast</b>	BGP IPv4

-	-

**41.1.41 clear bgp vpnv4 unicast**

BGP VPNV4

**clear bgp ipv4 unicast**

<b>clear bgp ipv4 unicast</b>	<b>clear bgp ipv4 unicast</b>

**clear bgp ipv4 unicast**

**clear bgp ipv4 unicast**

┌  
└

┌  
└

<b>clear bgp ipv4 unicast</b>	BGP IPv4

┌  
└

┌  
└

-	-

**41.1.42 clear ip bgp**

BGP IPv4

**clear ip bgp** { \* | *as number* } [soft [in | out]]

┌  
└

--	--

\*

BGP

```

inbound peer neighbor soft-reconfiguration
          BGP BGP speaker
          show ip bgp neighbors BGP
          neighbor soft-reconfiguration
inbound
-----
r BGP router
-----

```

```
Ruijie# clear bgp ipv4 unicast *
```

neighbor soft-reconfiguration inbound	BGP session BGP ( )
show ip bgp	BGP

-	-

### 41.1.43 clear ip bgp dampening

IPv4

**clear ip bgp dampening** [*address mask*]

<i>address</i>	IP
<i>mask</i>	

```

BGP BGP
BGP

```

```
Ruijie# clear ip bgp dampening 192.168.0.0 255.255.0.0
```

<b>show ip bgp dampening dampened-paths</b>	
<b>bgp dampening</b>	

-	-

### 41.1.44 clear ip bgp external

IPv4 EBGP

**clear ip bgp external** [[soft] [in | out]]

<b>in</b>	soft
<b>out</b>	soft BGP speaker
<b>soft in</b>	
<b>soft out</b>	

BGP

```
Ruijie# clear ip bgp external in
```

<b>clear ip bgp</b>	BGP
<b>show ip bgp neighbors</b>	BGP

	-	-

### 41.1.45 clear ip bgp flap-statistics

IPv4

**clear ip bgp flap-statistics** [*address* [*mask*]]

<i>address</i>	IP
<i>mask</i>	

|

|

|

**dampening**

**clear ip bgp**

|

Ruijie# **clear ip bgp flap-statistics**



BGP

**table-map**

```
Ruijie# clear ip bgp table-map
```

<b>clear ip bgp</b>	BGP
<b>show ip bgp</b>	BGP

-	-

**41.1.48 clear ip bgp vrf**

vrf

**clear ip bgp vrf** *vrf-name* [\* | *address*] [[**soft**] [**in** | **out**]]

<i>vrf-name</i>	vrf
*	vrf BGP
<i>address</i>	vrf peer BGP
<b>in</b>	<b>soft</b>
<b>out</b>	<b>soft</b> BGP speaker
<b>soft</b>	
<b>soft in</b>	
<b>soft out</b>	

vrf BGP

Ruijie# **clear ip bgp vrf my-vrf in**

<b>clear ip bgp</b>	BGP
---------------------	-----



	-	-
--	---	---

### 41.1.51 distance bgp

BGP

no

**distance bgp** *external-distance internal-distance local-distance*

**no distance bgp** [*external-distance internal-distance local-distance*]

<i>external-distance</i>	EBGP peers	1..255
<i>internal-distance</i>	IBGP peers	1..255

*local-distance*

BGP

|

|

|

IP

|

Ruijie(config-router)# ip as-path access-list hsd deny ^123\$

|

<b>neighbor filter-list</b>	as-path
<b>neighbor distribute-list</b>	

|

|

-	-

### 41.1.54 maximum-prefix

BGP IPv4 BGP IPv6 BGP  
 IPv4 VRF BGP VPNv4

BGP redistribute  
 BGP table overflow  
 overflow  
 show bgp < > summary table  
 bgp clear bgp < > \*  
 overflow maximum-prefix

1 ipv4 multicast BGP  
 Ruijie(config)# **router bgp 65000**  
 Ruijie(config-router)# **address-family ipv4 unicast**  
 Ruijie(config-router-af)# **maximum-prefix 65535**

<b>clear bgp &lt;addressfamily all&gt; *</b>	BGP
<b>show bgp &lt; addressfamily all &gt; summary</b>	BGP

ipv4

BGP IPv4 BGP IPv6 BGP  
IPv4 VRF BGP VPNv4

ipv4

```
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
```



BGP

BGP

```
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
```



IBGP EBGP

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 100
Ruijie(config-router)# address-family ipv4 vrf vpn1
Ruijie(config-router-af)# neighbor 10.0.0.1 allowas-in
```

<b>router bgp</b>	BGP
<b>neighbor remote-as</b>	BGP

-	-

### 41.1.58 neighbor as-override

PE AS no

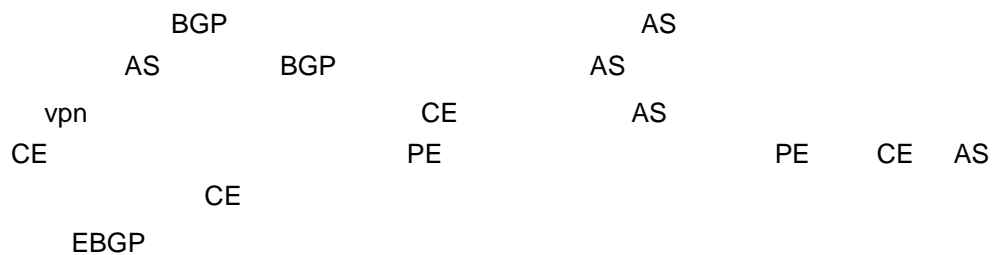
**neighbor** {*peer-address* | *peer-group-name*} **as-override**

**no neighbor** {*peer-address* | *peer-group-name*} **as-override**

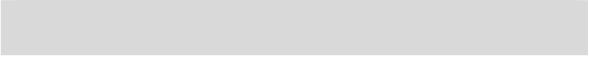
<i>peer-address</i>	
<i>peer-group-name</i>	32

as-override

BGP BGP IPv4 BGP IPv4VRF



```
Ruijie(config)# router bgp 60  
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 100  
Ruijie(config-router)# address-family ipv4 vrf vpn1  
Ruijie(config-router-af)# neighbor 10.0.0.1 as-override
```



```
Ruijie(config-router)# neighbor 10.1.1.1 remote-as 80  
Ruijie(config-router)# neighbor 10.1.1.1 default-originate
```



---

<b>router bgp</b>	BGP
<b>neighbor remote-as</b>	BGP ( )

---

---

-	-

---

### 41.1.61 neighbor distribute-list

BGP    ACL    no  
ACL

**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**}

---

--	--

---

```
Ruijie(config-router)# neighbor
```

```
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
```

<b>router bgp</b>	BGP
<b>neighbor remote-as</b>	BGP

-	-

### 41.1.63 neighbor filter-list

BGP

no

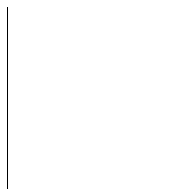


	Local AS	Local AS	
	Local AS	BGP	
AS-PATH	Local AS		Local AS
AS-PATH	350E>-6<stj 1yCD>B&15F&14E00&E-0.00410T2 0.D9 0)Zp/5T0 1 Tf 1.677 2.34		

<i>peer-group-name</i>	32
<i>maximum</i>	
<i>threshold</i>	
<b>warning-only</b>	BGP



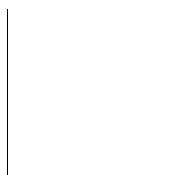
BGP                  BGP   IPv4                          BGP   IPv6                  BGP  
 IPv4 VRF



BGP    BGP  
                                  warning-only



```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 maximum-prefix 1000
```



<b>router bgp</b>	BGP
<b>neighbor remote-as</b>	BGP



-	-

### 41.1.66 neighbor next-hop-self

BGP    BGP speaker  
**no**

**neighbor** {*peer-address* | *peer-group-name*} **next-hop-self**

**no neighbor** {*peer-address* | *peer-group-name*} **next-hop-self**



--	--

*peer-address*

IPv4

	<b>next-hop-unchanged</b>	BGP
--	---------------------------	-----

EBGP

BGP      BGP IPV4      BGP VPN

Neighbor next-hop-unchanged      EBGP

neighbor next-ho-self

VPN      VPN      OptionC      Multihop MP-EBGP

VPN      PE

Multihop MP-EBGP      VPN

PE      EBGP  
VPN

VPN



### 41.1.69 neighbor peer-group (assigning members)

BGP

BGP

no

**B**

|

|

-	-

### 41.1.70 neighbor peer-group (creating)

BGP

no

**neighbor** *peer-group-name* **peer-group**

**no neighbor** *peer-group-name* **peer-group**

|

<i>peer-group-name</i>	32

|

BGP

|

BGP

BGP

### 41.1.71 neighbor prefix-list

BGP  
no prefix-list

**neighbor** {*peer-address* | *peer-group-name*} **prefix-list** *prefix-list-name* {**in** | **out**}

**no neighbor** {*peer-address* | *peer-group-name*} **prefix-list** {**in** | **out**}

<i>peer-address</i>	IPv4 IPv6
<i>peer-group-name</i>	32
<i>prefix-list-name</i>	prefix-list 32
<b>in</b>	prefix list
<b>out</b>	prefix list

└──┘

BGP IPv4 BGP IPv6 BGP  
IPv4 VRF BGP VPNv4

(in) (out) **neighbor distribute-list**  
BGP  
neighbor prefix-list in

```
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
```

<b>router bgp</b>	BGP
<b>neighbor remote-as</b>	BGP
<b>ip prefix-list</b>	ip

└──┘

--	--	--

**no** EBGP AS AS

**neighbor** {*peer-address* | *peer-group-name*} **remove-private-as**

**no neighbor** {*peer-address* | *peer-group-name*} **remove-private-as**

<i>peer-address</i>	IPv6	IPv4
<i>peer-group-name</i>		32

┌

BGP BGP IPv4 BGP IPv6 BGP  
IPv4 VRF

EBGP AS AS EBGP  
AS AS AS 64512 65535

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 remove-private-as
```

<b>router bgp</b>	BGP
<b>neighbor remote-as</b>	BGP

┌

-	-

### 41.1.74 neighbor route-map

**no**

**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**}

--	--

<i>peer-address</i>	IPv6	IPv4
<i>peer-group-name</i>		32
<i>map-tag</i>		
<b>in</b>		
<b>out</b>		

└──

BGP IPv4 BGP IPv6 BGP  
 IPv4 VRF BGP VPNv4

└──

Ruijie(config-router)# **neighbor ip-address route-map map-tag in**

<b>neighbor soft-reconfiguration inbound</b>	BGP
<b>show ip bgp</b>	BGP

└──

-	-

### 41.1.75 neighbor route-reflector-client

no

**neighbor peer-address route-reflector-client**

**no neighbor peer-address route-reflector-client**

--	--

<i>peer-address</i>	IPv6	IPv4
---------------------	------	------

┌

┌ BGP

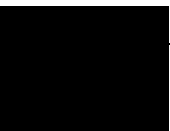
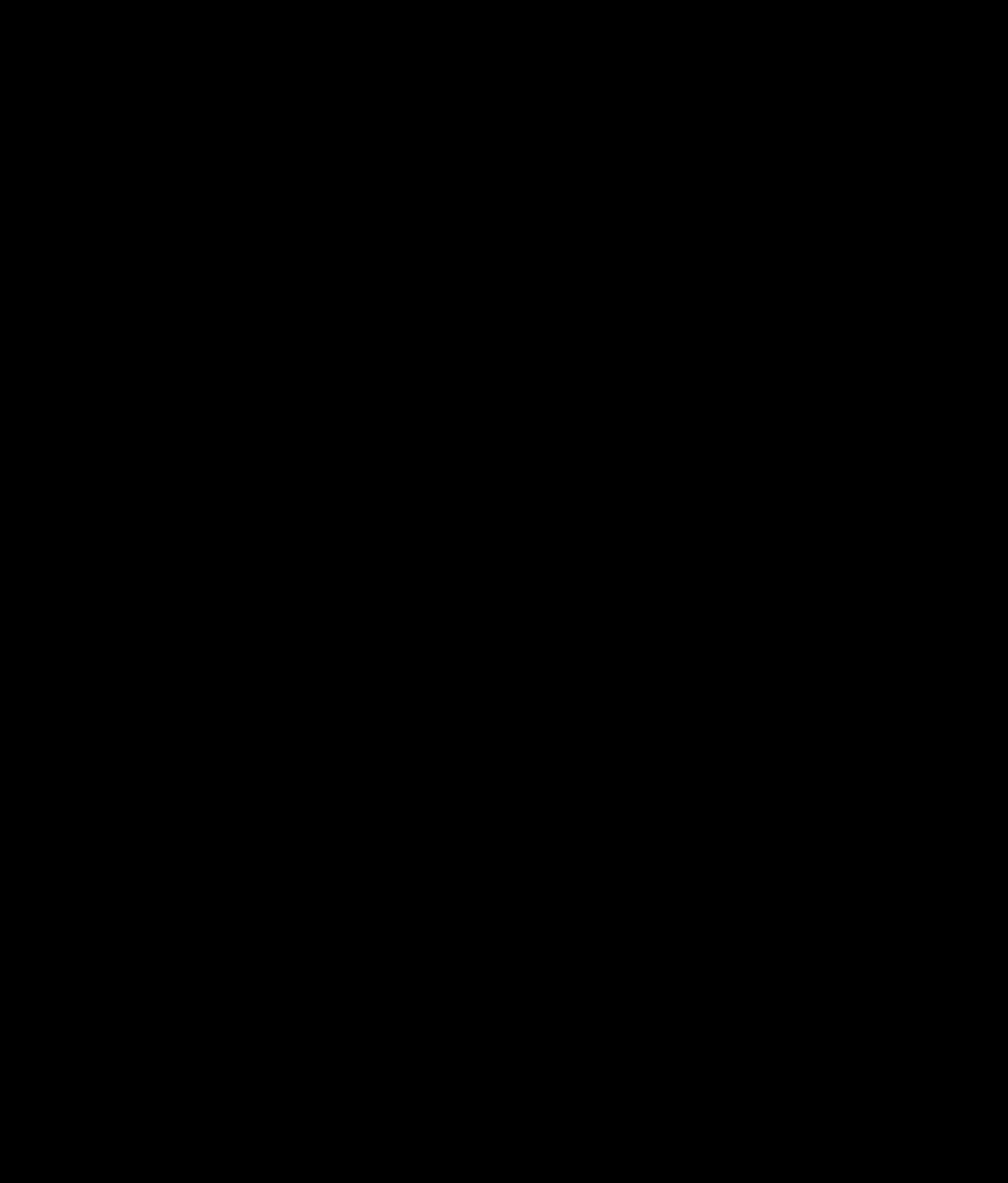


```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 route-reflector-client
```

<b>router bgp</b>	BGP
<b>neighbor remote-as</b>	BGP
<b>bgp cluster-id</b>	ID
<b>bgp client-to-client reflection</b>	

┌

--	--



┌

┌

BGP BGP IPv4 BGP VPNv4

┌

BGP MPLS label  
BGP  
ipv4 unicast AS AS  
MPLS

┌

```
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
```

┌

<b>router bgp</b>	BGP
<b>neighbor remote-as</b>	BGP

┌

┌

-	-

### 41.1.78 neighbor shutdown

( ) BGP BGP no BGP

**neighbor** {peer-address | peer-group-name} **shutdown**

**no neighbor** {peer-address | peer-group-name} **shutdown**

┌

<i>peer-address</i>	IPv4 IPv6
<i>peer-group-name</i>	32

┌

BGP IPv4 BGP IPv6 BGP  
 IPv4 VRF

( )  
 ( )

BGP

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.0.0.1 shutdown
```

<b>router bgp</b>	BGP
<b>neighbor remote-as</b>	BGP
<b>show ip bgp summary</b>	BGP

-	-
---	---

### 41.1.79 neighbor soft-reconfiguration inbound

BGP no

**neighbor {peer-address | peer-group-name} soft-reconfiguration inbound**

**no neighbor {peer-address | peer-group-name} soft-reconfiguration inbound**

<i>peer-address</i>	IPv4 IPv6
<i>peer-group-name</i>	32

BGP

BGP BGP ( )

**show ip bgp neighbors**  
BGP

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 soft-reconfiguration
inbound
```

<b>router bgp</b>	BGP
<b>neighbor remote-as</b>	BGP
<b>show ip bgp neighbors</b>	BGP
<b>clear ip bgp</b>	BGP

-	-

### 41.1.80 neighbor soo

, **no**

**neighbor** {*peer-address* | *peer-group-name*} **soo soo-value**

**no neighbor** {*peer-address* | *peer-group-name*} **soo**

<i>peer-address</i>	
<i>peer-group-name</i>	32
<i>soo-value</i>	soo soo_value 1 soo_value as_num nn an_num nn 2 soo_value ip_addr:nn ip_addr IP nn

```

                                soo
BGP IPv4
                                CE           CE           PE           CE

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-af)# neighbor 10.0.0.1 soo 100:100
    
```

<b>router bgp</b>	BGP
<b>timers bgp</b>	keepalive holdtime

-	-

### 41.1.81 neighbor timers

```

BGP           BGP           BGP           keepalive
holdtime           no
    
```

**neighbor** {peer-address | peer-group-name}timers keepalive holdtime  
**no neighbor** {peer-address | peer-group-name} timers keepalive holdtime

<i>peer-address</i>	IPv4 IPv6
<i>peer-group-name</i>	32
<i>keepalive</i>	BGP KEEPALIVE message 0..65535
<i>holdtime</i>	BGP 0..65535

*keepalive*: 60

*holdtime*: 180

BGP

| BGP

| BGP

Ruijie(config)# **router bgp**

┌

┌

┌

┌

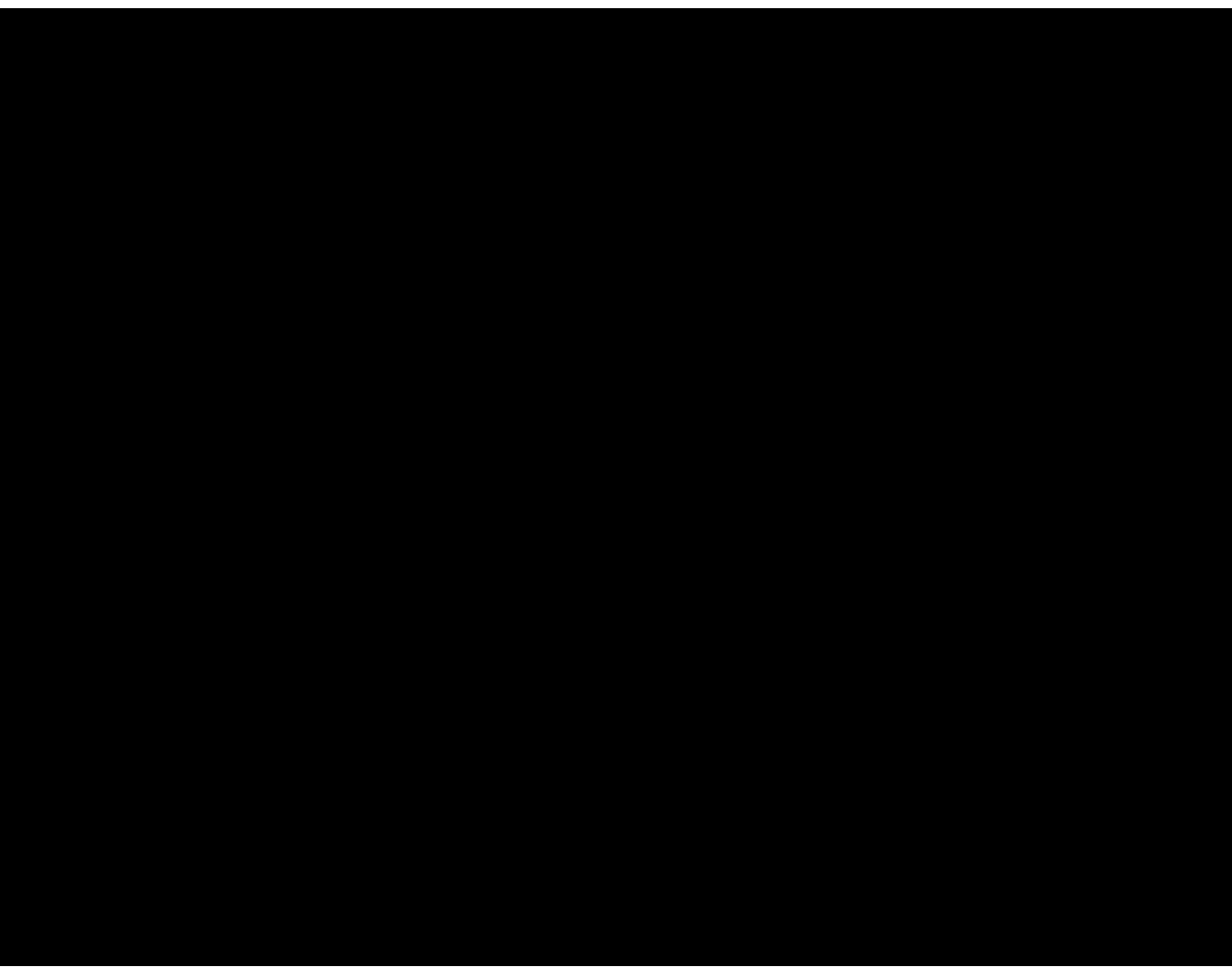
┌

BGP                    BGP   IPv4                    BGP   IPv6                    BGP  
 IPv4 VRF

                          loopback            BGP                    BGP  
                           BGP    TCP

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 update-source loopback 1
```

<b>router bgp</b>	BGP	7 CB-,CB-,CD) S) QCCV
<b>neighbor remote-as</b>	BGP	G15B_



BGP

```
Ruijie(config-router)# neighbor 10.1.1.1 version 3
```

router bgp	BGP
neighbor remote-as	BGP

-	-

### 41.1.85 neighbor weight

BGP

no

**neighbor** {*peer-address*|*peer-group-name*} **weight** *number*

**no neighbor** {*peer-address*|*peer-group-name*} **weight**

<i>peer-address</i>	
<i>peer-group-name</i>	32
<i>number</i>	0 - 65535

0

32768

BGP

route-map set weight

```
Ruijie(config-router)# neighbor 10.1.1.1 weight 73
```

<b>router bgp</b>	BGP
<b>neighbor remote-as</b>	BGP

-	-

### 41.1.86 network(BGP)

BGP speaker

**no**

**network** *network-number* **mask** *mask* [**route-map** *map-tag*] [**backdoor**]

**no network** *network-number* **mask** *mask* [**route-map**] [**backdoor**]

<i>network-number</i>	
<i>mask</i>	
<i>map-tag</i>	route-map      route map      32
<b>backdoor</b>	

BGP

IGP

BGP

**route-map**

```
Ruijie(config)# router bgp 65000
```

```
Ruijie(config-router)# network 10.0.0.1 mask 255.255.0.0
```

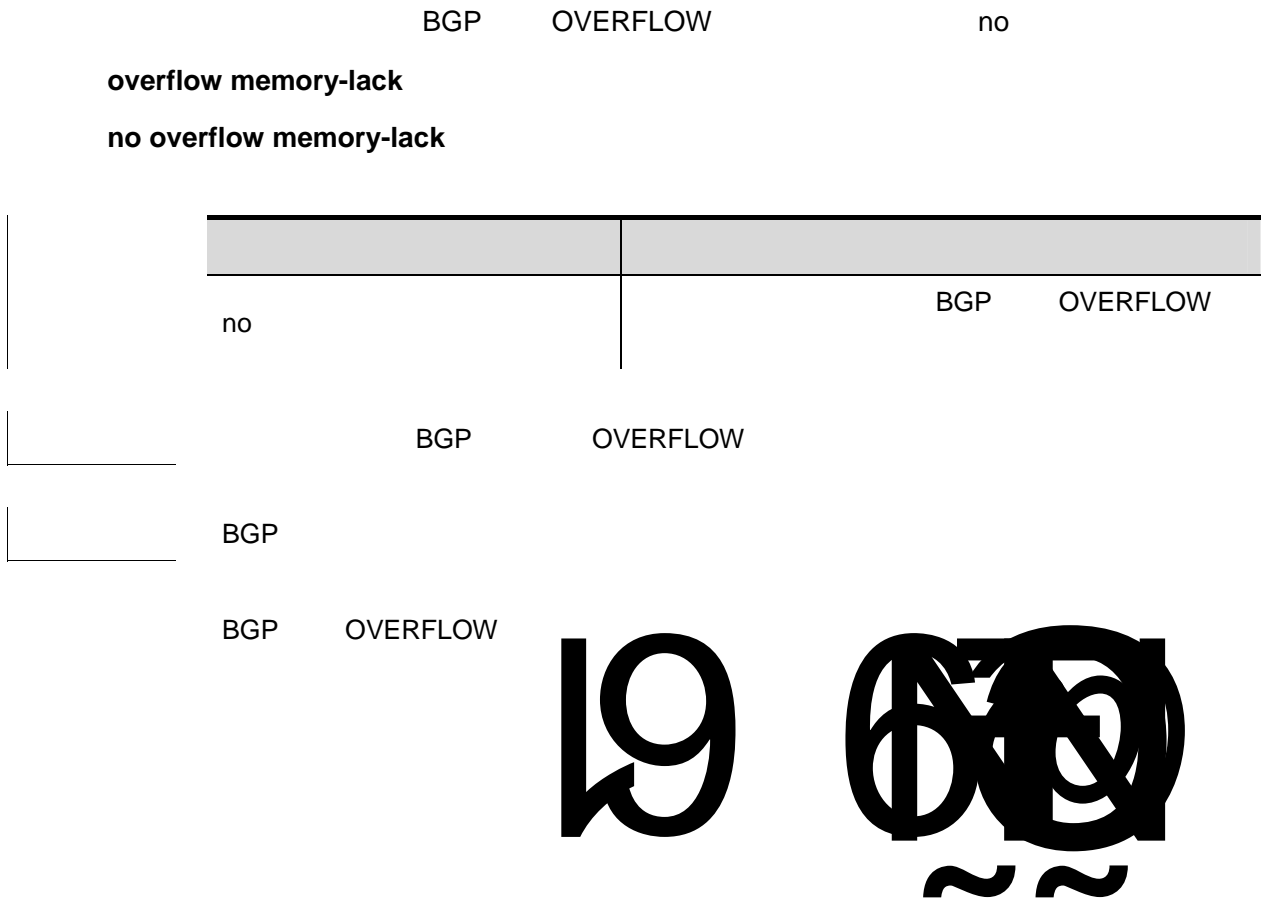
<b>router bgp</b>	BGP
<b>redistribute</b>	

	network synchronization	Network
	-	-

### 41.1.87 network synchronization

104.34.575(№ 9603 TC2\_01

### 41.1.88 overflow memory-lack



10.3(4b3)	

### 41.1.89 redistribute

BGP

**no**

**redistribute** *protocol-type* [**route-map** *map-tag*] [**metric** *metric-value*]

**no redistribute** *protocol-type* [**route-map** *map-tag*] [**metric** *metric-value*]

<i>protocol-type</i>	connected static rip
<b>route-map</b> <i>map-tag</i>	<b>route-map</b> <b>route-map</b>
<b>metric</b> <i>metric-value</i>	metric



BGP                      BGP    IPv4                      BGP    IPv6                      BGP  
 IPv4 VRF

IP

**no**



	<b>no</b>			<b>no</b>
			redistribute	
	no			
	OSPF		match	OSPF
		route-map		
<b>r</b>	metric	metric	route-map	
	route-map	route-map		route-map
		metric	metric	

```
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
```

w<0E5( i<04p protocols [<040122751CDD0ED8>6-rmap21.00 1420s1.60013 DB0 TDF-1.557 Td[092



## 41.1.92 router bgp

BGP  
BGP

BGP

no

**router bgp** *as-number*

**no router bgp** *as-number*

<i>as-number</i>	1..65535

BGP

BGP

Ruijie(config)# **router bgp** *DAA* *\$#02GCI* *6Ef0\$@dy6Rf42a" f/fh/fh2a%0#s0@...@...2a*

	-	-

┌

┌ BGP

┌ BGP IGP

AS ( AS AS)  
 AS router BGP BGP speaker  
 (BGP speaker )

┌ Ruijie(config)# **router bgp 65000**  
 Ruijie(config-router)# **synchronization**

	<b>router bgp</b>	BGP

┌

	-	-

### 41.1.94 table-map

BGP

**table-map** route-map-name

**no table-map**

	<i>route-map-name</i>	route-map

┌

table-map

BGP =

BGP      table-map  
                 table-map          IPv4

Ruijie(config)# **router bgp** 65000  
Ruijie(config-router)# **table-map** *bgp\_tm*

<b>route-map</b>	route-map

```
Ruijie(config-router)# timers bgp 80 240
```

		keepalive	holdtime
<b>neighbor timers</b>			
	-		-

## 41.2

### 41.2.1 show bgp all

BGP

BGP show

**show bgp all** [community | filter-list | community-list | dampening {flap-statistics | dampened-paths} | regexp | quote-regexp | neighbors {received-routes | routes | advertised-routes}]

**show bgp all dampening parameters**

**show bgp all neighbors**

**show bgp all summary**

**show bgp all paths**

<b>show bgp ipv4 unicast</b>	<b>show bgp ipv4 unicast</b>
------------------------------	------------------------------

**show bgp ipv4 unicast**



**network**

```
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
```

```
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 label
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
```

Network	
Nexthop	
In Label	
Out Label	

<b>show ip bgp</b>	BGP	IPv4

-	-

### 41.2.3 show bgp ipv4 unicast dampening parameters

BGP      IPv4

**show bgp ipv4 unicast dampening parameters**

-	-



## BGPIPv4

```
Ruijie# show bgp ipv4 unicast neighbors
BGP neighbor is 192.168.195.183, remote AS 23, local AS 23, internal
link
  BGP version 4, remote router ID 44.0.0.1
  BGP state = Established, up for 00:06:37
  Last read 00:06:37, hold time is 180, keepalive interval is 60
seconds
  Neighbor capabilities:
    Route refresh: advertised and received (old and new)
    Address family IPv4 Unicast: advertised and received
    Graceful restart: advertised and received
    Remote Restart timer is 120 seconds
  Received 14 messages, 0 notifications, 0 in queue
    open message:1 update message:4 keepalive message:9
    refresh message:0 dynamic cap:0 notifications:0
  Sent 12 messages, 0 notifications, 0 in queue
    open message:1 update message:3 keepalive message:8
    refresh message:0 dynamic cap:0 notifications:0
  Route refresh request: received 0, sent 0
  Minimum time between advertisement runs is 0 seconds
For address family: IPv4 Unicast
  BGP table version 2, neighbor version 1
  Index 2, Offset 0, Mask 0x4
  Inbound soft reconfiguration allowed
  8 accepted prefixes
  0 announced prefixes
  Connections established 2; dropped 1
Local host: 192.168.195.239, Local port: 1074
Foreign host: 192.168.195.183, Foreign port: 179
Nexthop: 192.168.195.239
Nexthop global: ::
Nexthop local: ::
BGP connection: non shared network
Last Reset: 00:06:43, due to BGP Notification sent
Notification Error Message: (Cease/Unspecified Error Subcode)
```

BGP

## 41.2.6 show bgp ipv4 unicast summary

BGPIPv4

show bgp ipv4 unicast summary

-	-

BGPIPv4

```
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
```

## BGP IPv6

**show bgp ipv6 unicast** [*IPv6-Prefix*]  
**show bgp ipv6 unicast community** *community-number* [**exact-match**]  
**show bgp ipv6 unicast community-list** *community-name* [**exact-match**]  
**show bgp ipv6 unicast dampening dampened-paths**  
**show bgp ipv6 unicast dampening flap-statistics**  
**show bgp ipv6 unicast filter-list** *path-list-number*  
**show bgp ipv6 unicast inconsistent-as**  
**show bgp ipv6 unicast prefix** *ipv6-prefix-list-name*  
**show bgp ipv6 unicast quote-regexp** *regexp*  
**show bgp ipv6 unicast regexp** *regexp*  
**show bgp ipv6 unicast route-map** *map-tag*  
**show bgp ipv6 unicast neighbors** *neighbor-address*  
**[received-routes | routes | advertised-routes]**

<b>network</b>	
<i>network-mask</i>	
<b>community</b> <i>community-number</i>	community <i>community-number</i> AA:NN( /2 ) internet no-export local-as no-advertise
<b>community-list</b> <i>community-name</i>	community-name
<b>exact -match</b>	
<b>dampening dampened-paths</b>	
<b>dampening flap-statistics</b>	
<b>filter-list</b> <i>path-list-number</i>	path-list-numbe
<b>inconsistent-as</b>	AS
<b>quote-regexp</b> <i>regexp</i>	AS BGP
<b>regexp</b> <i>regexp</i>	AS BGP

**route-map** *map-tag*

route-map

┌

┌

┌

BGP IPv6

**show bgp ipv4 unicast dampening parameters**

**show bgp ipv4 unicast dampening parameters**

┌

-	-

┌

<b>show bgp ipv4 unicast dampening parameters</b>	BGP IPv4

┌

┌

-	-

### 41.2.9 show bgp ipv6 unicast neighbors

BGPIPv6

**show bgp ipv6 unicast neighbors *neighbor-address***

┌

-	-

┌

┌

┌

BGPIPv6

**show bgp ipv4 unicast neighbors *neighbor-address***

**show bgp ipv4 unicast neighbors *neighbor-address***

-	-

<b>show bgp ipv4 unicast neighbors</b> <i>neighbor-address</i>	BGPIPv4

┌

-	-

### 41.2.10 show bgp ipv6 unicast paths

IPv6

**show bgp ipv6 unicast paths**

-	-

┌

┌

┌

┌

-	-

### 41.2.11 show bgp ipv6 unicast summary

BGPIPV6

show bgp ipv6 unicast summary

┌

-	-

┌

┌

┌

BGPIPV6

show bgp ipv4 unicast summary

show bgp ipv4

unicast summary

┌

-	-

┌

router bgp	BGP
show bgp ipv4 unicast summary	BGPIPV4

┌

┌

-	-

### 41.2.12 show bgp vpnv4 unicast

vrf rd vpn

**show bgp vpnv4 unicast all** [*network* | **neighbor** [ | *address*] | **summary** | **label**]

**show bgp vpnv4 unicast vrf** *vrf\_name* [*network* | **summary** | **label**]

**show bgp vpnv4 unicast rd** *rd\_value* [*network* | **summary** | **label**]

<i>network</i>	
<b>neighbor</b>	
<b>summary</b>	
<b>label</b>	
<i>vrf_name</i>	vrf
<i>rd_value</i>	RD 100 1 202.118.239.165:1

vrf rd vpn

```
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           0      i
*>i211.158.1.0     192.168.195.183    0           100    i
*> 212.210.0.0     0.0.0.0            0           0      i
*> 212.210.1.0     0.0.0.0            0           0      i
Total number of prefixes 7
Ruijie# show bgp vpnv4 unicast vrf this summary
BGP router identifier 192.168.183.1, local AS number 23
```

BGP

---

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
177.36.51.2	4	10	0	0	0	0	0	never
177.36.51.3	4	10	85	87	1	0	0	01:12:25

5  
Total number of neighbors 2

---

--	--

-

- 92 Pw 0 -Tf 0 Tc 2.36 0 Tm (86)

	-	-
	<b>show bgp ipv4 unicast</b>	BGP IPv4
	-	-

### 41.2.14 show ip as-path-access-list

**show ip as-path-access-list {num}**

	<i>num</i>	as-path-access-list
		as-path-access-list
	Ruijie# <b>show ip as-path-access-list</b>	
	AS path access list 30	
	permit ^30\$	
	-	-



## 42 VRF

### 42.1 VRF

#### 42.1.1 clear ip route vrf

VRF

```
clear ip route vrf vrf-name { * | network [mask] }
```

```
[
```

**ip vrf** *vrf-name*

**no ip vrf** *vrf-name*



```
Ruijie(config-if)# ip vrf forwarding redvrf
```

Q	, VRF (55 Vp0 XG)8y0p @)Ab'Ax0
-	-

	RGOS10.1	RGOS10.1

## 42.2.2 show ip vrf

VRF

**show ip vrf** [ **brief** | **detail** | **interfaces** ] [ *vrf-name* ]

# 43 URPF

## 43.1

### 43.1.1 ip verify unicast source reachable-via ( )

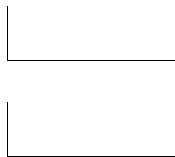
```

URPF
ip verify unicast source reachable-via rx
no ip verify unicast

```

Ä

rx		URPF	IP



URPF

- 1. URPF
- 2. URPF
- 1. MPLS URPF
- 2. URPF
- 1. URPF S8600 IPv4 URPF
- 2. URPF

r

1 URPF

Ruijie(config)# **ip verify unicast source reachable-via rx**

<b>show ip urpf</b>	URPF

S8600 MPLS

10.4	

### 43.1.2 ip verify unicast source reachable-via ( )

URPF no URPF

URPF

**ip verify unicast source reachable-via {rx | any} [allow-default | *acl\_name*]**

**no ip verify unicast**

<b>rx</b>	IP URPF
<b>any</b>	IP URPF
<b>allow-default</b>	URPF
<b><i>acl_name</i></b>	ACL 1 to 99 (IP standard access list) 100 to 199 (IP extended access list) 1300 to 1999 (IP standard access list, expanded range) 2000 to 2699 (IP extended access list, expanded range)

URPF

```

URPF
IP
URPF
URPF
URPF
allow-default
URPF
ACL (acl-name)
deny ACE
URPF
ACL ACE
permit ACE
-----
1. S8600 IPv4/IPv6
URPF IPv4 URPF
2. S8600 B Routed Port L3
AP URPF
URPF ACL
URPF 65 127 IPv6 URPF
URPF
URPF Tunnel URPF
URPF
URPF URPF
URPF URPF
URPF URPF
S8600 MPLS URPF
3. URPF URPF
-----

```

```

1 GigabitEthernet 0/21 URPF
Ruijie(config)# interface gigabitEthernet0/21
Ruijie(config-if)# no switchport
Ruijie(config-if)# ip verify unicast source reachable-via rx

```

	S8600	B
	10.4	

### 43.1.3 ip verify urpf drop-rate compute interval

URPF

no

URPF

**ip verify urpf drop-rate compute interval** *seconds*

**no ip verify urpf drop-rate compute interval**

<i>seconds</i>	URPF	
	[30, 300]	30s

30s

URPF

URPF

URPF

URPF

1 URPF

1 1

URPF

---

	10.4	
--	------	--

### 43.1.4 ip verify urpf drop-rate notify

URPF

no

URPF

ip verify urpf drop-rate notify

no ip verify urpf drop-rate notify



**ip verify urpf drop-rate notify hold-down *seconds***

**no ip verify urpf drop-rate notify hold-down**

<i>seconds</i>	URPF	[30, 300]	300s

300s

URPF URPF URPF URPF

1 URPF 1  
 Ruijie(config)# ip verify urpf drop-rate notify hold-down 60

<b>ip verify urpf drop-rate compute interval</b>	URPF
<b>ip verify urpf drop-rate notify</b>	URPF
<b>ip verify urpf notification threshold</b>	URPF

S8600

10.4	

### 43.1.6 ip verify urpf notification threshold

URPF no URPF

**ip verify urpf notification threshold *rate-value***

**no ip verify urpf notification threshold**

--	--

<i>rate-value</i>	URPF pps packets per second [0, 4294967295] 1000pps
-------------------	---

1000pps

0 URPF

```

1 GigabitEthernet 0/21 URPF 10
Ruijie(config)# interface gigabitEthernet0/21
Ruijie(config-if)# no switchport
Ruijie(config-if)# ip verify urpf drop-rate notify
Ruijie(config-if)# ip verify urpf notification threshold 10

```

<b>ip verify urpf drop-rate compute interval</b>	URPF
<b>ip verify urpf drop-rate notify</b>	URPF
<b>ip verify urpf drop-rate notify hold-down</b>	URPF

S8600

10.4	

### 43.1.7 snmp-server enable traps

URPF Trap no  
Trap



URPF

Trap

Syslog

1 URPF  
Ruijie(config)#

Trap

**urpf**

URPF Trap

SNMP

**snmp-server enable traps**

NMS

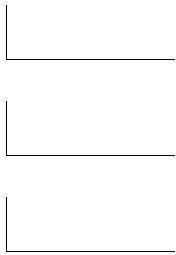
URPF

1 SNMP 192.168.12.219 URPF Trap  
Ruijie(config)# **snmp-server host 192.168.12.219 public urpf**

---

**snmp-server enable traps**





1 GigabitEthernet 0/21 URPF

```
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
Ruijie# clear ip urpf interface gigabitEthernet0/21
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 0
Number of drop-rate notification counts in this interface is 0
```



<b>show ip urpf</b>	URPF



S8600



10.4	

---

# 44

## 44.1

### 44.1.1 distribute-list in

no

**distribute-list in**

**distribute-list** {[*access-list-number* | *access-list-name*] | **prefix** *prefix-list-name* [**gateway** *prefix-list-name*]} **in** [*interface-type interface-number*]

**no distribute-list** {[*access-list-number* | *access-list-name*] | **prefix** *prefix-list-name* [**gateway** *prefix-list-name*]} **in** [*interface-type interface-number*]

<i>access-list-number</i>	1-99 1300-1999 100-199 2000-2699
<i>access-list-name</i>	
<b>prefix</b> <i>prefix-list-name</i>	
<b>gateway</b>	

```

Ruijie(config-router)# distribute-list 10 in fastethernet 0/0
Ruijie(config-router)# no auto-summary
Ruijie(config-router)# exit
Ruijie(config)# access-list 10 permit 172.16.0.0 0.0.255.255

```

<b>access-list</b>	
<b>prefix-list</b>	

-	-

#### 44.1.2 distribute-list out

##### distribute-list out

no

**distribute-list** {[*access-list-number* | *access-list-name*] | **prefix** *prefix-list-name*} **out** [*interface* | *protocol* | *process-id*]

**no distribute-list** {[*access-list-number* | *name*] | **prefix** *prefix-list-name*} **out** [*interface* | *protocol* | *process-id*]

<i>access-list-number</i>	1-99 1300-1999 100-199 2000-2699
<i>access-list-name</i>	
<b>prefix</b> <i>prefix-list-name</i>	
<i>Interface</i>	( )
<i>protocol</i>	( )

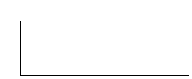
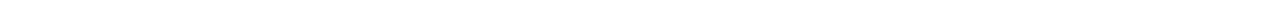


<i>community-list-name</i>	80
<i>community-list-number</i>	1-99 100-199
<b>permit</b>	
<b>deny</b>	
<i>community-number</i>	AA:NN( 2 ) 0-4294967295 internet Internet local-as AS no-advertise BGP peers no-export EBGp peers 1..255 32

BGP

```
Ruijie(config)# ip community-list standard test deny 100:20 200:20
Ruijie(config)# ip community-list standard test2 permit internet
```

<b>match community</b>	
<b>set comm-list delete</b>	BGP
<b>show ip community-list</b>	
<b>show ip bgp community-list</b>	BGP



-	-

### 44.1.5 ip prefix-list

**ip prefix-list**                      **no**

**ip prefix-list** *prefix-lis-name* [ **seq** *seq-number*] { **deny** | **permit** } *ip-prefix* [**ge** *minimum-prefix-length*][**le** *maximum-prefix-length*]

**no ip prefix-list** *prefix-lis-name*[ **seq** *seq-number*] { **deny** | **permit**} *ip-prefix* [**ge** *minimum-prefix-length*][**le** *maximum-prefix-length*]

<i>prefix-lis-name</i>	
<i>seq-number</i>	1 2147483647 5
<b>deny</b>	
<b>permit</b>	
<i>ip-prefix</i>	IP                      0    32
<i>minimum-prefix-length</i>	(                      ) <b>ge</b>
<i>maximum-prefix-length</i>	(                      ) <b>le</b>

┌

┌

**ip prefix-list**                      IP                      permit                      deny

ge                      le                      ip-prefix                      ge                      le

```

ge          minimum-prefix-length 32          le          ip-prefix
           maximum-prefix-length
minimum-prefix-length  maximum-prefix-length  ip-prefix
minimum-prefix-length  maximum-prefix-length  ip-prefix      <
minimum-prefix-length < maximum-prefix-length <= 32

```

```

           IP          OSPF          RIP
           IP          IP          (
IP 201.1.1.0/24      )
Ruijie# configure terminal
Ruijie(config)# ip prefix-list pre1 permit 201.1.1.0/24
Ruijie(config)# router ospf
Ruijie(config-router)# distribute-list prefix pre1 out rip
Ruijie(config-router)# end

```

--	-

-	-

#### 44.1.6 ip prefix-list description

**ip prefix-list description no**

**ip prefix-list** *prefix-lis-name* **description** *descripton-text*

<i>prefix-lis-name</i>	
<i>descripton-text</i>	





---

An L-shaped corner symbol consisting of a vertical line segment on the left and a horizontal line segment extending to the right from the bottom of the vertical segment.

---

WCMP

```
0.0.0.0 Fastethernet 0/0
Fastethernet 0/0
ip route 0.0.0.0
ARP CPU
```

```
172.16.100.0/24
192.168.12.1 115
ip route 172.16.100.0 255.255.255.0 192.168.12.1 115
172.16.100.0/24
fastethernet 0/0
Ruijie(config)# ip route 172.16.100.0 255.255.255.0 fastethernet
0/0 192.168.12.1
```

<b>show ip route</b>	IP

-	-

### 44.1.10 ip routing

```
RGOS IP no
IP
ip routing
no ip routing
```

-	-

IP

┌

┌

┌

┌

┌

┌

VOIP RGOS IP

RGOS IP

Ruijie(config)# no ip routing

-	-

-	-

### 44.1.11 ip static route-limit

ip static route-limit no

ip static route-limit *number*

no ip static route-limit

┌

<i>number</i>	1-10000

┌

1024

┌

┌

ip static route-limit show

running-config

┌

900

Ruijie(config)# ip static route-limit 900

Ruijie(config)# no ip static route-limit

	-	-
	-	-

### 44.1.12 ipv6 prefix-list

IPv6

ipv6 prefix-list

no

**ipv6 prefix-list** *prefix-lis-name* [ **seq** *seq-number*] { **deny** | **permit** } *ipv6-prefix* [**ge** *minimum-prefix-length*][**le** *maximum-prefix-length*]

**no ipv6 prefix-list** *prefix-lis-name*[ **seq** *seq-number*] { **deny** | **permit**} *ipv6-prefix* [**ge** *minimum-prefix-length*][**le** *maximum-prefix-length*]

<i>prefix-lis-name</i>			
			1
<i>seq-number</i>	2147483647		
		5	
	5		
<b>deny</b>			
<b>permit</b>			
<i>ipv6-prefix</i>	IP	0	32
<i>minimum-prefix-length</i>		<b>ge</b>	( )
<i>maximum-prefix-length</i>		<b>le</b>	( )

---

**ipv6 prefix-list**

IPv6

permit

deny

ge

le

ipv6-prefix

---

L

---

---

	-	-
	-	-

### 44.1.15 ipv6 route

ipv6    ipv6 route                          no

**ipv6 route** *network* | *prefix-length* { *ipv6-address* | *interface* [ *ipv6-address* ] } [*distance*]  
**[weight number]**

<i>network</i>	
<i>prefix-length</i>	
<i>ipv6-address</i>	
<i>interface</i>	
<i>distance</i>	
<i>distance</i>	

```

                2001::/64                                2002::2
            115
    ipv6 route 2001::/64 2002::2 115

                fastethernet 0/0                            1::/64
    ipv6 route 2001::/64 fastethernet 0/0 2002::2

```

<b>show ipv6 route</b>	IPv6

<b>10.1</b>	
<b>10.4</b>	weight

#### 44.1.16 ipv6 static route-limit

```

                ipv6 static route-limit                    no

    ipv6 static route-limit number
    no ipv6 static route-limit

```

--	--

<b>ipv6 route</b>	ipv6
<b>show ipv6 route</b>	IPv6

10.1	

### 44.1.17 ipv6 unicast-routing

RGOS IPv6 no  
IPv6

**ipv6 unicast-routing**

**no ipv6 unicast-routing**

-	-

IPv6

VOIP RGOS IPv6  
RGOS IPv6

RGOS IPv6  
Ruijie# **no ipv6 unicast-routing**

<b>ipv6 route</b>	ipv6
<b>show ipv6 route</b>	IPv6

--	--



---

## 44.1.19 match community

COMMUNITY match

**community**            **no**

**match community**{*community-list-number* | *community-list-name*}[**exact-match**]  
[*{community-list-number | community-list-name}*][**exact-match**] ...]

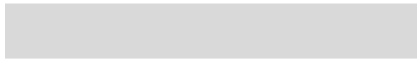
**no match community** { *community-list-number* | *community-list-name* } [ **exact-match** ]  
[ { *community-list-number* | *community-list-name* } [**exact-match**] ...]

<i>community-list-number</i>	1-99
	100-199
<i>communitys-list-name</i>	

---

<b>match origin</b>	
<b>set as-path prepend</b>	AS_PATH
<b>set comm-list delete</b>	
<b>set community</b>	
<b>set metric</b>	

└──



```

0/0  RIP
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)# match interface fastethernet 0/0

```

match ip address	
match ip next-hop	
match ip route-source	
match metric	
match route-type	
match tag	
set metric	
set metric-type	
set tag	

-	-

#### 44.1.21 match ip address

```

address          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...]}
no match ip address0 Tfr...9Tc names-lis 8 Td(prefix-listTj/TT5 1 Tf-0.0026 T848 2)2-num |a

```

---

<i>access-list-number</i>	1-99 1300-1999 100-199 2000-2699
<i>access-list-name</i>	
<b>prefix-list</b> <i>prefix-list-name</i>	

|  
 |  
 |

**match ip address**

RIP

RIP

CÃ

OSPF

---

<b>match ip next-hop</b>	
<b>match ip route-source</b>	
<b>match metric</b>	
<b>match route-type</b>	
<b>match tag</b>	
<b>set metric</b>	
<b>set metric-type</b>	
<b>set tag</b>	

---

**match ip next-hop**

RIP

RIP  
IP

route maps

1

**match**

**sc**

OSPF

RIP

10 20 OSPF

Ruijie(config)# **router ospf**

Ruijie(config-router)# **redistribute**

Ruijie(config-router)# **network 192.1**

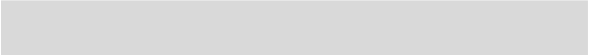
Ruijie(config-router)# **exit**

Ruijie(config)# **access-list 10 permi**

Ruijie(config)# **access-list 20 permi**

Ruijie(config)# **route-map redrip per**

Ruijie(config-route-map)# **match ip next-hop 10 20**



---

..]  
ne

...]  
ne



**access-list**



match ipv6 route-source	IPv6
match metric	
match route-type	
match tag	
set metric	
set metric-type	
set tag	
set ipv6 default next-hop	
set ipv6 next-hop	
show ipv6 policy	

-	-

#### 44.1.25 match ipv6 next-hop

IPv6  
 match ipv6 address  
 match ipv6 next-hop  
 no

t-n/5(a4.9(m)6(e4.9(3F5547A1

	1	<b>match</b>	1	<b>set</b>
<b>match</b>		<b>set</b>		

```

RIP          OSPF          RIP          10
RIP          OSPF          type-1       40
Ruijie(config)# ipv6 router ospf
Ruijie(config-router)# redistribute rip subnets route-map redrip
Ruijie(config-router)# exit
Ruijie(config)# ipv6 access-list v6acl
Ruijie(config-ipv6-acl)# 10 permit ipv6 2720::/64 any
Ruijie(config-ipv6-acl)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match ipv6 next-hop v6acl
Ruijie(config-route-map)# set metric 40

```

<b>ipv6 access-list</b>	<b>IPv6</b>
-------------------------	-------------

---

IPv6

**match ipv6 address**                      **no**

**match ipv6 route-source** { *access-list-name* | **prefix-list** *prefix-list-name* }

**no match ipv6 route-source**

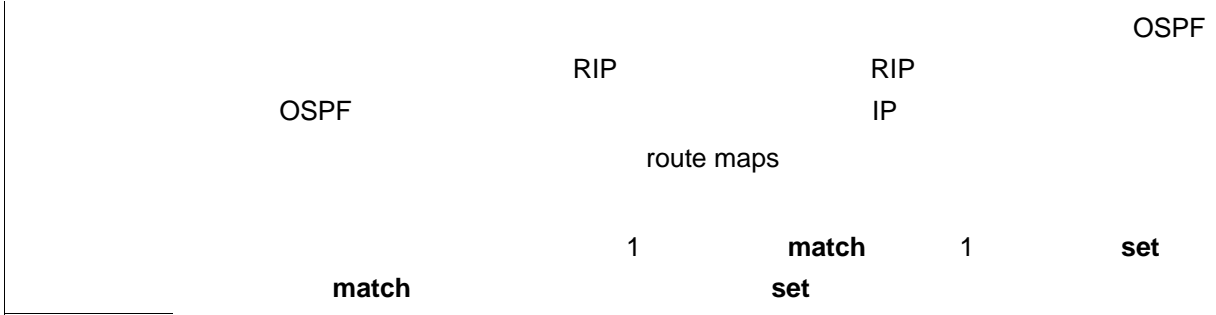
<i>access-list-name</i>	
<b>prefix-list</b> <i>prefix-list-name</i>	IPv6

┌

└

┌

└



<b>match ipv6 address</b>	IPv6
<b>match ipv6 route-source</b>	IPv6
<b>match metric</b>	
<b>match route-type</b>	
<b>match tag</b>	
<b>set metric</b>	
<b>set metric-type</b>	
<b>set tag</b>	

-	-

#### 44.1.27 match length

**no** IP **match length**  
**match length** *min-length max-length*  
**no match length** *min-length max-length*

<i>min-length</i>	IP
<i>max-length</i>	IP

F9m

---

<i>metric</i>	0-4294967295
---------------	--------------

└──

└──

└──

```

                                OSPF
                                RIP          RIP
                                route maps  IP
                                1          1
                                match      set
                                set
                                OSPF      RIP          10 RIP  OSPF

```

```

Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets route-map
redist-rip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redist-rip permit 10
Ruijie(config-route-map)# match metric 10 Ruijie(config-route-map)#

```

-	-

## 44.1.29 match origin

### match origin

no

**match origin {egp | igp | incomplete}**

**no match origin {egp | igp | incomplete}**

<b>egp</b>	EGP
<b>igp</b>	IGP
<b>Incomplete</b>	

┌

┌

┌

```
Ruijie(config)# route-map MY_MAP 10 permit
Ruijie(config-route-map)# match origin egp
Ruijie(config-route-map)# set community 109
Ruijie(config-route-map)# exit
Ruijie(config)# route-map MAP20 20 permit
Ruijie(config-route-map)# match origin incomplete
Ruijie(config-route-map)# set community no-export
```

<b>match as-path</b>	AS_PATH
<b>match metric</b>	
<b>match origin</b>	

<b>set as-path prepend</b>	AS_PATH
<b>set metric</b>	
<b>set origin</b>	
-	-

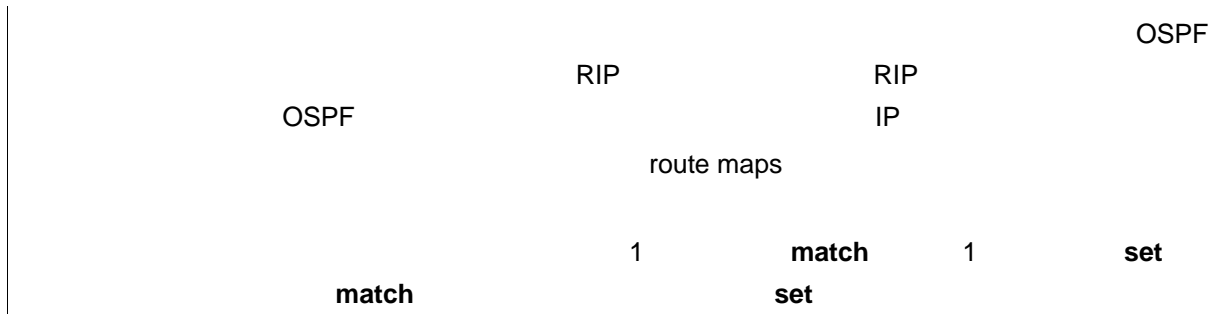
### 44.1.30 match route-type

**match route-type**      **no**

**match route-type** {local | internal | external [type-1 | type-2] | level-1 | level-2}

**no match route-type** {local | internal | external [type-1 | type-2] | level-1 | level-2}

<b>local</b>	
<b>Internal</b>	OSPF
<b>external</b>	(BGP OSPF )
<b>type-1   type-2</b>	OSPF    1    2
<b>level-1   level-2</b>	ISIS    1    2



```

Ruijie(config)# router rip
Ruijie(config-router)# redistribute ospf 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 route-type internal

```

<b>access-list</b>	
<b>match ip address</b>	
<b>match interface</b>	
<b>match ip next-hop</b>	
<b>match ip route-source</b>	
<b>match metric</b>	
<b>match tag</b>	
<b>set metric</b>	
<b>set metric-type</b>	
<b>set tag</b>	

-	-

### 44.1.31 match tag

**match tag**      **no**

**match tag** *tag* [...*tag*]

**no match tag** *tag* [...*tag*]

<i>tag</i>	

```

match tag tag OSPF
RIP RIP OSPF
OSPF IP
route maps
1 match 1 set
match set

```

```

RIP OSPF RIP OSPF
50 80
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

```

<b>access-list</b>	
<b>match ip address</b>	
<b>match interface</b>	
<b>match ip route-source</b>	
<b>match metric</b>	
<b>match ip next-hop</b>	
<b>match route-type</b>	
<b>set metric</b>	
<b>set metric-type</b>	
<b>set tag</b>	

-	-

### 44.1.32 maximum-paths

---

**maximum-paths**

no

**maximum-paths** *number*

**no maximum-paths**

	<i>number</i>	1-32

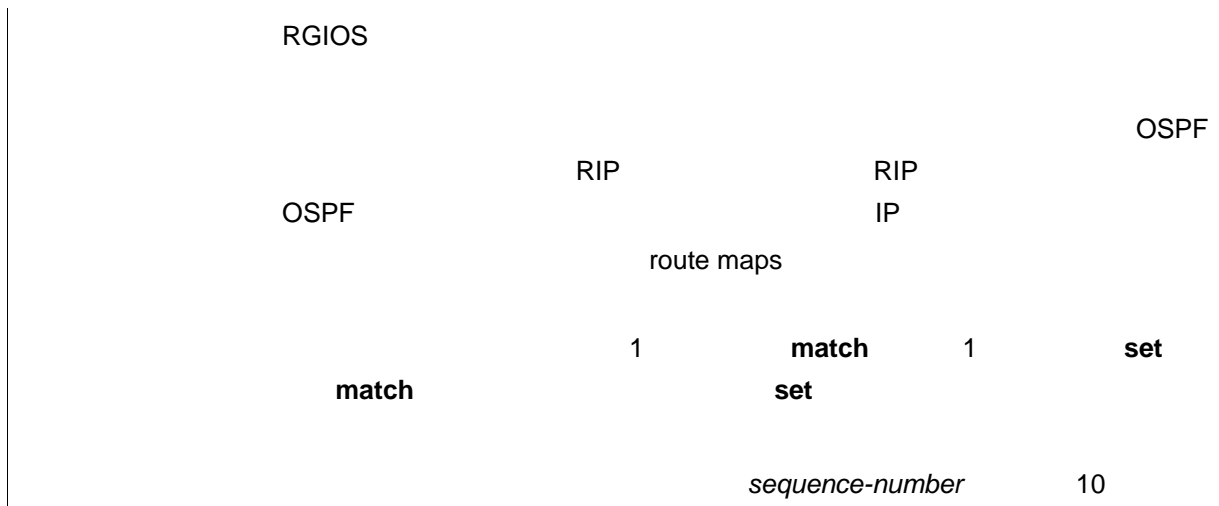
32

**route-map** *route-map-name* [**permit** | **deny**] [*sequence-number*]

**no route-map** *route-map-name* [**permit** | **deny**] [*sequence-number*]

<i>route-map-name</i>	
<b>permit</b>	permit match set set permit match set
<b>deny</b>	deny match deny match set
<i>sequence-number</i>	

┌  
└



*sequence-number*

OSPF                      OSPF                      RIP                      4    RIP  
OSPF                                           type-1                      40

```
Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets route-map redrip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match metric 4
Ruijie(config-route-map)# set metric 40
Ruijie(config-route-map)# set metric-type type-1
Ruijie(config-route-map)# set tag 40
```

<b>Redistribute</b>	

	} 5
--	-----

---

BGP

as,ip-addr

```
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
```

<b>match as-path</b>	AS_PATH
<b>match community</b>	
<b>match metric</b>	
<b>match origin</b>	
<b>set community</b>	COMMUNITY
<b>set metric</b>	
<b>set metric-type</b>	

15 as AS\_PATH as-path

```
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
```

match as-path	AS_PATH
match community	
match metric	
match origin	
set community	COMMUNITY
set metric	
set metric-type	

-	-

#### 44.1.36 set comm-list delete

match COMMUNITY\_LIST community  
**set comm-list delete no**

**set comm-list** *community-list-number* | *community-list-name* **delete**

**no comm-list** *community-list-number* | *community-list-name* **delete**



---

<i>community-list-name</i>	80
----------------------------	----

---

```
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
ROUTEPAOUT 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 ROUTEPAOUT permit 10
Ruijie(config-route-map)# set comm-list 120 delete
```

<b>ip community-list</b>	
<b>match as-path</b>	AS_PATH
<b>match community</b>	
<b>match metric</b>	
<b>match origin</b>	
<b>set as-path prepend</b>	AS_PATH
<b>set comm-list delete</b>	
<b>set local-preference</b>	

---

### 44.1.37 set community

```

match          COMMUNITY          set
community      no
set community {community-number[community-number ...] additive | none}
no set community { community-number[community-number ...] additive | none}

```

<i>community-number</i>	AA:NN( :2 ) 0-4294967295 internet Internet local-as AS no-advertise BGP peers no-export EBGPeers
<b>additive</b>	community
<b>none</b>	

```

┌
└
┌
└
┌
└

```

```

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
```

<b>match as-path</b>	AS_PATH
<b>match community</b>	
<b>match metric</b>	
<b>match origin</b>	
<b>set as-path prepend</b>	AS_PATH
<b>set origin</b>	
<b>set metric-type</b>	

-	-

### 44.1.38 set dampening

match  
no

**set dampening**

**set dampening** *half-life reuse suppress max-suppress-time*

**no set dampening**

<i>half-life</i>	1..45( )	15
<i>reuse</i>	1..20000	750
<i>suppress</i>	1..20000	2000
<i>max-suppress-time</i>	1..255( )	4* half-life

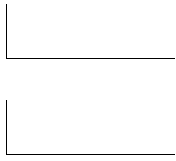
---

|

|

Ruijie(config)# **route-map**

---



---

```

set ip default next-hop
  ip address
  weight
  next-hop
  WCMP
  weight
  IP
  32
  4
  nexthop
  set
  WCMP
  weight
  nexthop
  weight
  1
set ip next-hop
set ip default next-hop
set ip next-hop
set ip default next-hop
  (nexthop)
  1
setsetG`VE`_T Z —
```

```
Ruijie(config- route-map)#set default interface null 0
```

<b>route-map</b>	
<b>match ip address</b>	
<b>set default interface</b>	
<b>set default interface</b>	
<b>set interface</b>	
<b>set ip next-hop</b>	IP
<b>set ip precedence</b>	IP

-	-

#### 44.1.41 set ip dscp

```

match          DSCP          set ip dscp
no
set ip dscp dscp_value
no set ip dscp

```

<i>dscp_value</i>	IP IP DSCP

<b>route-map</b>	
<b>match ip address</b>	
<b>set default interface</b>	
<b>set default interface</b>	
<b>set interface</b>	
<b>set ip default next-hop</b>	IP
<b>set ip precedence</b>	IP

S8600	M8600-MPLS	MPLS
-	-	-

#### 44.1.42 set ip next-hop

match IP set ip next-hop  
no

**set ip next-hop** *ip-address* [*weight*] [...*ip-address* [*weight*]]

**no set ip next-hop** *ip-address* [*weight*] [...*ip-address* [*weight*]]

<i>ip-address</i>	IP
<i>weight</i>	

<b>set</b>	WCMP	weight	WCMP	WCMP
<b>set ip next-hop</b>	IP	32		
ip address	weight	4	nexthop	

	next-hop	weight	set	
	WCMP		WCMP	
		weight	nexthop	weight
r	1			

1

set

```

serial 1/0                                10.0.0.0/8
      192.168.100.1                        172.16.0.0/16
      172.16.100.1

```

```

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

```

*load-balance*

<b>set ip default next-hop</b>	IP
<b>set ip precedence</b>	IP
-	-

### 44.1.43 set ip next-hop verify-availability

IP set ip next-hop

**verify-availability no**

**set ip next-hop verify-availability ip-address track track-obj-num**

**no set ip next-hop verify-availability ip-address track track-obj-num**

<i>ip-address</i>	IP
<i>track-obj-num</i>	


```

                    serial 1/0 10.0.0.0/8
                      192.168.100.1 172.16.0.0/16
                      172.16.100.1

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

```

<b>route-map</b>	
<b>match ip address</b>	
<b>set default interface</b>	
<b>set default interface</b>	
<b>set interface</b>	
<b>set ip default next-hop</b>	IP
<b>set ip precedence</b>	IP

-	-

#### 44.1.44 set ip precedence

**match** IP , **set ip**  
**precedence no**

**set ip precedence** {<0-7> | *critical* | *flash* | *flash-override* | *immediate* | *internet* | *network* | *priority* | *routine* }

**no set ip precedence** {<0-7> | *critical* | *flash* | *flash-override* | *immediate* | *internet* | *network* | *priority* | *routine* }

---

IP

IP

**set ip precedence**

IP

FastEthernet 0/0

192.168.217.68

precedence 4

Ruijie(config)#**access-list 1 permit 192.168.217.68 0.0.0.0**

Ruijie(config)#**route-map name**

Ruijie(config-route-map)#**match ip address 1**

Ruijie(config-route-map)#**set ip precedence 4**

Ruijie(config)#**interface FastEthernet 0/0**

Ruijie(config-if)#**ip policy route-map name**

<b>match interface</b>	
<b>match ip address</b>	
<b>match ip next-hop</b>	
<b>match ip route-source</b>	

D3 Tm/TT0 1 Tf10.05

---

**set ip tos** {<0-15> | *max-reliability* | *max-throughput* |

-	-

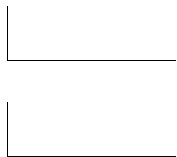
#### 44.1.46 set ipv6 default next-hop

```

match      IPv6
ipv6 default next-hop      no
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]...]

```

<i>global-ipv6-address</i>	IPv6
<i>weight</i>	1 8.



```

IPv6
set ipv6 default nexthop
match      IPv6
set ipv6 next-hop
set ipv6 default next-hop
64
r set ipv6 next-hop verify-availability      set ipv6
next-hop verify-availability

```

```

fastEthernet 0/0
2001:0db8:2001:1760::/64      2002:0db8:2003:1::95
Ruijie(config)# ipv6 access-list acl_for_pbr
Ruijie(config -ipv6-acl)#permit ipv6 any 2001:0db8:2001:1760::/64
Ruijie(config)#route-map rm_if_0_0

```

```

Ruijie(config-route-map)#match ipv6 address acl_for_pbr
Ruijie(config-route-map)# set ipv6 default next-hop
2002:0db8:2003:1::95
Ruijie(config)#interface FastEthernet 0/0
Ruijie(config-if)#ipv6 policy route-map rm_if_0_0

```

<b>match ipv6 address</b>	
<b>ipv6 policy route-map</b>	
<b>set ipv6 next-hop</b>	

S86                      M8600-MPLS                      MPLS

RGOS 10.4	RGOS 10.4

#### 44.1.47 set ipv6 next-hop

```

match            IPv6                      IPv6                      set ipv6
next-hop                      no
set ipv6 next-hop global-ipv6-address [weight] [global-ipv6-address [weight]...]
no set ipv6 next-hop global-ipv6-address [weight] [global-ipv6-address [weight]

```

		weight		set
<b>r</b>	WCMP		WCMP	
		weight	nexthop	weight
	1			

set ipv6 next-hop

set ipv6 default next-hop

```

fastEthernet 0/0
2001:0db8:2001:1760::/64          2002:0db8:2003:1::95
Ruijie(config)# ipv6 access-list acl_for_pbr
Ruijie(config -ipv6-acl)#permit ipv6 any 2001:0db8:2001:1760::/64
Ruijie(config)#route-map rm_if_0_0
Ruijie(config-route-map)#match ip address acl_for_pbr
Ruijie(config-route-map)# set ipv6 next-hop 2002:0db8:2003:1::95
Ruijie(config)#interface FastEthernet 0/0
Ruijie(config-if)#ipv6 policy route-map rm_if_0_0

```

<b>match ipv6 address</b>	
<b>ipv6 policy route-map</b>	
<b>set ipv6 default next-hop</b>	IPv6

S86

RGOS 10.4	RGOS 10.4

#### 44.1.48 set ipv6 next-hop verify-availability

Route-map  
IPv6

**set ipv6 next-hop verify-availability**  
**no**

BFD

**set ipv6 next-hop verify-availability** [*global-ipv6-address* [*weight*] **bfd** *interface-type interface-number gateway*]

**no set ipv6 next-hop verify-availability** [*global-ipv6-address* [*weight*] **bfd** *interface-type* *interface-number* *gateway*]

<i>[`cVU!]dj`*!LXXfYgg</i>	fl t =Dj *
<b>bfd</b>	fl t 6 8
<i>kY][\h</i>	fl t
<i>interface-type</i> <i>interface-number</i>	fl t
<i>gateway</i>	( ) BFD IPv6

6 8

<b>r</b>	<i>gYh`]dj`*`bYl h\cd</i> =Dj * 6 8
----------	--

```
# BFD BFD 2002::2
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# route-map Example1 permit 10
Ruijie(config-route-map)# match ipv6 address 1
Ruijie(config-route-map)# set ipv6 precedence priority
Ruijie(config-route-map)# set ipv6 next-hop 2002::2
Ruijie(config-route-map)#set ipv6 next-hop verify-availability
2002::2 bfd FastEthernet 0/1 2002::2
Ruijie(config-route-map)#end
```

<b>bfd</b>	BFD
------------	-----

10.4	

#### 44.1.49 set ipv6 precedence

match IPv6 set ipv6  
precedence no

**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* }

<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>	IPv6
0~7	0~7

0	routine
1	priority
2	network
3	internet
4	immediate
5	flash-override
6	flash
7	critical

1 IPV6 3

ACL6

Ruijie(config)#ipv6 access-list aaa

Ruijie(config-ipv6-acl)#permit ipv6 2003:1000::10/80 2001:100::/64

route-map

Ruijie(config)#route-map pbr-aaa permit 10

Ruijie(config-route-map)#set ipv6 next-hop 2001:1234::2

Ruijie(config-route-map)# set ipv6 precedence 3

Or

Ruijie(config-route-map)# set ipv6 precedence immediate

<b>match ipv6 address</b>	IPv6 PBR ACL
<b>route-map</b>	
<b>set default interface</b>	
<b>set interface</b>	
<b>set ipv6 default next-hop</b>	
<b>set ipv6 next-hop</b>	
<b>show ipv6 policy</b>	
<b>show route-map</b>	

-

10.4	

#### 44.1.50 set level

match

set level

no

set level {level 1 | level 2 | level 1-2 | stub-area | backbone}

no set level

--	--

--	--

┌

┌

┌

```

                                OSPF          RIP          backbone
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

```

match interface	
match ip address	
match ip next-hop	
match ip route-source	
match metric	
match route-type	
match tag	
set metric-type	
set tag	

┌

--	--

### 44.1.51 set local-preference

```

match          LOCAL_PREFERENCE          set
local-preference  no

```

**set local-preference** *number*

**no set local-preference**

<i>number</i>	0-4294967295

└───┘

└───┘

└───┘

local-preference

local-preference

└───┘

```
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
```

└───┘

<b>match as-path</b>	AS_PATH
<b>match metric</b>	
<b>match origin</b>	
<b>set as-path prepend</b>	AS_PATH
<b>set metric</b>	
<b>set metric-type</b>	

└───┘

└───┘

-	-

---

match

**set metric**

**no**

**set metric** [+ *metric-value* | - *metric-value* | *metric-value*]

**no set metric**



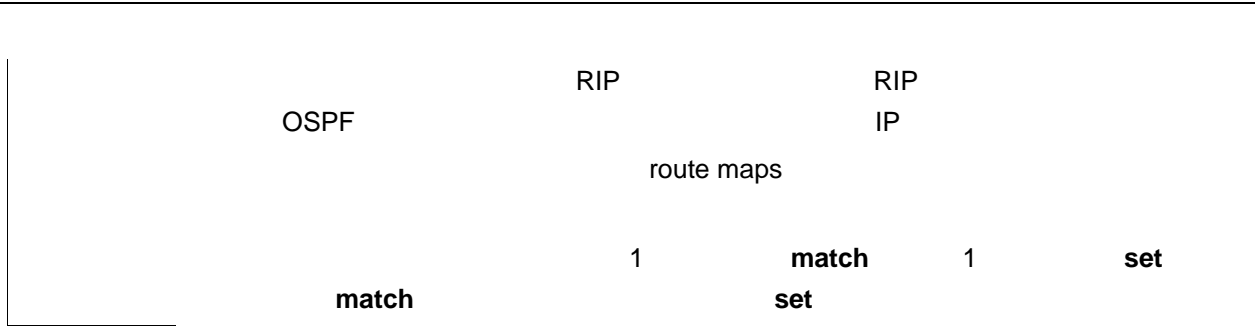
---

**match ip route-source**

---

```
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
```

<b>match interface</b>	
<b>match ip address</b>	
<b>match ip next-hop</b>	
<b>match ip route-source</b>	
<b>match metric</b>	
<b>match route-type</b>	



---

**egp**

EGP

**set originator-id** *ip-addr*

**no originator-id** [*ip-addr*]

<i>ip-addr</i>	

|

|

|

```
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
```

<b>match as-path</b>	AS_PATH
<b>match metric</b>	
<b>match origin</b>	
<b>set as-path prepend</b>	AS_PATH
<b>set metric</b>	
<b>set local-preference</b>	

|

-	-

## 44.1.57 set tag

match

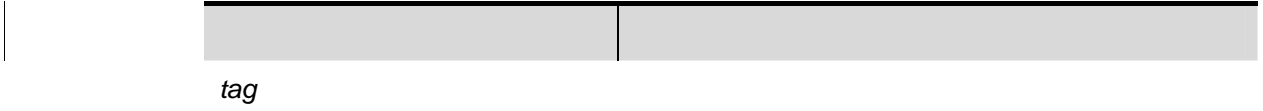
set tag

no

---

**set tag *tag***

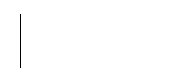
**no set tag**



---

## 44.1.58 set weight

match BGP set weight  
no  
set weight *number*



.



---

	-	-

### 44.2.2 show ip prefix-list

#### show ip prefix-list

**show ip prefix-list** [ *prefix-name* ]

	<i>prefix-name</i>	

┌

┌

┌

```
Ruijie# show ip prefix-list
ip prefix-list pre: 2 entries
seq 5 permit 192.168.64.0/24
seq 10 permit 192.2.2.0/24
```

	-	-

┌

	-	-

### 44.2.3 show ip route

IP **show ip route**

**show ip route** [[vrf *vrf\_name*] [*network* [*mask*] | **count** | **protocol** [*process-id*] | **weight** ]]

<b>vrf vrf_name</b>	VRF
<i>network</i>	
<i>mask</i>	
<b>count</b>	
<b>protocol</b>	<b>connected, static</b> <b>ospf, rip</b> <b>bgp, isis,</b>
<i>process-id</i>	
<b>weight</b>	

#### 1 show ip route

Ruijie# **show ip route**

Codes: C - connected, S - static, R - RIP, B - BGP

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

i - IS-IS,su - IS-IS summary,L1 - IS-IS level-1,L2 - IS-IS level-2

ia - IS-IS 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

---

O

C  
S  
R RIP  
B BGP  
O OSPF  
i IS-IS

E1 OSPF

E2 OSPF

OSPF-OSPF

E2

---

```
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
```

-	-

-	-

#### 44.2.4 show ipv6 prefix-list

IPv6

---

## 44.2.5 show ipv6 route

IPv6 **show ipv6 route**

**show ipv6 route** *[[network/prefix-length | summary | protocol]]*

<i>network/prefix-length</i>	
<b>summary</b>	ipv6
<b>protocol</b>	<b>connected, static</b> <b>ospf, rip</b> <b>bgp, isis,</b>

**show ipv6 route**

Ruijie(config)# **show ipv6 route**

IPv6 routing table name is Default(0) global scope - 7 entries

O	C L S R RIP B BGP O OSPF i IS-IS
E2	E1 OSPF E2 OSPF N1 OSPF NSSA 1 N2 OSPF NSSA 2 IA OSPF su IS-IS L1 IS-IS 1 L2 IS-IS 2 ia IS-IS
20::/64	
[1/0]	
Via 10::4	IP
00:00:06	
VLAN 1	

--	--

**ipv6 route**

---

**show route-map**

**show route-map** *route-map-name*

---

# 45

## 45.1

### 45.1.1 ip local policy route-map

ip local policy route-map

no

ip local policy route-map *route-map*

no ip local policy route-map

<i>route-map</i>	

IP

IP

1

set interface

set interface

192.168.217.10

serial 2/0

1 IP ACL

```
Ruijie(config)#access-list 1 permit 192.168.217.10
```

2

```
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
```

```
Ruijie(config)#ip local policy route-map lab1
```

<b>access-list</b>	
<b>route-map</b>	
<b>set vrf</b>	IP VRF
<b>set ip next-hop</b>	
<b>set ip default next-hop</b>	
<b>set interface</b>	
<b>set default interface</b>	
<b>set ip tos</b>	IP TOS
<b>set ip dscp</b>	IP DSCP
<b>set ip precedence</b>	IP
<b>match ip address</b>	
<b>match length</b>	

-	-

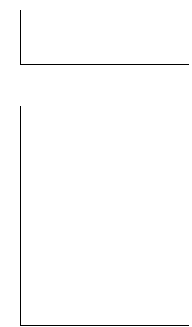
## 45.1.2 ip policy

```
set ip [default] nexthop  
ip policy no
```

```
ip policy {load-balance | redundance}
```

```
no ip policy
```

load-balance   redundance	



**set ip next-hop**

WCMP                    8                    ECMP                    32  
ARP                    ARP                    MAC

MAC

nexthop,

**FastEthernet 0/0**

nexthop

1                    IP                    ACL config)#L access-listCL

---

---

45.1.3 ip policy route-map

ip policy route-map

no

ip policy route-map *route-map*

no ip policy route-map

<i>route-map</i>	

1

r

```
FastEthernet 0/0
 10.0.0.1          196.168.4.6      20.0.0.1
196.168.5.6
 1          IP          ACL
Ruijie(config)#access-list 1 permit 10.0.0.1
Ruijie(config)#access-list 2 permit 20.0.0.1
 2
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
3
Ruijie(config)#interface FastEthernet 0/0
Ruijie(config-if)#ip policy route-map lab1
Ruijie(config-if)#exit

```

<b>access-list</b>		
<b>route-map</b>		
<b>set vrf</b>	IP	VRF
<b>set ip next-hop</b>		
<b>set ip default next-hop</b>		
<b>set interface</b>		
<b>set default interface</b>		
<b>set ip tos</b>	IP	TOS
<b>set ip dscp</b>	IP	DSCP
<b>set ip precedence</b>	IP	
<b>match ip address</b>		
<b>match length</b>		

-	-

#### 45.1.4 ipv6 local policy route-map

no

**ipv6 local policy route-map** *route-map-name*

**no ipv6 local policy route-map**

--	--

---

<i>route-map-name</i>	<b>route-map</b>
<b>no</b>	

|

|

IPv6 IPv6 ping  
IPv6  
1

0Ð@™)Ú Ě ñKD L I Ô\% Q ðÂ#\* \*Q ,@ w Â òUE-ÑÐU@

<b>set ipv6 precedence</b>	IPv6
<b>show ipv6 policy</b>	
<b>show route-map</b>	
<hr/>	
<hr/>	
<hr/>	
<b>10.4</b>	

### 45.1.5 ipv6 policy

```

set next-hop
ipv6 policy .
ipv6 policy {load-balance | redundance}
no ipv6 policy C

```

<b>set default interface</b>	
<b>set interface</b>	
<b>set ipv6 default next-hop</b>	
<b>set ipv6 next-hop</b>	
<b>show ipv6 policy</b>	

-

10.4	

### 45.1.6 ipv6 policy route-map

ipv6 policy route-map      no

**ipv6 policy route-map** *route-map-name*

**no ipv6 policy route-map**

<i>route-map-name</i>	<b>route-map</b>
-----------------------	------------------

	1
<b>r</b>	

1	GigabitEthernet 1/38
2003:1000::10/80	2001:100::/64      AAA    IPV6 ACL

---

```
2003:1001::2
IPV6 ACL
Ruijie(config)#ipv6 access-list aaa
Ruijie(config-ipv6-acl)#permit ipv6 2003:1000::10/80 2001:100::/64
route-map
Ruijie(config)#
```

```
Ruijie#show ip policy
Banlance Mode  redundance
Interface      Route map
local          test
FastEthernet 0/0  test
```

<b>ip policy route-map</b>	
<b>ip local policy route-map</b>	


### 45.2.2 show ipv6 policy

IPv6    show ipv6 policy

show ipv6 policy [*route-map-name*]

<i>route-map-name</i>	

1

```
Ruijie#show ipv6 policy
```

---

```
Banlance Mode  redundance
Interface      Route map
VLAN 1        RM_for_Vlan_1
VLAN 2        RM_for_Vlan_2
```

Banlance Mode	
Interface	
Route map	

<b>show route-map</b>	

<b>10.4</b>	

# 46 IGMP

## 46.1

### 46.1.1 ip igmp access-group

no

**ip igmp access-group** *access-list*

**no ip igmp access-group**

<i>access-list</i>	WORD <1-199> <1300-2699>

┌

┌

			<b>ip</b>
<b>igmp access-group</b>			
	IGMPv3		ACL
	MLD report	S1,S2,S3...Sn,G	(0,G)
<b>r</b>	ACL		
	ACL	(0, G)	
	S1,S2,S3...Sn,G		

```
Ruijie(config-ext-nacl)# permit ip host 1.1.1.1 host 233.3.3.3
Ruijie(config)# interface ethernet 0
Ruijie(config-if)# ip igmp access-group ext_acl
```

-	-

-	-

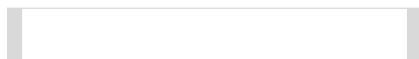
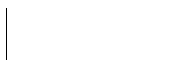
### 46.1.2 ip igmp join-group

no

**ip igmp join-group** *group-address*

**no ip igmp join-group** *group-address*

<i>group-address</i>	



-	-

### 46.1.4 ip igmp last-member-query-count

```
last-member-query-count          leave
                                last-member-query-count          no
```

```
ip igmp last-member-query-count number
```

```
no ip igmp last-member-query-count
```

<i>number</i>	, <2-7>

```
last member query count          2
```

```
IGMPv2                          ip igmp last-member-query-count
```

```

3
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0
Ruijie(config-if)# ip igmp last-member-query-count 3
```

-	-

---

<1-255>	0.1s
---------	------

---

**ip igmp last-member-query-count**

per-query-interval 200

-
---

---

-
---

---

>0 1 Tf 0.00233 tTT0

---

<i>except</i>	access-list	limit
<i>access-list</i>		

1024

IGMP IGMP

300

Ruijie(config-if)# ip igmp limit 300

-	-

-	-

### 46.1.7 ip igmp limit ( )

igmp

no

**ip igmp limit** *number* [*except access-list*]

**no ip igmp limit** *number* [*except access-list*]

<i>number</i>	IGMP
<i>except</i>	access-list limit
<i>access-list</i>	

65536

IGMP  
IGMP

300

Ruijie config # `ip igmp limit 300`

-	-

-	-

### 46.1.8 ip igmp mroute-proxy

`ip igmp mroute-proxy interfname`

`no ip igmp mroute-proxy`

<i>interfname</i>	

proxy-service

gmp

```
Ruijie(config-if)# ip igmp mroute-proxy fa 0/1
```

-	-

-	-

### 46.1.9 ip igmp proxy-service

```

mroute-proxy
mroute-proxy
ip igmp proxy-service
no ip igmp proxy-service

```

-	-

```
proxy-service
```

```

32 IGMP Proxy
proxy-service proxy-service
proxy-service mroute-proxy
interface switchport ip igmp mroute-proxy

```

┌

┌

-	-

### 46.1.10 ip igmp query-interval

no

**ip igmp query-interval** *seconds*

**no ip igmp query-interval**

┌

<i>seconds</i>	s 1 18000

┌

125

┌

┌

┌

1 Ethernet 0 120s

Ruijie(config-if)# **ip igmp query-interval 120**

2 Ethernet 0

Ruijie(config-if)# **no ip igmp query-interval**

┌

-	-

┌

┌

-	-

no

**ip igmp query-max-response-time** *seconds*

**no ip igmp query-max-response-time**

<i>seconds</i>	s 1 25

10s

IGMPv2

1 Ethernet 0 20s

Ruijie(config-if)# **ip igmp query-max-response-time 20**

2 Ethernet 0

Ruijie(config-if)# **no ip igmp query-max-response-time**

|  
|  
|

255s

|  
|  
|

|  
|  
|

**query-interval** IGMPv2 Ruijie **255s** **ip igmp**

1

3

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0
Ruijie(config-if)# ip igmp robustness-variable 3
```

-	-

-	-

#### 46.1.14 ip igmp ssm-map enable

**igmp ssm-map**

**ip igmp ssm-map enable**

**no ip igmp ssm-map enable**

-	-

-	-

### 46.1.15 ip igmp ssm-map static

ssm-map

**ip igmp ssm-map static** *access-list a.b.c.d*

**no ip igmp ssm-map static** *access-list a.b.c.d*

<i>access-list</i>	Acl <1-99>  <1300-1999>  WORD
<i>a.b.c.d</i>	

┌

┌

┌

**ip igmp ssm-map enable**

v3

┌

ACL 11

192.168.2.2

Ruijie(config)# **ip igmp ssm-map static 11 192.168.2.2.**

-	-

┌

-	-

### 46.1.16 ip igmp static-group

no

**ip igmp static-group** *group-address*

**no ip igmp static-group** *group-address*

<i>group-address</i>	

└───┘

└───┘

└───┘

Eth0      236.6.6.6

|

|

igmp

igmp

|

2

Ruijie# **configure terminal**

Ruijie(config)# **interface ethernet 0**

Ruijie(config-if)# **ip igmp version 2**

|

-	-

|

|

-	-

## 46.2

### 46.2.1 clear ip igmp group

IGMP

**clear ip igmp group** *group-address* |

IGMP

**clear ip igmp group**

Ruijie# **clear ip igmp group**

<b>show ip igmp groups</b>	-
<b>show ip igmp interface</b>	-

-	-

### 46.2.3 show ip igmp groups

#### IGMP

**show ip igmp groups** [*group-address* | *interface-type interface-number*] [*detail*]

<i>group-address</i>	32 IP D 8
<i>interface-type</i>	
<i>interface-number</i>	
<i>detail</i>	

|  
 |  
 |  
 |

1

Ruijie# **show ip igmp groups**

IGMP Connected Group Membership

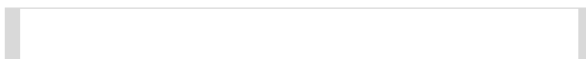
Group Address Interface Uptime Expires Last Reporter

224.0.1.1 eth2 00:00:09 00:04:17 10.10.0.82

224.0.1.24 00:00:01 00:04:17 10.10.0.82

224.0.1.24 00:00:05\_0 125>6<16430st R91 00:04:176010.10.0.82

```
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
```



```

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
IGMP Snooping is globally enabled
IGMP Snooping is enabled on this interface
IGMP Snooping fast-leave is not enabled
IGMP Snooping querier is not enabled
IGMP Snooping report suppression is enabled
    
```

-	-

-	-

### 46.2.5 show ip igmp ssm-mapping

```

IGMP      ssm-map
show ip igmp ssm-mapping ( A.B.C.D )
    
```

A.B.C.D	

```

IGMP      ssm-map
    
```

```

1      ssm-map
Ruijie# sh ip igmp ssm-mapping
    
```

```
SSM Mapping : Enabled
Database    : Static mappings configured
      2      233.3.3.3
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
```

-	-

--	--

# 47 PIM-DM

## 47.1 PIM-DM

### 47.1.1 ip pim dense-mode

```

PIM-DM ip pim dense-mode no
PIM-DM
ip pim dense-mode
no ip pim dense-mode

```

```

PIM-DM
PIM-DM
PIM-DM IGMP
Failed to enable PIM-DM on <
>, resource temporarily unavailable, please try again
PIM-DM Configure failed! VIF limit
exceeded in NSM!!!
PIM-DM
PIM-DM PIM-SM DVMRP
v4

```

```

Ruijie# configure terminal
Ruijie(config)# interface fastethernet
Ruijie-if(config)# )Tj/TT re37Tf12.97ip pim dense-modeterminal

```


	-	-

### 47.1.3 ip pim override-interval

hello override-interval **ip pim override-interval**  
 no hello override-interval

**ip pim override-interval** *interval-milliseconds*  
**no ip pim override-interval**

	<i>interval-milliseconds</i>	<1-65535>
	2500	

### 47.1.4 ip pim query-interval

hello interval                      **ip pim query-interval**

no                      hello interval

**ip pim query-interval** *interval-seconds*

**no ip pim query-interval**

<i>interval-seconds</i>	<1-65535>

30

hello interval   hello holdtime                      hello interval   3.5

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim query-interval 123
```



### 47.1.5 ip pim propagation-delay

hello                      propagation-delay                      **ip pim propagation-delay**

no                      hello                      propagation-delay

**ip pim propagation-delay** *interval-milliseconds*

**no ip pim propagation-delay**


	<i>interval-milliseconds</i>	<1-32767>
	500	
	propagation-delay	
	propagation-delay 600	
	Ruijie# <b>configure terminal</b>	
	Ruijie(config)# <b>interface fastethernet 0/1</b>	
	Ruijie(config-if)# <b>ip pim propagation-delay 600</b>	

### 47.1.6 ip pim state-refresh disable

	PIM-DM	1	ip pim state-refresh disable
j			

	<b>ip pim state-refresh disable</b>	
<b>r</b>		PIM-DM

PIM-DM

```
Ruijie# configure terminal
Ruijie(config)# ip pim state-refresh disable
```


┌


### 47.1.7 ip pim state-refresh origination-interval

	PIM-DM	ip pim state-refresh
<b>origination-interval</b>		
no		
<b>ip pim state-refresh origination-interval</b> <i>interval-seconds</i>		
<b>no ip pim state-refresh origination-interval</b>		

<i>interval-seconds</i>	<1-100>

┌ 60

┌

┌

```
Ruijie# configure terminal
Ruijie(config)# ip pim state-refresh origination-interval 60
```

	origination-interval 65	

## 47.2 PIM-DM

### 47.2.1 show ip pim dense-mode interface

PIM-DM aB61QÄ

detail


/ /

#### ip pim dense-mode interface

Ruijie# B.6w ip pim dense-mode interface

Interface	VIFIndex	Ver/	Nbr
-----------	----------	------	-----

VIF Index	VIF ID
Ver/Mode	PIM /
Nbr Count	PIM-DM

<b>show ip pim dense-mode neighbor</b>	PIM-DM
--	--------

--	--

### 47.2.2 show ip pim dense-mode mroute

PIM-DM show ip pim dense-mode mroute

**show ip pim dense-mode mroute [ A.B.C.D A.B.C.D ] [ summary ]**

<i>A.B.C.D A.B.C.D</i>	
<i>summary</i>	

/ /

/

```

Downstream IF List:
FastEthernet 0/45:
Downstream State: NoInfo
Assert State: Loser, AT:170
    
```



### 47.2.3 show ip pim dense-mode neighbor

PIM-DM **show ip pim dense-mode neighbor**

**show ip pim dense-mode neighbor** [ *interface-type interface-number* ]

<i>interface-type interface-number</i>	

/ /

#### **show ip pim dense-mode neighbor**

```

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
    
```

Neighbor-Address	
Interface	

Uptime/Expires	
Ver	PIM

	Metric	
	Pref	

### 47.2.5 show ip pim dense-mode track

PIM-DM show ip pim dense-mode track

show ip pim dense-mode track


/ /

PIM  
clear ip pim dense-mode track  
PIM

**show ip pim dense-mode track**

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>clear ip pim dense-mode track</b>	PIM


### 47.2.6 clear ip pim dense-mode track

```

PIM-DM clear ip pim dense-mode track

```

**clear ip pim dense-mode track**


└─┘

└─┘

└─┘

PIM

```

Ruijie# clear ip pim dense-mode track

```

	<b>show ip pim dense-mode track</b>	PIM


# 48 PIM-SM

## 48.1 PIM-SM

### 48.1.1 clear ip mroute

**clear ip mroute** { \* | *group\_address* [*source\_address*] }

*	pimsm
<i>group_address</i>	pimsm
<i>group_address source_address</i>	pimsm

┌

┌

┌

pimsm

Ruijie# **clear ip mroute \***  
 Ruijie# **clear ip mroute 224.2.2.2**  
 Ruijie# **clear ip mroute 224.2.2.2 2.2.2.2**

-	-

┌

-	-

### 48.1.2 clear ip mroute statistics

**clear ip mroute statistics** { \* | *group\_address* [*source\_address*] }

*	pimsm
group_address	pimsm
group_address source_address	pimsm

└──

└──

└── pimsm

```
Ruijie# clear ip mroute statistics *
Ruijie# clear ip mroute statistics 224.2.2.2
Ruijie# clear ip mroute statistics 224.2.2.2 2.2.2.2
```

-	-

└──

-	-

### 48.1.3 clear ip pim sparse-mode bsr rp-set

**clear ip pim sparse-mode bsr rp-set \***

*	rp-set

└── rp-set

└──

└── RP

```
Ruijie# clear ip pim sparse-mode bsr rp-set *
```

-	-

-	-

### 48.1.4 clear ip pim sparse-mode track

**clear ip pim sparse-mode track**

-	-

PIM

PIM

```
Ruijie# clear ip pim sparse-mode track
```

<b>show ip pim sparse-mode track</b>	-

-	-

### 48.1.5 ip multicast-routing

**ip multicast-routing**

	-	-

|

|

|

**ip pim sparse-mode**                      pimsm  
   pimsm

|

Ruijie (config)# **ip multicast-routing**

	-	-

|



**ip pim accept-crp-with-null-group**

	-		-	
	BSR	prefix-count	0	C-RP-ADV
	BSR	BSR	BSR	prefix-count
	0	C-RP-ADV	C-RP	
	Ruijie# <b>configure terminal</b>			
	Ruijie(config)# <b>ip pim accept-crp-with-null-group</b>			
	-		-	
	10.4(1)			

**48.1.9 ip pim accept-register list**

**ip pim accept-register list *access-list***

	<i>access-list</i>	access-list	<100 199>
		<2000 2699>	acl
		RP	
	RP		
	Ruijie (config)# <b>ip pim accept-register list 100</b>		

```
Ruijie (config)# access-list 100 permit ip 192.168.195.0 0.0.0.255  
225.1.1.1 0.0.0.255
```

<b>access-list</b>	-

-	-

### 48.1.10 ip pim bsr-candidate

**ip pim bsr-candidate** *interface-type interface-number* [ *hash-mask-length* ]  
[ *priority-value* ]

<i>interface-type interface-number</i>	
<i>hash-mask-length</i>	<0-32> RP HASH 10
<i>priority-value</i>	<0-255> BSR 64

BSR

```

PIM-SM                                  BSR BSR RP
                                BSR      BSR
C-BSR    BSR      PIM-SM      224.0.0.13
                                BSR
                                BSR      PIM
                                BSR
                                BSR
                                BSR
IP        BSR      BSR      BSR
    
```

```
Ruijie# configure terminal  
Ruijie(config)# ip pim bsr-candidate g 0/3  
Ruijie(config)# ip pim bsr-candidate g 0/3 30 192
```

-	-

-	-

### 48.1.11 ip pim bsr-border

#### ip pim bsr-border

-	-

BSR

BSM                                  BSR                                  BSM  
                                BSM

g 0/3          BSR

```
Ruijie# configure terminal  
Ruijie(config)# interface g 0/3  
Ruijie(config-if)# ip pim bsr-border
```

-	-

--	--

--	--

### 48.1.12 ip pim dr-priority

**ip pim dr-priority** *priority-value*

<i>priority-value</i>	<0-4294967294> 1

--	--

DR 1

--	--

--	--

```

DR
hello DR
IP DR
hello
DR IP DR
    
```

--	--

```

Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim dr-priority 10000
    
```


-	-
---	---

rp-set rp

rp rp

rp rp

```
Ruijie# configure terminal
Ruijie(config)# ip pim ignore-rp-set-priority
```

-	-
---	---

-

-	-
---	---

### 48.1.14 ip pim jp-timer

**ip pim jp-timer interval-seconds**

<i>Interval-seconds</i>	<1-65535>
-------------------------	-----------

join/prune 60s

join/prune

join/prune

```
Ruijie# configure terminal
Ruijie(config)# ip pim jp-timer 50
```

-	-
---	---



|

|

|

PIM-SM                      PIM                      peering

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim neighbor-filter 14
Ruijie(config-if)# exit
Ruijie(config)#access-list 14 deny
```

join

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim neighbor-tracking
```

ip pim propagation-delay	-

-	-

### 48.1.18 ip pim override-interval

**ip pim override-interval** *interval-milliseconds*

<i>interval-milliseconds</i>	<1-65535>

Hello      Override-Interval      2500

Override-Interval

---

```

r           J/P-override-interval      J/P-override-interval
           Join-Prune      holdtime

```

---

Override-Interval      3000

```
Ruijie# configure terminal
Ruijie(config)# interface g0/3
Ruijie(config-if)# ip pim override-interval 3000
```

	<b>ip pim propagation-delay-</b>	-
	-	-

### 48.1.19 ip pim propagation-delay

**ip pim propagation-delay interval-milliseconds**

	<i>interval-milliseconds</i>	<1-32767>

Hello Propagation\_Delay 500

	propagation-delay	
	-----	
	J/P-override-interval	J/P-override-interval
<b>r</b>	Join-Prune	holdtime
	-----	

```

propagation-delay 600
Ruijie# configure terminal
Ruijie(config)# interface g0/3
Ruijie(config-if)# ip pim propagation-delay 600
    
```

	<b>ip pim override-interval</b>	-
	<b>ip pim neighbor-tracking</b>	-

--	--	--



```

hello                               30s

```

```


```

```

Hello                               Hello                               Hello
65535 Hello                           3.5 Hello                               * 3.5 >
18725

```

```

Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim query-interval 123

```

-	-

```


```

-	-

### 48.1.22 ip pim register-decapsulate-forward

#### ip pim register-decapsulate-forward


```

RP

```

```


```

```

RP                               pimsm
r
cpu

```

```

Ruijie# configure terminal
Ruijie(config)# ip pim register-decapsulate-forward

```

-	-
---	---

-	-
---	---

### 48.1.23 ip pim register-checksum-wholepkt

```

ip pim register-checksum-wholepkt [group-list access-list

```

<i>access-list</i>	access-list <1 99> <1300 1999>	acl group-list access-list
--------------------	--------------------------------	-------------------------------

```

pim
pim

```

```

Ruijie# configure terminal
Ruijie(config)# ip pim register-checksum-wholepkt
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>access-list</b>	-
--------------------	---

|

---

|

---

-	-

### 48.1.24 ip pim register-rate-limit

ip pim register-rate-limit *rate*

|

---

--	--

*rate*

-	-
---	---

RP

RP

RP

```
Ruijie# configure terminal
Ruijie(config)# ip pim register-rp-reachability
```

-	-

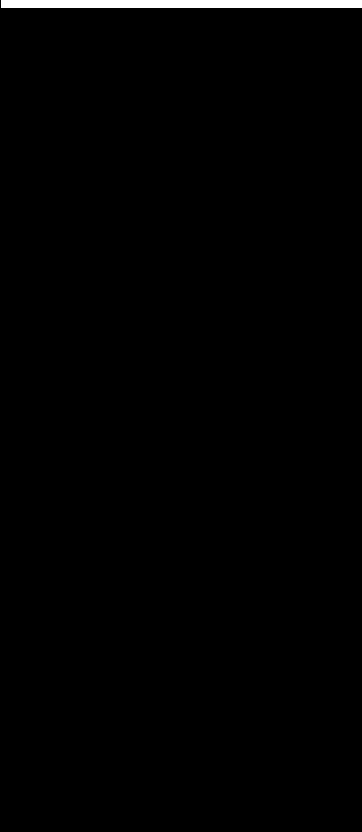
RP

-	-

### 48.1.26 ip pim register-source

**ip pim register-source** {*local\_address* | *interface-type interface-number*}

--	--





**ip pim rp-address** *rp-address* [*access\_list*]

<i>rp-address</i>	RP ip
<i>access_list</i>	access-list acl <1-99> <1300-1999> acl

rp

RP BSR

RP BSR  
BSR RP  
RP

”

## 48.1.29 ip pim rp-candidate

**ip pim rp-candidate** *interface-type interface-number* [**priority** *priority-value*] [**interval** *interval-seconds*][**group-list** *access\_list*]

<i>interface-type interface-number</i>	
<i>priority-value</i>	<0-255> priority priority-value 192
<i>Interval-seconds</i>	<1-16383> interval interval-seconds interval-seconds 60s
<i>access_list</i>	acl 1-99 acl group-list access_list

RP

```

PIM-SM
  RP
  C-RP
  RP
  BSR
  PIM
  rp
  permit ace
  deny ace
  RP
  C-RP
  BSR
  acl
  
```

```

Ruijie# configure terminal
Ruijie(config)# ip pim rp-candidate g 0/3
Ruijie(config)# ip pim rp-candidate g 0/3 priority 200 group-list
3 interval 70
Ruijie(config)# access-list 3 permit 225.1.1.1 0.0.0.255
  
```

<b>access-list</b>	-
--------------------	---

-	-
---	---

### 48.1.30 ip pim rp-register-kat

**ip pim rp-register-kat** *seconds*

<i>seconds</i>	KAT <1-65535>

RP KAT 210s

└───┘

rp kat

```
Ruijie# configure terminal
Ruijie(config)# ip pim rp-register-kat 250
```

-	-

└───┘

-	-

### 48.1.31 ip pim sparse-mode

**ip pim sparse-mode**

-	-

pimsm

└───┘

pim sm

└───┘

```

PIM-SM
PIM-SM
PIM-SM    IGMP

Failed to enable PIM-SM on <
>, resource temporarily unavailable, please try again

PIM-SM Configure failed! VIF limit
exceeded in NSM!!!

PIM-DM    DVMRP
v4
    
```

```

Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim sparse-mode
    
```

-	-

-	-

### 48.1.32 ip pim spt-threshold

**ip pim spt-threshold [group-list access-list]**

	access-list      acl      1-99 1300-1999          acl group-list access-list SPT

SPT

```

rp      spt
      SPT      group-list
group-list      SPT
    
```

```

Ruijie# configure terminal
Ruijie(config)# ip pim spt-threshold
Ruijie(config)# ip pim spt-threshold group-list 12
Ruijie(config)# access-list 12 permit 225.1.1.1 0.0.0.255
    
```

<b>access-list</b>	-

-	-

### 48.1.33 ip pim ssm

**ip pim ssm { default / range access\_list}**

<i>default</i>	232/8
<i>access_list</i>	acl      1-99      acl

SSM

```

pim ssm      pim ssm
    
```

```

1      232/8
Ruijie# configure terminal
Ruijie(config)# ip pim SSM default
2      10
Ruijie(config)# ip pim SSM range 10
Ruijie(config)# access-list 10 permit 232.0.0.1 0.0.0.255
    
```

	<b>access-list</b>	-
	-	-

### 48.1.34 ip pim triggered-hello-delay

**ip pim triggered-hello-delay** *interval-seconds*

	<i>interval-seconds</i>	<1-5>

Triggered-Hello-Delay 5s

Triggered-Hello-Delay  
 Triggered-Hello-Delay  
 hello

Triggered-Hello-Delay 3s  
 Ruijie# **configure terminal**  
 Ruijie(config)# **interface g 0/3**  
 Ruijie(config-if)# **ip pim triggered-hello-delay 3**



## 48.2 PIM-SM

### 48.2.1 show debugging

show debugging

-	-

┌

┌ / /

┌

```
Ruijie #show debugging
      show debugging
Ruijie #show debugging
ip packet debug:
ip packet debug debugging is on, acl: 0
```

-	-

┌

-	-

### 48.2.2 show ip pim sparse-mode bsr-router

show ip pim sparse-mode bsr-router

-	-

┌ BSR

\_\_\_\_\_ / \_\_\_\_\_ /

\_\_\_\_\_ BSR

```
Ruijie# show ip pim sparse-mode bsr-router
      show ip pim sparse-mode bsr-router
Ruijie# show ip pim sparse-mode bsr-router
```

/ /

PIM SM

```
Ruijie#show ip pim sparse-mode interface g 0/4 detail
Ruijie#show ip pim sparse-mode interface
Ruijie#show ip pim sparse-mode interface g 0/3
          show ip pim sparse-mode interface detail
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
```

-	-

-	-

#### 48.2.4 show ip pim sparse-mode local-members

**show ip pim sparse-mode local-members** [*interface-type interface-number*]

<i>interface-type interface-number</i>	

/ /

PIM SM

IGMP

```
Ruijie# show ip pim local-members
Ruijie# show ip pim local-members g 0/3
          sh ip pim sparse-mode local-members
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:
```

-	-

-	-

### 48.2.5 show ip pim sparse-mode mroute

**show ip pim sparse-mode mroute** {*group\_address* | *source\_address* | }

<i>group_address</i>	A.B.C.D
<i>source_address</i>	A.B.C.D
	( )

/ /

```

Ruijie# show ip pim sparse-mode mroute
Ruijie# show ip pim sparse-mode mroute 40.40.40.11
Ruijie# show ip pim sparse-mode mroute 235.0.0.1
Ruijie# show ip pim sparse-mode mroute 235.0.0.1 40.40.40.11
          sh ip pim sparse-mode mroute
Ruijie (config-if)#sh ip pim sparse-mode mroute
    
```

-	-

	-

|

-	-

### 48.2.7 show ip pim sparse-mode nexthop

show ip pim sparse-mode nexthop

-	-

|

| / /

| metric

Ruijie# show ip pim sparse-mode nexthop

-	-

|

-	-

### 48.2.8 show ip pim sparse-mode rp mapping

show ip pim sparse-mode rp mapping

-	-

|

|

/ /

|

rp

|

Ruijie #show ip pim sparse-mode rp mapping

Ruijie (config)#sh 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

|

-	-

|

|

-	-

### 48.2.9 show ip pim sparse-mode rp-hash

show ip pim sparse-mode rp-hash *group-address*

|

<i>group-address</i>	

|

|

/ /

RP

```
Ruijie# show ip pim sparse-mode rp-hash 225.1.1.1
```

```
Ruijie# show ip pim sparse-mode rp-hash 225.1.1.1
```

```
RP: 30.30.100.1
```

```
Info source: 30.30.100.1, via bootstrap
```

-	-

-	-

### 48.2.10 show ip pim sparse-mode track

**show ip pim sparse-mode track**

-	-

/ /

PIM  
clear ip pim sparse-mode track

PIM

**show ip pim sparse-mode track**

```
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
```

---

-	-

---

---

-	-

---



**clear ip mroute statistics** { \* | *group-address* [*source -address*]

*	
<i>group-address</i>	
<i>source -address</i>	

IP

230.0.0.1

Ruijie# **clear ip mroute statistics 230.0.0.1**

--	--

**show ip mroute**

-

<i>rpf-address</i>	
<i>interface-type interface-number</i>	
<i>distance</i>	0 <0-255> RPF

*Distance Distance 0*

RFF

ACL	IP	ACL	ACL	ACL
r		IP	IGMP	PIMSM

```
svi1      IP
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
```

```
limit      1024
threshold  2147483647
```

IPv6

r

500

```
Ruijie(config)# ip multicast route-limit 500
```

-	-

-	-

### 49.1.6 ip multicast-routing

no

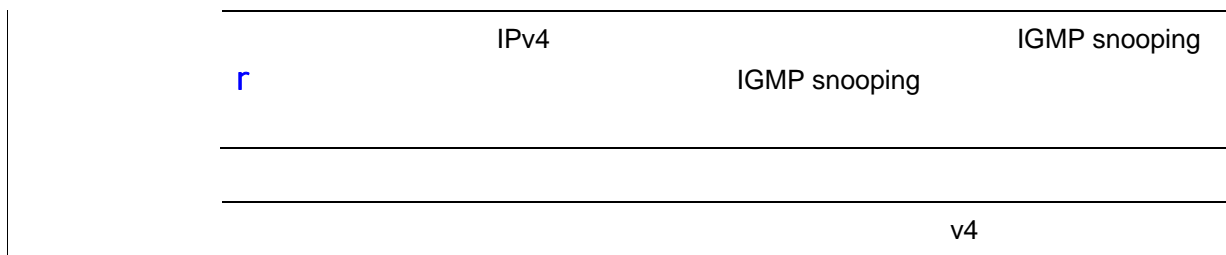
ip multicast-routing

no ip multicast-routing

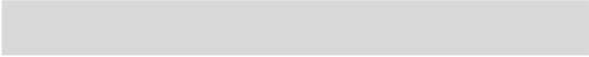
-	-

IPv4

IPv4



```
Ruijie(config)# ip multicast-rounting
```



┌

```

(192.168.43.4 225.1.1.5) GigabitEthernet 2/6
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
    
```

┌

-	-

┌

┌

-	-

### 49.1.8 ip multicast ttl-threshold

TTL Time-To-Live **no**

**ip multicast ttl-threshold *ttl-value***

**no ip multicast ttl-threshold**

┌

<i>ttl-value</i>	TTL , 0~255

┌

*ttl-value* 0

┌

TTL TTL

┌

TTL 5

┌

Ruijie(config-if)# ip multicast ttl-threshold 5

┌

--	--

---

	-	-
	-	-

---

### 49.1.9 ip multicast rpf longest-match

FD: A6; D A6; D FD:

MBGP

no

MBGP

**ip multicast rpf longest-match**

**no ip multicast rpf longest-match**


---

FD: A6; D A6; D FD:

A6; D

MBGP

```

|
|
|

```

-	10.4 2

## 49.2 IP

### 49.2.1 show ip mroute

**show ip mroute** [ *group-address*] [ *source-address*] [**dense**][ **sparse**] [**summary**] [**count**]

<i>group-address</i>	
<i>source-address</i>	
<b>dense</b>	PIMDM
<b>sparse</b>	PIMSM
<b>summary</b>	
<b>count</b>	

```

|
|
|

```

```

|
|
|

```

```

|
|
|

```

```

1
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

2

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

3

Ruijie# **show ip mroute count**

IP Multicast Statistics

Total 1 routes using 132 bytes memory

Route limit/Route threshold: 2147483647/2147483647

Total NOCACHE/WRONGVIF/WHOLEPKT rcv from fwd: 1/0/0

Flags	I- T- F-
Timers:Uptime/Stat Expiry	
Interface State	
Owner	
Incoming interface	
Outgoing interface list	
Forwarding Counts Pkt count/Byte count,	/
Other Counts: Wrong If pkts	

<b>ip multicast-routing</b>	
<b>ip pim dense-mode</b>	PIM-DM
<b>ip pim sparse-mode</b>	PIM-SM

```
Ruijie#show ip mroute static
Mroute: 172.16.0.0, RPF neighbor: 172.30.10.13
Protocol: , distance: 0
```

-	-

-	-

### 49.2.3 show ip rpf

#### RPF

**show ip rpf** {*source-address*}

<i>source-address</i>	

```
192.168.1.54 RPF
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
    
```

-	-

-	-

### 49.2.4 show ip mvif

**show ip mvif** { *interface-type interface-number* }

<i>interface-type interface-number</i>	

```

svi1
Ruijie# show ip mvif vlan 1
    
```

Interface	Vif	Owner	TTL	Local	Remote
Uptime	Idx	Module	Address	Address	
VLAN 1 00:13:16	1	PIM-DM	2	192.168.1.1	0.0.0.0

-	-

┌

-	-

## 49.3 IP

### 49.3.1 debug nsm mcast all

no

debug nsm mcast all

-	-

┌

┌

┌

Ruijie# debug nsm mcast all

-	-

|

|

-	-

### 49.3.2 debug nsm mcast fib-msg

no

debug nsm mcast fib-msg

|

-	-

|

|

|

|

Ruijie# debug nsm mcast fib-msg

|

-	-

|

|

-	-

### 49.3.3 debug nsm mcast register

no

debug nsm mcast register

|

--	--

	-	-
--	---	---

|

|

|

|

Ruijie# **debug nsm mcast register**

1



	-	-

┌

	-	-

### 49.3.5 debug nsm mcast vif

no

**debug nsm mcast vif**


┌

┌

┌

┌  
Ruijie# **debug nsm mcast vif**

	-	-

┌

	-	-

# 50 IPv6

## 50.1

### 50.1.1 ping ipv6

IPV6

**ping ipv6** [*ipv6-address*]

|



*ipv6-address*



IPV6	UP		
IPv6		IPv6	= +
+		<b>ipv6 general-prefix</b>	
DHCPv6	PD	DHCPv6	
+		<i>sub-bits/prefix-length</i>	
<b>no ipv6 address</b>			
<b>no ipv6 address</b>	<i>ipv6-prefix/prefix-length</i>	<b>eui-64</b>	<b>ipv6 address</b>
<i>ipv6-prefix/prefix-length</i>	<b>eui-64</b>		
<hr/>			
<b>r</b>	S8600	IPv6	
		[65,127]	IPv6 512

```

1 IPv6
Ruijie(config-if)# ipv6 address 2001:1::1/64
Ruijie(config-if)# no ipv6 address 2001:1::1/64
Ruijie(config-if)# ipv6 address 2002:1::/64 eui-64
Ruijie(config-if)# no ipv6 address 2002:1::/64 eui-64

2
Ruijie(config-if)# ipv6 address my-prefix 0:0:0:7272::72/64
my-prefix 2001:1111:2222::/48 IPv6
2001:1111:2222:7272::72/64
    
```

<b>ipv6 address autoconfig</b>	
<b>ipv6 general-prefix</b>	
<b>show ipv6 general-prefix</b>	

RGOS10.4	IPv6 RGOS10.4

### 50.1.3 ipv6 address autoconfig

no IPv6 **ipv6 address autoconfig**

**ipv6 address autoconfig [default]**

**no ipv6 address autoconfig**

	<b>default</b>	<b>default</b>

```

IPv6

2 IPv6 ipv6 enable ,
IPv6
r IPv6 IPv6
no ipv6 enable IPV6

Ruijie(config-if)# ipv6 enable

show ipv6 interface

- -
    
```

### 50.1.5 ipv6 general-prefix

IPv6

ipv6 general-prefix

**ipv6 general-prefix** *prefix-name ipv6-prefix/prefix-length*

**no ipv6 general-prefix** *prefix-name ipv6-prefix/prefix-length*

<i>prefix-name</i>	
<i>ipv6-prefix</i>	RFC4291
<i>prefix-length</i>	



	-	-

┌

	-	-

### 50.1.7 ipv6 nd dad attempts

```

                IPV6                                (NS)
                no
ipv6 nd dad attempts value
no ipv6 nd dad attempts
    
```

value	(NS)	0
	0-600	ipv6 :

┌

┌

```

                IPV6
                "tentative"( )
                EUI-64
                ( IPV6 )
                down/up
                down up
    
```

```

Ruijie(config)# interface vlan 1
Ruijie(config-if)# ipv6 nd dad attempts 3
    
```

<b>show ipv6 interface</b>	

┌

┌

-	-

### 50.1.8 ipv6 nd managed-config-flag

“managed address configuration”

no

**ipv6 nd managed-config-flag**

**no ipv6 managed-config-flag**

┌

-	-

┌

┌

┌

┌

```
Ruijie(config)# int vlan 1
Ruijie(config)# ipv6 nd managed-config-flag
```

┌

<b>show ipv6 interface</b>	ra-info
<b>ipv6 nd other-config-flag</b>	

┌

┌

-	-

### 50.1.9 ipv6 nd ns-interval

(NS)

no

**ipv6 nd ns-interval** *milliseconds*

**no ipv6 nd ns-interval**

milliseconds	1000-4294967295

(RA) 0( )  
1000ms(1 )

|

(RA)

Ruijie(config-if)# **ipv6 nd ns-interval 2000**

<b>show ipv6 interface</b>	

|

--	--

---

<i>prefix-length</i>	IPV6	'/'
<i>valid-lifetime</i>		
<i>preferred-lifetime</i>		
<b>at</b> <i>valid-date preferred-date</i>		
<b>infinite</b>		
<b>default</b>		
<b>no-advertise</b>		

```
Ruijie(config-if)# ipv6 nd prefix 2001::/64 infinite 2592000  
2          SVI 1          (          )  
Ruijie(config)# interface vlan 1  
Ruijie(config-if)# ipv6 nd default no-autoconfig
```

```
show ipv6 interface
```

```
ra-info
```

<b>show ipv6 interface</b>	ra-info
<b>ipv6 nd ra-interval</b>	
<b>ipv6 nd ra-hoplimit</b>	
<b>ipv6 nd ra-mtu</b>	MTU



-	-

### 50.1.12 ipv6 nd ra-interval

(RA)

no

**ipv6 nd ra-interval** {seconds | min-max min\_value max\_value}

**no ipv6 nd ra-interval**

<i>seconds</i>	(RA)
<i>min-max</i>	
<i>min_value</i>	
<i>max_value</i>	



200

200

20



**min-max**

```
Ruijie(config)# interface vlan 1
Ruijie(config-if)# ipv6 nd ra-interval 110
Ruijie(config-if)# ipv6 nd ra-interval min-max 110 120
```

<b>show ipv6 interface</b>	ra-info
<b>ipv6 nd ra-lifetime</b>	
<b>ipv6 nd ra-hoplimit</b>	
<b>ipv6 nd ra-mtu</b>	MTU

-	-
---	---

### 50.1.13 ipv6 nd ra-hoplimit

(RA) no

**ipv6 nd ra-hoplimit value**

**no ipv6 nd ra-hoplimit**

<i>value</i>	(RA)
--------------	------

64

```
Ruijie(config)# interface vlan 1
Ruijie(config-if)# ipv6 nd ra-hoplimit 110
```

<b>show ipv6 interface</b>	ra-info
<b>ipv6 nd ra-lifetime</b>	
<b>ipv6 nd ra-interval</b>	
<b>ipv6 nd ra-mtu</b>	MTU

┌

-	-

### 50.1.14 ipv6 nd ra-mtu

(RA) MTU no

**ipv6 nd ra-mtu** *value*

**no ipv6 nd ra-mtu**

<i>value</i>	(RA) MTU

┌

IPv6 MTU

┌

┌

0 MTU

Ruijie(config)# **interface** *vlan 1*  
 Ruijie(config -if)# **ipv6 nd ra-mtu** *1400*

<b>show ipv6 interface</b>	<b>ra-info</b>
<b>ipv6 nd ra-lifetime</b>	
<b>ipv6 nd ra-interval</b>	

<b>ipv6 nd ra-hoplimit</b>	
-	-

### 50.1.15 ipv6 nd reachable-time

NDP  
no

**ipv6 nd reachable-time** *milliseconds*

**no ipv6 nd reachable-time**

<i>milliseconds</i>	0-3600000
---------------------	-----------

(RA) 0( )  
30000ms(30 )

0 (RA)

Ruijie(config-if)# **ipv6 nd reachable-time 1000000**

<b>show ipv6 interface</b>	
----------------------------	--





**ns-linklocal-src**  
RFC3484

**no ipv6**  
IPv6

|

---

|

---

ICMPv6

10

ICMPv6 (10pps)

```
Ruijie(configfsE3>]TJ/T2 1 Tf30.001392 r( )TjETinterface vlan2 1 Tf-0.00133
```

```
┌  
└  
┌  
└
```

```
Ruijie(config)# ipv6 route 2001::/64 vlan 1 2005::1
```

<b>show ipv6 route</b>	IPv6

-	-

### 50.1.21 ipv6 source-route

```
┌  
└  
┌  
└
```

	IPv6	no
<b>ipv6 source-route</b>		
<b>no ipv6 source-route</b>		
	-	-

```
┌  
└  
┌  
└
```

	IPv6	
0	IPv6	0

IPv6

Ruijie(config)# **no ipv6 source-route**

-	-

-	-

### 50.1.22 tunnel destination

no

**tunnel destination** {*ipv4-address* | *ipv6-address*}

**no tunnel destination**

<i>ipv4-address</i>	, IPv4
<i>ipv6-address</i>	tunnel mode ipv6 IPv6 tunnel mode gre ipv6 IPV6

IPv6

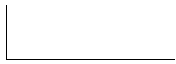
tunnel source, 100

Q-

3

T 9

1



RGOS10.4	RGOS10.4

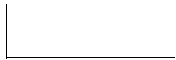
### 50.1.24 tunnel mode ipv6ip

IPV6 , no IPv6

**tunnel mode ipv6ip [6to4 | isatap]**

**no tunnel mode**

<b>6to4</b>	6to4
<b>isatap</b>	ISATAP



IPv6



tunnel mode ipv6ip  
oTd( )TjET66.84 506.6 0.24 0.48 rD 1 Tf<4627B462de F146272402D62 0.24 refBT5TT0 1 T

-	-

### 50.1.25 tunnel mode gre

GRE , no IPv6

**tunnel mode gre [ip | ipv6]**

**no tunnel mode**

<b>ip</b>	IPv4
<b>ipv6</b>	IPv6

IPv6

ipv6 gre tunnel mode gre ip  
 destination gre tunnel source, tunnel destination,  
 UP

```

gre
Ruijie(config)# interface tunnel 1
Ruijie(config-if)# tunnel mode gre ip
Ruijie(config-if)# tunnel source vlan 1
Ruijie(config-if)# tunnel destination 1.1.1.1
    
```

<b>tunnel source</b>	
<b>tunnel destination</b>	
<b>tunnel ttl</b>	TTL

--	--

	-	-
--	---	---

### 50.1.26 tunnel source

, no

**tunnel source** {*ipv4-address* | *ipv6-address* | *interface-type interface-number*}

**no tunnel source**

<i>ipv4-address</i>	IPv4	IPv4	
<i>ipv6-address</i>	ipv6	tunnel mode ipv6 IPv6	tunnel mode gre
<i>interface-type interface-number</i>	IPv4	ipv4 ipv6 IPv6	ipv6ip ipv6

└───

└───

	<b>tunnel destination</b>	
	<b>tunnel ttl</b>	TTL
	-	-

### 50.1.27 tunnel ttl

IPv6 over IPv4

0

	-	-

## 50.2

### 50.2.1 clear ipv6 neighbors

**clear ipv6 neighbors**



-	-
---	---

┌

┌

┌

**show ipv6 general-prefix**  
DHCPv6

┌

```
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
```

┌

<b>ipv6 general-prefix</b>	

┌

┌

RGOS10.4	RGOS10.4

### 50.2.3 show ipv6 interface

IPV6

**show ipv6 interface** [*interface-id*] [*ra-info*]

┌

<i>interface-id</i>	aggregateport    SVI
<b>ra-info</b>	RA

┌

┌



IPV6

ND

GEN	
-----	--

---

```
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 router advertisements live for 1800 seconds
```

total	
fec0:1:1:1::/64	
Def	
Auto   CFG	Auto IPV6 , CFG
!Adv	
vlttime	( )
pltime	( )
L   !L	L on-link !L
A   !A	A auto-config , !A

-	-

-	-

### 50.2.4 show ipv6 neighbors

IPV6

**show ipv6 neighbors** { [**verbose**] [*interface-id*] [*ipv6-address*] | [**static**] }

--	--

**verbose**

1 SVI 1

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
```

2

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
```

IPv6 Address	IPV6
Linklayer Addr	Mac incomplete
Interface	

<p>State</p>	<p>state/H(R)</p> <p>STATE</p> <p>INCMP( Incomplete)— (NS) (NA)</p> <p>REACH(Reachable) —</p> <p>STALE —</p> <p>NUD ( Neighbor Unreachability Detection )</p> <p>DELAY— STALE</p> <p>STALE DELAY</p> <p>DELAY_FIRST_PROBE_TIME seconds(5 )</p> <p>DELAY PROBE (NS) NUD</p> <p>PROBE— NUD</p> <p>RetransTimer milliseconds (NS)</p> <p>MAX_UNICAST_SOLICIT(3 )</p> <p>?—</p> <p>/R—</p> <p>/H—</p>
<p>Age</p>	<p>'expired'</p> <p>NUD</p>
<p>Asked</p>	<p>(NS)</p>

3

Ruijie# **show ipv6 neighbors static**

IPv6 Address	Linklayer Addr	Interface	State
2001:1::1	00d0.f822.33ab	GigabitEthernet 0/14	ACTIVE
2001:2::2	00d0.f822.33ac	VLAN 1	INACTIVE

Interface	
State	STATE ACTIVE— INACTIVE—  mac
	IPV6

<b>ipv6 neighbor</b>	

-	-

### 50.2.5 show ipv6 route

IPV6

**show ipv6 route [static] [local] [connected]**

<b>static</b>	
<b>local</b>	
<b>connected</b>	

G Q , / PYbQ V@ldr P)b Sc“hG / Q`A` • ` Ö aà ðÀ R T

**show ipv6 router**

**IPv6**

```
Ruijie# show ipv6 router
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 sec, preferred lifetime 604800 sec
```

-	-

RGOS10.4	RGOS10.4

# 51 OSPFv3

## 51.1

### 51.1.1 area default-cost

```

stub      ABR      stub
no
area area-id default-cost cost
no area area-id default-cost
    
```

<i>area-id</i>	stub  IPv4
<i>cost</i>	stub 1-16777214

```

default-cost 1
    
```

```

stub      ABR
    
```

```

stub      50      100
ipv6 router ospf 1
area 50 stub
area 50 default-cost 100
    
```

--	--

	-
--	---

### 51.1.2 area range

no

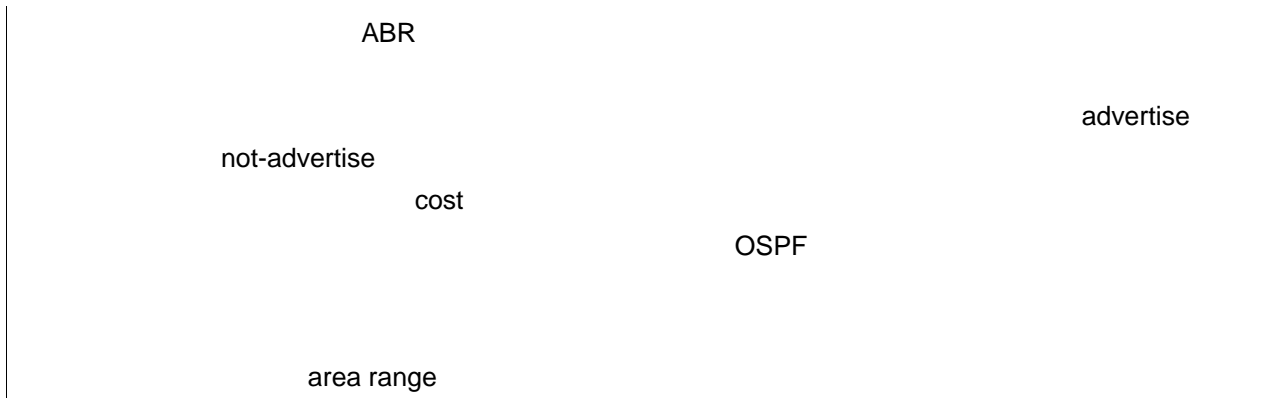
**area** *area-id* **range** *ipv6-prefix/prefix-length* [**advertise**|**not-advertise**]

**no area** *area-id* **range** *ipv6-prefix/prefix-length*

<i>area-id</i>	IPv4
<i>ipv6-prefix/prefix-length</i>	
<b>advertise</b>	
<b>not-advertise</b>	

--	--

--	--



	1
--	---

```

ipv6 router ospf 1
area 1 range 2001:DB8:1:2::/64
    
```

<b>summary-prefix</b>	


### 51.1.3 area stub

stub
stub
no

stub

**area *area-id* stub [no-summary]**  
**no area *area-id* stub [no-summary]**

<i>area-id</i>	stub <div style="text-align: right;">IPv4</div>
<b>no-summary</b>	<div style="display: flex; justify-content: space-around;"> <span>stub</span> <span>ABR</span> <span>ABR</span> </div> <div style="display: flex; justify-content: space-around;"> <span>3</span> <span>LSA</span> <span>stub</span> </div> <div style="display: flex; justify-content: space-around;"> <span>3</span> <span>LSA</span> </div>

stub

stub
stub
AS

area stub
stub

(type 5 LSAs)

stub

OSPFv3

stub
ABR
3
LSA
stub

stub
AS

totally stub
stub
ABR
area stub

no-summary

stub
10
ABR
stub

```

ipv6 router ospf 1
area 10 stub
area 10 stub no-summary
    
```

	<b>area default-cost</b>	stub
	-	-

### 51.1.4 area virtual-link

**no**

**area** *area-id* **virtual-link** *router-id* [**hello-interval** *seconds*] [**dead-interval** *seconds*] [**retransmit-interval** *seconds*] [**transmit-delay** *seconds*] [**instance** *instance-id*]

**no area** *area-id* **virtual-link** *router-id* [**hello-interval**] [**dead-interval**] [**retransmit-interval**] [**transmit-delay**] [**instance**]

--	--

hello-interval 10  
dead-interval hello-interval

<b>reference-bandwidth</b> <i>ref-bw</i>	Mbps 1-4294967

100Mbps

**no auto-cost reference-bandwidth**  
**ipv6 ospf cost**

10M  
ipv6 router ospf 1  
auto-cost reference-bandwidth 10

<b>ipv6 ospf cost</b>	
<b>show ipv6 ospf</b>	OSPFv3

-	-

### 51.1.6 bfd all-interfaces (OSPFv3)

OSPFv3	BFD	OSPFv3
<b>bfd all-interfaces</b>	no	
<b>bfd all-interfaces</b>		
<b>no bfd all-interfaces</b>		

--	--



OSPFv3

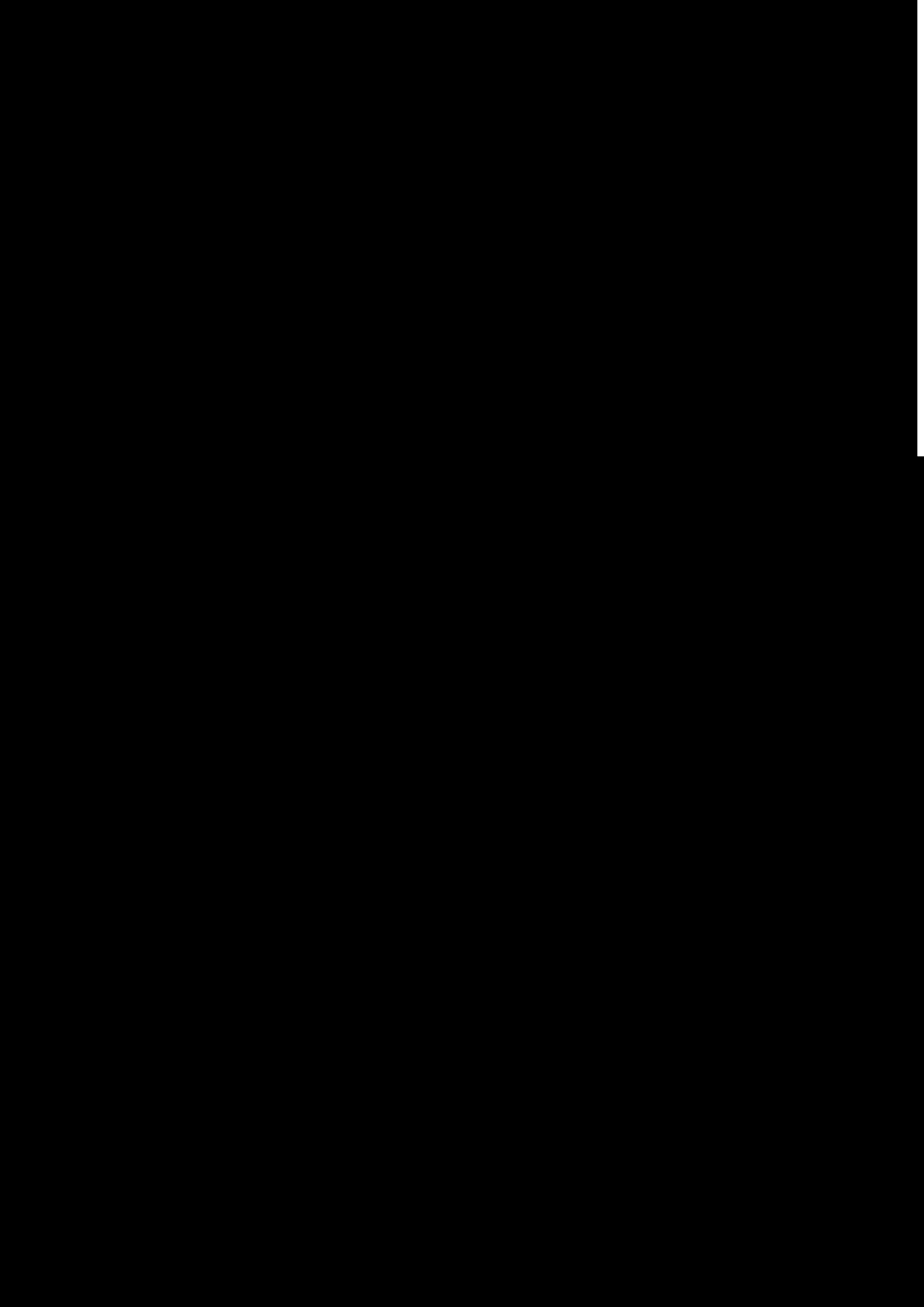
Hello

OSPFv3

OSPFv3

```
enable
```

```
clear ipv6 ospf process
```



20

```

redistribute
default-information originate
20

```

```

metric 10
default-metric 10

```

<b>redistribute</b>	
<b>show ipv6 ospf</b>	OSPFv3

-	-

### 51.1.10 distance

OSPFv3

no

**distance** { *distance* | **ospf** { *intra-area distance* | *inter-area distance* | **external distance** }}

**no distance** [**ospf**]

<i>distance</i>	1-255
<b>intra-area distance</b>	1-255
<b>inter-area distance</b>	1-255
<b>external distance</b>	1-255

```

110
110
110
110

```

```

OSPFv3
-----
r OSPFv3
255
-----

```

```

OSPFv3 160
Ruijie(config)# ipv6 router ospf 20
Ruijie(config-router)# distance ospf external 160

```

ipv6 router ospf	OSPFv3

-	-

### 51.1.11 ipv6 ospf area

```

OSPFv3 no
ipv6 ospf process-id area area-id [instance instance-id]
no ipv6 ospf process-id area [instance instance-id]

```

<i>process-id</i>	ospf 1-65535
<b>area area-id</b>	

<b>instance</b> <i>instance-id</i>	OSPFv3 0-255
------------------------------------	-----------------

OSPFv3	OSPFv3	OSPFv3	<b>ipv6 router ospf</b>
<b>no ipv6 ospf area</b>		OSPFv3	
<b>no ipv6 router ospf</b>		OSPFv3	
<i>instance-id</i>			
		OSPFv3	

	int fastethernet 0/0	OSPFv3
int fastethernet 0/0		
ipv6 ospf 1 area 2 instance 2		

--	--



# ipov

disable	OSPF	BFD
instance <i>instance-id</i>	OSPFv3 0-255	

OSPFv3	BFD
--------	-----

<b>bfd all-interfaces</b>	
<b>ipv6 ospf bfd</b>	BFD
OSPFv3	<b>bfd all-interfaces</b>
BFD	OSPFv3
BFD	<b>ipv6 ospf bfd disable</b>

<b>ipv6 router ospf <i>process-id</i></b>	OSPFv3 OSPFv3
<b>bfd all-interfaces</b>	OSPFv3 BFD

-	-
---	---

### 51.1.13 ipv6 ospf cost

**no**

**ipv6 ospf cost *cost* [instance *instance-id*]**

**no ipv6 ospf cost [instance *instance-id*]**

<i>cost</i>	1-65535
-------------	---------

**OSPFv3**

<b>instance</b> <i>instance-id</i>	OSPFv3	0-255
------------------------------------	--------	-------

/Bandwidth	100Mbps
------------	---------

OSPFv3	100Mbps/Bandwidth	Bandwidth
bandwidth		
OSPFv3		
64K	cost	1562
E1	cost	48
10M	cost	10
100M	cost	1
<b>ipv6 ospf cost</b>	OSPFv3	

1  
 ipv6 ospf cost 1

<b>show ipv6 ospf interface</b>	OSPFv3
<b>ipv6 ospf area</b>	OSPFv3

-	-
---	---

**5 Tf.14 ipv6 ospf dead-interval**

hello  
 no

<b>instance</b> <i>instance-id</i>	OSPFv3	0-255
------------------------------------	--------	-------

**ipv6 ospf hello-interval** 4

```

                                hello          4          hello
                                hello
    
```

**ipv6 ospf dead-interval** 60s

<b>ipv6 ospf hello-interval</b>	Hello
<b>show ipv6 ospf interface</b>	OSPFv3
<b>ipv6 ospf area</b>	OSPFv3

-	-

### 51.1.15 ipv6 ospf mtu-ignore

MTU no

**ipv6 ospf mtu-ignore** [**instance** *instance-id*]

**no ipv6 ospf mtu-ignore** [**instance** *instance-id*]

<b>instance</b> <i>instance-id</i>	OSPFv3 0-255

```

MTU

OSPFv3          MTU          MTU
                MTU          MTU
                MTU

ethernet 1/0  MTU
Ruijie(config)# interface ethernet 1/0
Ruijie(config-if)# ipv6 ospf mtu-ignore
    
```

<b>ipv6 router ospf</b>	OSPFv3
<b>ipv6 mtu</b>	IPv6 MTU

-	-

### 51.1.16 ipv6 ospf hello-interval

```

Hello          no

ipv6 ospf hello-interval seconds [instance instance-id]
no ipv6 ospf hello-interval [instance instance-id]
    
```

<i>seconds</i>	Hello 1-65535( )
<b>instance</b> <i>instance-id</i>	OSPFv3 0-255

┌

Hello

┌

hello 20s  
 ipv6 ospf hello-interval 20

┌

<b>ipv6 ospf dead-interval</b>	
<b>show ipv6 ospf interface</b>	OSPFv3
<b>ipv6 ospf area</b>	OSPFv3

┌

┌

-	-

### 51.1.17 ipv6 ospf neighbor

OSPFv3

no

**ipv6 ospf neighbor** *ipv6-address* {[**cost** <1-65535>] | [**poll-interval** <0-2147483647> | **priority** <0-255>]} [**instance** *instance-id*]

**no ipv6 ospf neighbor**



OSPFv3

<b>point-to-multipoint non-broadcast</b>	
<b>instance</b> <i>instance-id</i>	OSPFv3 0-255

OSPFv3

ipv6 ospf network point-to-point

<b>ipv6 ospf priority</b>	
<b>show ipv6 ospf interface</b>	OSPFv3
<b>ipv6 ospf area</b>	OSPFv3

-	-

19 **ipv6 ospf priority**

**no**

**ipv6 ospf priority** *number-value* [**instance** *instance-id*]

**no ipv6 ospf priority** [**instance** *instance-id*]

<i>number-value</i>	0-255
<b>instance</b> <i>instance-id</i>	OSPFv3 0-553

┌

┌

```

DR/BDR( / ) DR/BDR
DR BDR Router-ID
DR BDR
DR/BDR
DR BDR
DR BDR

```

┌

```

DR/BDR DR BDR
ipv6 ospf priority 0

```

┌

<b>ipv6 ospf network</b>	
<b>router-id</b>	
<b>show ipv6 ospf interface</b>	OSPFv3
<b>ipv6 ospf area</b>	OSPFv3

┌

┌

-	-

### 51.1.20 ipv6 ospf retransmit-interval

LSA no

**ipv6 ospf retransmit-interval** *seconds* [**instance** *instance-id*]

**no ipv6 ospf retransmit-interval** [**instance** *instance-id*]

┌

<i>seconds</i>	LSA 1-65535( )
<b>instance</b> <i>instance-id</i>	OSPFv3 0-255

┌

5

|  
|

|  
|

|  
|

LSA

LSA

LSA

10s

ipv6 ospf retransmit-interval 10



## OSPFv3

```
ipv6 ospf transmit-delay 2
```

```
show ipv6 ospf interface
```

```
OSPFv3
```

```
-
```

```
-
```

### 51.1.22 ipv6 router ospf

```
OSPFv3
```

```
no
```

```
OSPFv3
```

```
ipv6 router ospf [process-id]
```

```
no ipv6 router ospf process-id
```

```
process-id
```

```
OSPFv3
```

```
1
```

```
OSPFv3
```

```
OSPFv3
```

```
32 OSPFv3
```

```
OSPFv3
```

```
ipv6 router ospf 1
```

```
ipv6 ospf area
```

```
OSPFv3
```

```
show ipv6 ospf
```

```
OSPFv3
```



<i>number</i>	DD 1-65535
---------------	---------------

5

OSPFv3 DD

```

max-concurrent-dd 4 4 DD
router ipv6 ospf 1
max-concurrent-dd 4
    
```

-	-

-	-

### 51.1.25 passive-interface

**no**

**passive-interface** {**default** | *interface-type interface-number*}

**no passive-interface** {**default** | *interface-type interface-number*}

<i>default</i>	
<i>interface-type interface-number</i>	

```
hello  
OSPFv3
```

```
VLAN1 OSPFv3  
passive-interface default  
no passive-interface vlan 1
```

<b>ipv6 ospf area</b>	OSPFv3
<b>show ipv6 ospf</b>	OSPFv3
<b>show ipv6 ospf neighbor</b>	OSPFv3

-	-

<b>level-1   level-1-2   level-2</b>	IS-IS level
<b>match</b>	OSPFv3 internal external [1 2] E1 E2
<b>metric</b> <i>metric-value</i>	OSPFv3 external 2 LSA metric metric-value metric 0-16777214
<b>metric-type</b> {	







- 1 RGOS 10.4 timers throttle spf  
timers spf 5 10
- 2 RGOS 10.4 timers throttle spf timers spf





Number of AS-Scoped Unknown LSA 0  
Number of LSA originated 11  
Number of LSA received 4  
Log Neighbor Adjacency Changes : Enabled  
Number of areas in this router is 2  
Area BACKBONE(0)  
Number of interfaces in this area is 1(1)  
SPF algorithm executed 4 times  
Number of LSA 3. Checksum Sum 0

	<b>timers spf</b>	OSPFv3 SPF SPF
	-	-

### 51.2.2 show ipv6 ospf database

OSPFv3

**show ipv6 ospf** [*process- id*] **database** [*lsa-type* [**adv-router** *router-id* ]]

<i>process- id</i>	OSPFv3	
<i>lsa-type</i>	LSA AS-external-LSAs Link-LSAs Inter-Area-Prefix-LSAs Inter-Area-Router-LSAs Intra-Area-Prefix-LSAs Network-LSAs Router-LSAs LSA	
<b>adv-router</b> <i>router-id</i>	router	LSA

OSPFv3

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
    
```

<b>ipv6 router ospf</b>	OSPFv3

-	-

### 51.2.3 show ipv6 ospf interface

OSPFv3

**show ipv6 ospf interface** [*interface-type interface-number*]

<i>interface-type interface-number</i>	

## OSPFv3

```
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
                                BFD , BFD enabled
```

```
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
    
```

<b>ipv6 router ospf</b>	OSPFv3
<b>ipv6 ospf area</b>	OSPFv3

-	-

### 51.2.4 show ipv6 ospf neighbor

OSPFv3

**show ipv6 ospf** [*process-id*] **neighbor** [*interface-type interface-number* [**detail**]] [*neighbor-id* [**detail**]]

<i>process-id</i>	OSPFv3
<b>detail</b>	
<i>interface-type interface-number</i>	
<i>neighbor-id</i>	Router ID

```

1 OSPFv3
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
2 OSPFv3
```

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

BFD

**session state up**

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
```

<b>ipv6 router ospf</b>	OSPFv3
<b>ipv6 ospf area</b>	
<b>area virtual-link</b>	OSPFv3
<b>show ipv6 ospf interface</b>	OSPFv3

-	-

## 51.2.5 show ipv6 ospf route

OSPFv3

**show ipv6 ospf [process- id] route [count]**

<i>process- id</i>	OSPFv3
<b>count</b>	OSPFv3

┌

┌

┌

```

                                OSPFv3
Ruijie# show ipv6 ospf route
OSPFv3 Process (1)
Codes: C - connected, D - Discard, O - OSPF, IA - OSPF inter area,
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
    
```

<b>ipv6 router ospf</b>	OSPFv3

┌

-	-

## 51.2.6 show ipv6 ospf summary-prefix

OSPFv3

**show ipv6 ospf [*process-id*] summary-prefix**

<i>process- id</i>	OSPFv3

└───┘

└───┘

└───┘

OSPFv3

Ruijie# **show ipv6 ospf summary-prefix**

OSPFv3 Process 1, Summary-prefix:

2001:db8::/64, Metric 16777215, Type0, Tag0, Match count0, advertise

<b>ipv6 router ospf</b>	OSPFv3
<b>summary-prefix</b>	OSPFv3

└───┘

-	-

### 51.2.7 show ipv6 ospf topology

OSPFv3

**show ipv6 ospf [*process- id*] topology [*area area-id*]**

<i>process- id</i>	OSPFv3
<i>area-id</i>	

└───┘



OSPFv3

```
Ruijie# show ipv6 ospf topology
OSPFv3 Process (1)
OSPFv3 paths to Area (0.0.0.0) routers
Router ID      Bits  Metric  Next-Hop
Interface
1.1.1.1        EB  --
2.2.2.2        E   1       2.2.2.2
FastEthernet 1/0
OSPFv3 paths to Area (0.0.0.1) routers
Router ID      Bits  Metric  Next-Hop
Interface
```

OSPFv3

```
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 2001:DB8::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
```

<b>ipv6 router ospf</b>	OSPFv3
<b>area virtual-link</b>	OSPFv3
<b>show ipv6 ospf neighbor</b>	OSPFv3

-	-

# 52 Tunnel

## 52.1

### 52.1.1 keepalive (tunnel interface)

GRE

**keepalive** [*seconds* [*retries*]]

**no keepalive**

<i>seconds</i>	0	32767	10	
<i>retries</i>	255	3	down	1

```

                keepalive
seconds 10
retries 3
    
```

```

                UP
                10.4 2
    
```

```

1 interface tunnel 1                                3          5

Ruijie(config)# interface tunnel 1
Ruijie(config)# keepalive 3 5
    
```

<b>show interface tunnel</b>	tunnel

┌

┌

10.4	RGOS 10.4 10.4 2

### 52.1.2 tunnel destination

**tunnel destination**                      tunnel

no                      tunnel

**tunnel destination** *ip-address*

**no tunnel destination**

┌

ip-address	IP

┌

┌

┌

┌

```

1 tunnel 0 IP 61.154.101.3
Ruijie(config)# interface tunnel 0
Ruijie(config-if)# tunnel destination 61.154.101.3
    
```

┌

<b>show interface tunnel</b>	tunnel

┌

┌

-	-

tunnel

**tunnel key**

no

**tunnel key** *value*

**no tunnel key**

<i>value</i>	hi bbY` \$! (&- (- * +&-) `

|

|

|

**tunnel key**

GRE

1 tunnel 0 1234

Ruijie(config)# **interface tunnel 0**

Ruijie(config-if)# **tunnel key 1234**

<b>show interface tunnel</b>	tunnel

|

-	-

Tunnel

<i>min-mtu</i>	DAH 8	AH
<i>mtu-bytes</i>	AH	-& *)' ) -&

IP PMTUD

IP DF Don't Fragment RGNOS MTU  
**tunnel path-mtu-discovery** PMTU tunnel  
 mtu  
 10.4 2

1 tunnel 0 PMTUD  
 Ruijie(config)# **interface tunnel 0**  
 Ruijie(config-if)# **tunnel path-mtu-discovery**

<b>show interface tunnel</b>	tunnel
------------------------------	--------



<i>interface-type</i>	Dialer FastEthernet Tunnel	Loopback	Ethernet Null	Async
<i>interface-number</i>				

┌

┌

┌

tunnel

1 tunnel 0 tunnel source 1/0

Ruijie(config)# interface tunnel 0

Ruijie(config-if)# tunnel source serial 1/0

<b>show interface tunnel</b>	tunnel
------------------------------	--------

┌

-	-
---	---

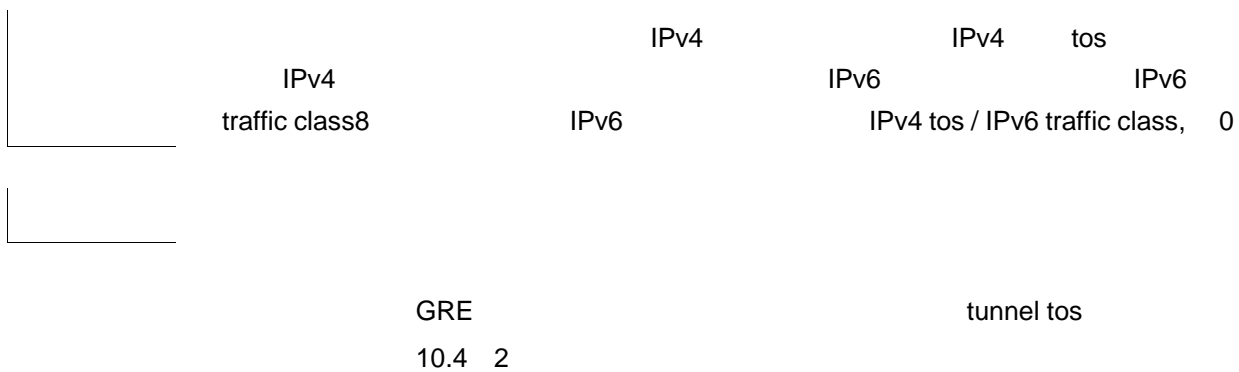
### 52.1.7 tunnel tos

tunnel IPv4 ToS IPv6 traffic class 8

**tunnel tos** [num]

**no tunnel tos**

<i>num</i>	
------------	--



Tunnel

	<b>show interface tunnel</b>	tunnel

└───┘

	10.4	





	-	-

### 53.1.2 distance IPv6

RIPng **distance** **no**

**distance** *distance*

**no distance**

<i>distance</i>	RIPng	<1-254>

120

RIPng

RIPng 160  
 Ruijie(config)# **ipv6 router rip**  
 Ruijie(config-router)# **distance 160**

	-	-

	-	-

### 53.1.3 distribute-list

prefix-list / **distribute-list**  
**no**

**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*]

<b>prefix-list</b> <i>prefix-list-name</i>	<b>prefix-list</b>
<b>in</b>   <b>out</b>	
<i>interface-type interface-name</i>	

---

---

---

---

<b>originate</b>	ipv6
<b>metric</b> <i>metric-value</i>	1-15

```
metric 1
```

```

RIPng
IPv6
RIPng

```

```

ethernet0/0
RIPng

```

```

Ruijie(config)# interface ethernet 0/0
Ruijie(config-if)# ipv6 rip default-information only

```

<b>show ipv6 rip</b>	RIPng
<b>show ipv6 rip database</b>	RIPng

-	-
---	---

### 53.1.5 ipv6 rip enable

```

RIPng
RIPng
ipv6 rip enable
no ipv6 rip enable

```

-	-
---	---

┌

┌

┌

RIPng

RIPng

RIPng

┌

ethernet 0/0 RIPng

Ruijie(config)# **interface ethernet 0/0**

Ruijie(config-if)# **ipv6 rip enable**

┌

-	-

┌

┌

-	-

### 53.1.6 ipv6 rip metric-offset

**ipv6 rip metric-offset *value* no**

**ipv6 rip metric-offset *value***

**no ipv6 rip metric-offset**

┌

<i>value</i>	1-16

┌

1

┌

┌

metric

┌

ethernet 0/1

5



	-	-
--	---	---

---

### 53.1.8 passive-interface RIPng

**passive-interface**

**no**

**passive-interface** {**default** | *interface-type interface-num*}

**no passive-interface** {**default** | *interface-type interface-num*}

<b>default</b>		passive
<i>interface-type interface-num</i>		

---

passive

**passive-interface default**                      passive                      no  
**passive-interface** *interface-type interface-number*

**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*]

<b>bgp</b>	BGP		
<b>connected</b>			
<b>isis</b> [ <i>area-tag</i> ]	ISIS	<i>area-tag</i>	ISIS
<b>ospf</b> <i>process-id</i>	OSPF <i>process-id</i>	<i>process-id</i> 1-65535	ospf
<b>static</b>			
<b>metric</b> <i>metric-value</i>			



### 53.1.11 timers (ipv6)

RIPng	timers	no
<i>timers update invalid flush</i>		
<i>no timers</i>		
<i>update</i>	update 30	invalid flush
<i>invalid</i>	invalid invalid 180	invalid
<i>flush</i>	flush flush	RIPng invalid 120

30 180 120

```

RIPng
RIPng
r
show ipv6 rip
2Mbps
    
```

```

RIP 10 30 90
invalid invalid
Ruijie(config)# ipv6 router rip
Ruijie(config-router)# timers 10 30 90
    
```

<b>show ipv6 rip</b>	RIPng
<b>show ipv6 rip database</b>	RIPng

└───┘

-	- 29/C2_0

└───┘

└───┘

└───┘

└───┘

```
Ruijie#          rip
Routing          Protocol          is          "RIPng"
```

```

    Redistributing protocol connected route-map rm
    Redistributing protocol static
    Redistributing protocol ospf 1
    Default version control: send version 1, receive version 1
    Interface          Send  Recv
    VLAN 1             1    1
    Loopback 1         1    1
    Routing Information Sources:
    None
  
```

<b>show ipv6 rip</b>	RIPng

-	-

### 53.2.2 show ipv6 rip database

RIPng

**show ipv6 rip database**

**show ipv6 rip database**

-	-

RIPng

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/::

```

<b>show ipv6 rip</b>	RIPng

-	-

# 54 IPv6

## 54.1 IPv6

### 54.1.1 clear ipv6 mroute

IPv6

```
clear ipv6 mroute {* | v6group-address [v6source -address]}
```

*	IPv6	
v6group-address	IPv6	IPv6
v6source -address	IPv6	IPv6

```


```

```


```

```


```

IPv6

```


```

```
Ruijie# clear ipv6 mroute *
```

show ipv6 mroute	-
clear ipv6 mroute statistics	-

```


```

-	-

### 54.1.2 clear ipv6 mroute statistics

IPv6



<i>v6rpf-address</i>	v6source-address	ipv6
<i>interface-type</i> <i>interface-number</i>		
<i>distance</i>	0	RPF



IPv6

IPv6

IPv6

rpf

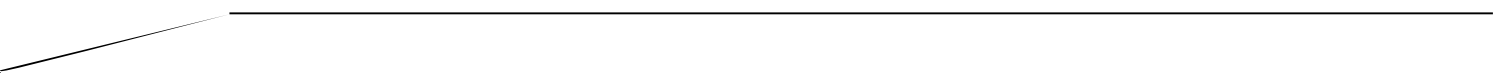
ip

rpf

bgp

rpf IPv

IPv6



```

limit      1024
threshold  2147483647
    
```

IPv6

r

```

IPv6      100      90
Ruijie(config)# ipv6 multicast route-limit 100 90
    
```

-	-

-	-

### 54.1.6 ipv6 multicast-routing

```

IPv6      no      IPv6
ipv6 multicast-routing
no ipv6 multicast-routing
    
```

-	-

IPv6

IPv6

IPv6

r



```
Ruijie(config)# ipv6 multicast rpf longest-match
```

-	-

-	10.4 2

## 54.2 IPv6

### 54.2.1 show ipv6 mroute

IPv6

```
show ipv6 mroute [ v6group-address] [v6source-address] [summary] [count]
```

<i>v6group-address</i>	IPv6
<i>v6source-address</i>	IPv6
<b>summary</b>	IPv6
<b>count</b>	IPv6

IPv6

1

```
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
```

2

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 rcv 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 rcv/Reg NACK rcv/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 rcv
Client msg counts: WRONGVIF/WHOLEPKT/Imm Stat/Timed Stat sent
Reg pkt counts: Reg ACK rcv/Reg NACK rcv/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
```

3

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
```

<b>clear ipv6 mroute</b>	-
<b>clear ipv6 mroute statistics</b>	-

-	-

## 54.2.2 show ipv6 rpf

IPv6 RPF

**show ipv6 rpf v6source-address**

<i>v6group-address</i>	IPv6	IPv6	

|

|

|

IPv6 RPF

2222::3333 RPF

Ruijie# **show ipv6 rpf 2222::3333**

RPF interface: GigabitEthernet 0/1

RPF neighbor: ::

RPF route: 2222::/64

RPF type: unicast (connected)

RPF recursion count: 0

Doing distance-preferred lookups across tables

Distance: 0

Metric: 0

--	--	--	--



```

svi1
Ruijie#show ipv6 mvif
Interface          Mif  Owner          Uptime
                   Idx  Module
Register          0
VLAN 1             1    PIMSMV6       03d03h09m
    
```

-	-

-	-

## 54.3 IPv6

### 54.3.1 debug nsm mcast6 all

```

IPv6                               no          IPv6
    
```

eC>Tjd<1sm mcast6

	-	-
	-	-

### 54.3.2 debug nsm mcast6 fib-msg

IPv6

no

#### debug nsm mcast6 fib-msg

	-	-

└───

└───

└───

IPv6

└───

IPv6

Ruijie# **debug nsm mcast6 fib-msg**

	-	-

└───

	-	-

### 54.3.3 debug nsm mcast6 register

IPv6

no

**debug nsm mcast6 register**





	-	-

# 55 PIM-SMv6

## 55.1 PIM-SMv6

### 55.1.1 clear ipv6 mroute

**clear ipv6 mroute** { \* | ipv6\_group\_address | ipv6\_group\_address ipv6\_source\_address }

*	
<i>ipv6_group_address</i>	
<i>ipv6_group_address</i> <i>ipv6_source_address</i>	

└───┘

└───┘

└───┘

```
Ruijie# clear ipv6 mroute *
Ruijie# clear ipv6 mroute ff66::6666
Ruijie# clear ipv6 mroute ff66::6666 3333::3333
```

-	-

└───┘

-	-

### 55.1.2 clear ipv6 mroute statistics

**clear ipv6 mroute statistics** { \* | *ipv6\_group\_address* [*ipv6\_source\_address*] }

*	
<i>ipv6_group_address</i>	
<i>ipv6_group_address</i> <i>ipv6_source_address</i>	



**ipv6 multicast-routing**

	-	-

IPv6

IPv6

**ipv6 pim sparse-mode**

PIM-SMv6  
PIM-SMv6

Ruijie(config)#

**ipv6 multicast-routing**

	-	-

	-	-

**55.1.6 ipv6 pim accept-bsr list**

**ipv6 pim accept-bsr list WORD**

	WORD	v6 acl

PIM-SMv6

BSM

PIM-SMv6

BSR

Ruijie#  
Ruijie(config)#

**configure terminal**

**ipv6 pim accept-bsr list bsr-list**

	-	-

┌

	-	-

### 55.1.7 ipv6 pim accept-crp list

**ipv6 pim accept-crp list** *WORD*

	<i>WORD</i>	v6 acl

┌

BSR

RP

┌

┌

BSR

BSR

BSR

C-RP

┌

Ruijie# **configure terminal**

Ruijie(config)# **ipv6 pim accept-crp list** *crp-list*

	-	-

┌

	-	-

### 55.1.8 ipv6 pim accept-crp-with-null-group

**ipv6 pim accept-crp-with-null-group**

-	-

BSR prefix-count 0 C-RP-ADV

BSR BSR BSR prefix-count  
 0 C-RP-ADV C-RP

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim accept-crp-with-null-group
```

-	-

-	-10.4 2

### 55.1.9 ipv6 pim accept-register

**ipv6 pim accept-register** {list *ipv6\_access-list* | route-map *map-name*}

<i>ipv6_access-list</i>	ipv6_access-list acl
<i>map-name</i>	

RP

RP  
 RP Register-Stop

```
Ruijie# configure terminal
```

```
Ruijie(config)# ipv6 pim accept-register list register-access-list
Ruijie(config)# ipv6 access-list register-access-list
                    fe80::2d0:f8ff:fe22:33ad
Ruijie(config-ipv6-acl)# deny ipv6 fe80::2d0:f8ff:fe22:33ad/128
any
```

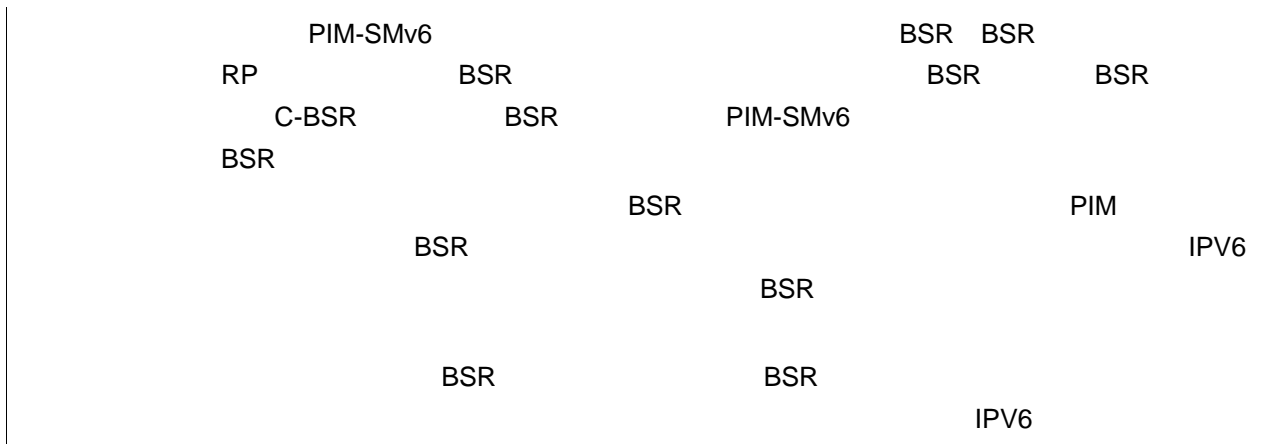
-	-

### 55.1.11 ipv6 pim bsr-candidate

**ipv6 pim bsr-candidate** *interface-type interface-number* [ *hash-mask-length* ]  
 [*priority-value*]

<i>interface-type interface-number</i>	
<i>hash-mask-length</i>	<0-128> RP HASH 126
<i>priority-value</i>	<0-255> BSR 64

BSR



```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim bsr-candidate g 0/3 30 100
Ruijie(config)# ipv6 pim bsr-candidate g 0/3
```

-	-

┌

┌

-	-

### 55.1.12 ipv6 pim dr-priority

**ipv6 pim dr-priority** *priority-value*

┌

<i>priority-value</i>	<0-4294967294> 1

┌

DR 1

┌

┌

```

DR
Hello DR
IP DR
Hello
DR IP DR
    
```

┌

```

Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim dr-priority 11234
    
```

┌

-	-

┌

┌

-	-

**ipv6 pim ignore-rp-set-priority**





### 55.1.16 ipv6 pim neighbor-filter

**ipv6 pim neighbor-filter** *ipv6\_access-list*

<i>ipv6_access-list</i>	ipv6_access-list	acl

└──┘

└──┘

PIM  
PIM-SMV6 peering

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim neighbor-filter acl
Ruijie(config-if)# exit
Ruijie(config)# ipv6 access-list acl
                    fe80::2d0:f8ff:fe22:33ad
Ruijie(config-ipv6-acl)# deny ipv6 fe80::2d0:f8ff:fe22:33ad/128
any
```

<b>ipv6 access-list</b>	-

└──┘

-	-

### 55.1.17 ipv6 pim override-interval

**ipv6 pim override-interval** *interval-milliseconds*

--	--

<i>interval-milliseconds</i>	<1-65535>
------------------------------	-----------

Hello      Override-Interval      2500

Override-Interval	
<b>r</b> J/P-override-interval	J/P-override-interval
Join-Prune	holdtime

Override-Interval      3000  
 Ruijie# **configure terminal**  
 Ruijie(config)# **interface g 0/3**  
 Ruijie(config-if)# **ipv6 pim override-interval 3000**

<b>ipv6 pim propagation-delay</b>	-
-----------------------------------	---

-	-
---	---

### 55.1.18 ipv6 pim probe-interval

**ipv6 pim probe-interval** *interval-seconds*

<i>interval-seconds</i>	<1-65535>
-------------------------	-----------

5s

DR    RP

NULL-Register

r	Warning	3*	+
65535			Warning

6s

Ruijie# **configure terminal**

Ruijie(config)# **ipv6 pim probe-interval 6**

<b>ipv6 pim register-suppression</b>	-
--------------------------------------	---

-

```
Ruijie(config-if)# ipv6 pim propagation-delay 600
```

ipv6 pim override-interval	-
ipv6 pim neighbor-tracking	-

-	-

### 55.1.20 ipv6 pim query-interval

**ipv6 pim query-interval** *interval-seconds*

<i>Interval-seconds</i>	<1-65535>

Hello 30s

Hello Hello Hello Hello  
 65535 Hello 3.5 Hello \* 3.5 >  
 18725

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim query-interval 60
```

-	-

--	--

--	--

### 55.1.21 ipv6 pim register-checksum-wholepkt

**ipv6 pim register-checksum-wholepkt** [group-list *ipv6\_access-list*]

<i>ipv6_access-list</i>	<i>ipv6_access-list</i> acl group-list <i>ipv6_access-list</i>

PIM PIM

PIM PIM

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim register-checksum-wholepkt
Ruijie(config)# ipv6 pim register-checksum-wholepkt
group-list checksum-access-list
Ruijie(config)# ipv6 access-list checksum-access-list
ff66::6666/64
Ruijie(config-ipv6-acl)# permit ipv6 any ff66::6666/64
```

<b>ipv6 access-list</b>	-

-	-

### 55.1.22 ipv6 pim register-rate-limit

**ipv6 pim register-rate-limit rate**

<i>rate</i>	register
	<1-65535>

└───┘

└───┘

└───┘

S G

DR RP

└───┘

Ruijie# **configure terminal**

Ruijie(config)# **ipv6 pim register-rate-limit 3000**

└───┘

-	-

└───┘

└───┘

-	-

**55.1.23 ipv6 pim register-rp-reachability**

**ipv6 pim register-rp-reachability**

-	-

└───┘

RP

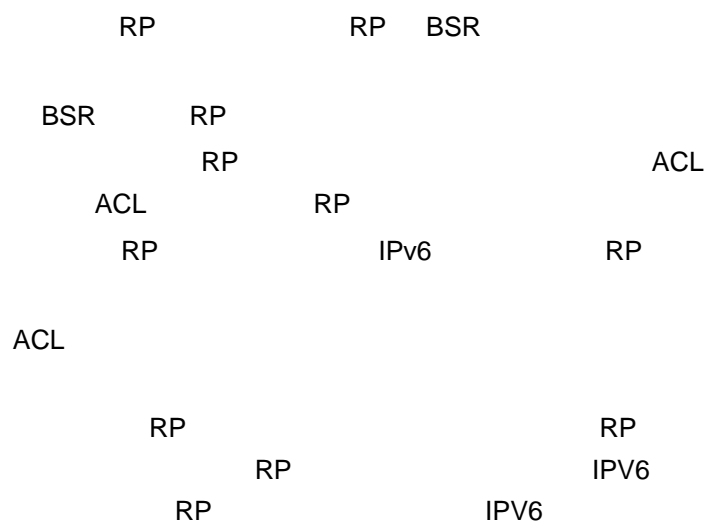
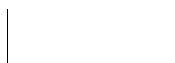
└───┘

└───┘

RP

```
Ruijie# configure terminal
```





<i>interface-type interface-number</i>	
<i>priority-value</i>	<0-255> priority priority-value 192
<i>Interval-seconds</i>	<1-16383> interval interval-seconds interval-seconds 60s
<i>ipv6_access-list</i>	acl group-list ipv6_access-list

RP

```

PIM-SMv6          RPT          RP          BSR
                  C-RP        BSR        C-RP        BSR        PIM
                  RP          acl
                  permit ace        deny ace
    
```

```

Ruijie# configure terminal
Ruijie(config)# ipv6 pim rp-candidate g 0/3 priority 200 group-list
acl interval 40
Ruijie(config)# ipv6 access-list acl
rp ff66::6666/64
Ruijie(config-ipv6-acl)# permit ipv6 any ff66::6666/64
    
```

-	-

-	-

### 55.1.28 ipv6 pim rp embedded

**ipv6 pim rp embedded [group-list ipv6\_acl\_name]**

--	--

<i>ipv6_acl_name</i>	<i>ipv6_acl_name</i>			RP
	IPV6		RP	
			RP	IPV6
		RP		

---

┌

---

┌

---

RP                  IPV6                  RP

RP                  RP                  IPV6

RP                  RP                  IPV6                  RP

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim rp-register-kat 250
```

-	-

-	-

### 55.1.30 ipv6 pim sparse-mode

**ipv6 pim sparse-mode**

-	-

PIM-SMv6

PIM-SMv6

PIM-SMv6

PIM-SMv6

PIM-SMv6

MLD

Failed to enable PIM-SMv6 on <  
>, resource temporarily unavailable, please try again

PIM-SMv6 Configure failed! VIF limit  
exceeded in NSM!!!

PIM-SMv6

PIM-SMv6 PIM-DMv6

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim sparse-mode
```



-	-

### 55.1.32 ipv6 pim ssm

**ipv6 pim ssm { default / range ipv6\_access-list }**

<b>default</b>	FF3x::/32
<i>ipv6_access-list</i>	acl

SSMV6

PIM-SSMv6

```

Ruijie# configure terminal
Ruijie(config)# ipv6 pim ssm range acl
                                fe80::2d0:f8ff:fe22:33ad      ff32::3333/64      SSM
Ruijie(config-ipv6-acl)# permit ipv6 fe80::2d0:f8ff:fe22:33ad
/128 ff32::3333/64
    
```

<b>ipv6 access-list</b>	-

-	-

### 55.1.33 ipv6 pim static-rp-preferred

**ipv6 pim static-rp-preferred**

--	--

-----  
|  
|  
|

| BSR RP |

|

| RP BSR RP |

| RP |

Ruijie# **configure terminal**  
Ruijie(config)# **ipv6 pim static-rp-preferred**

-----

|  
|  
|

e g 0/3

pim triggered-hello-delay 3

--	--

### 55.2.2 show ipv6 pim sparse-mode bsr-router

show ipv6 pim sparse-mode bsr-router

-	-

--	--

--	--

--	--

BSR .

```
Ruijie# show ipv6 pim sparse-mode bsr-router
PIMv2 Bootstrap information
This system is the Bootstrap Router (BSR)
BSR address: 3333::8888
Uptime:00:03:31, BSR Priority: 64, Hash mask length: 126
Next bootstrap message in 00:00:47
Role: Candidate BSR Priority: 64, Hash mask length: 126
State: Elected BSR
Candidate RP: 3333::8888(GigabitEthernet 0/5)
Advertisement interval 60 seconds
Next Cand_RP_advertisement in 00:00:37
```

-	-

--	--

-	-

### 55.2.3 show ipv6 pim sparse-mode interface

**show ipv6 pim sparse-mode interface** [*interface-type interface-number* [detail] ]

<i>interface-type interface-number</i>	interface-type interface-number
<b>detail</b>	

└───┘

└───┘

└───┘

/ /

PIM-SMv6

└───┘

```
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
```

--	--

```

interface-type interface-number

```

```


```

```

/ /

```

```

PIM-SMv6 MLD

```

```

Ruijie# show ipv6 pim sparse-mode local-members
PIM Local membership information
GigabitEthernet 0/5:
(*, ff66::6666) : Include

```

-	-

```


```

-	-

### 55.2.5 show ipv6 pim sparse-mode mroute

**show ipv6 pim sparse-mode mroute** {*ipv6\_group\_address* | *ipv6\_source\_address*}

<i>ipv6_group_address</i>	IPv6
<i>ipv6_source_address</i>	IPv6

```


```

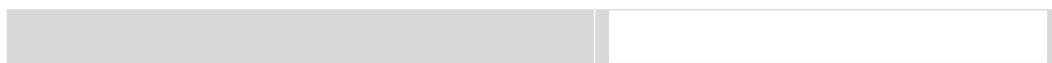
```

/ /

```

```


```





```
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
```

-	-

-	-

### 55.2.9 show ipv6 pim sparse-mode rp-hash

**show ipv6 pim sparse-mode rp-hash *ipv6\_group-address***

<i>ipv6_group-address</i>	IPv6

/ /

*ipv6\_group-address* RP

```
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
```

--	--



```

Errors:
Malformed packets:                0
Bad checksums:                    0
Send errors:                      0
Packets received with unknown PIMv6 version: 0
    
```

<b>clear ipv6 pim sparse-mode track</b>	-

-	-

# 56 MLD

## 56.1

### 56.1.1 clear ipv6 mld group

MLD

report

**clear ipv6 mld group** [*group-address*] [*interface-type interface-number*]

<i>group-address</i>	128	IPv6
<i>interface-type</i>		
<i>interface-number</i>		

MLD

MLD

**clear ipv6 mld group**

Ruijie# **clear ipv6 mld group**

Ruijie# **clear ipv6 mld group ff1e::100**

Ruijie# **clear ipv6 mld group**

MLD

|

|

-	-

### 56.1.2 clear ipv6 mld interface

MLD

**clear ipv6 mld interface** *interface-type interface-number*

|

<i>interface-type</i>	
<i>interfaceid</i>	

|

|

|

MLD  
report done

|

Ruijie# **clear ipv6 mld interface fa 1/1**

|

-	-

|

|

-	-

### 56.1.3 ipv6 mld access-group

ACL report

no

**ipv6 mld access-group** *word*

**no ipv6 mld access-group**

<i>Word</i>	IPv6                  ACL

└──

└──

			ACL
	ACL deny    report		ACL
	MLDv2		
	S1,S2,S3...Sn,G	ACL (0,G)	MLD report ACL
<b>r</b>			ACL
	(0, G)	S1,S2,S3...Sn,G	

Eth0/1                  report                  acl

```
Ruijie(config)#ipv6 access-list acl
Ruijie(config-ipv6-acl)#permit ipv6 ::/64 ff66::100/64
Ruijie(config-ipv6-acl)#permit ipv6 2222::3333/64 ff66::100/64
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if)# ipv6 mld access-group acl
```

-	-

└──

--	--

no

**ipv6 mld immediate-leave group-list** *word***no ipv6 mld immediate-leave group-list**

<i>Word</i>	IPv6	ACL

---



---



---

MLD

MLD

2s

---

```
Ruijie# configure terminal
Ruijie(config)#ipv6 access-list acl
Ruijie(config-ipv6-acl)#permit ipv6 2222::3333/64 ff66::100/64
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if)# ipv6 mld immediate-leave group-list acl
```

---

<b>ipv6 mld last-member-query-interval</b>	-

---



---

-	-

### 56.1.5 ipv6 mld join-group

no

**ipv6 mld join-group** *group-address*

**no ipv6 mld join-group** *group-address*



**no ipv6 mld last-member-query-count**

	<b>MLD</b>
--	------------

|

|

MLD MLD mld last-member-query-count

|

2  
 Ruijie# **configure terminal**  
 Ruijie(config)# **interface fa 0/1**  
 Ruijie(config-if)# **ipv6 mld last-member-query-interval 200**

|

<b>ipv6 mld immediate-leave</b>	-

|

|

-	-

### 56.1.8 ipv6 mld limit ( )

MLD  
 no  
**ipv6 mld limit** *number* [**except** *access-list*]  
 no **ipv6 mld limit**

|

<i>number</i>	MLD 1024
<b>except</b> <i>access-list</i>	

except access-list

```

300
Ruijie(config-if)# ipv6 mld limit 300
300 acl
Ruijie(config-if)# ipv6 mld limit 300 except acl
    
```

-	-

-	-

### 56.1.9 ipv6 mld limit ( )

MLD no

**ipv6 mld limit** *number* [**except** *word*]

**no ipv6 mld limit** *number* [**except** *word*]

<i>number</i>	MLD 1-65536
<b>except</b>	
<i>word</i>	ipv6

MLD except

|  
|  
|

```
300
Ruijie config # ipv6 mld limit 300
300 ac1
Ruijie(config)# ipv6 mld limit 300 except ac1
```

|  
|

[Redacted]	
-	-

|  
|

[Redacted]

	-	-

### 56.1.11 ipv6 mld proxy-service

mroute-proxy  
mroute-proxy

no

**ipv6 mld query-interval** *seconds***no ipv6 mld query-interval**

<i>seconds</i>		s	1 18000

125

```

Ethernet 0
Ruijie(config-if)# ipv6 mld query-interval 120s
Ethernet 0
Ruijie(config-if)# no ipv6 mld query-interval

```

-		-	

-		-	

### 56.1.13 ipv6 mld query-max-response-time

no

**ipv6 mld query-max-response-time** *seconds***no ipv6 mld query-max-response-time**

<i>seconds</i>		s	1 25

10s



200s

Ruijie(config-if)# **ipv6 mld querier-timeout 200**

Ethernet 0

Ruijie(config-if)# **no ipv6 mld querier-timeout**

-	-

-	-

**56.1.15 ipv6 mld robustness-variable**

no

**ipv6 mld robustness-variable** *number***no ipv6 mld robustness-variable**

<i>number</i>	2-7

2

3

Ruijie# **configure terminal**Ruijie(config)# **interface ethernet**

-	-

---

```

|
|
|

```

	-	-

### 56.1.16 ipv6 mld ssm-map enable

**mld ssm-map**

**ipv6 mld ssm-map enable**

**no ipv6 mld ssm-map enable**

	-	-

```

|
|
|

```

```

|
|
|

```

```

|
|
|

```

**ipv6 mld ssm-map static**

```

|
|
|
|

```

**mld ssm-map**

Ruijie(config)# **ipv6 mld ssm-map enable**

--	--

---

**no ipv6 mld ssm-map static access-list X:X:X:X::X**

<i>access-list</i>	ipv6 ACL
<i>X:X:X:X::X</i>	

**ipv6 mld ssm-map enable**

mldv2

ACL te

4444::1234

```
no ipv6 mld static-group join-group clear ,
```

```
Ruijie# configure terminal  
Ruijie(config)# interface fast 0/1  
Ruijie(config-if)# ipv6 mld static-group ff55::3
```

	-	-

	-	-

### 56.1.19 ipv6 mld version

MLD i 5 1

```
Ruijie(config-if)# ipv6 mld version 1
```

-	-

2

```
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
```

-	-

-	-

## 56.2.2 show ipv6 mld interface

```
show ipv6 mld interface [interface-type interface-number]
```

```
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
```

-	-

-	-

### 56.2.3 show ipv6 mld ssm-mapping

```
show ipv6 mld ssm-mapping [
```

```
Ruijie# show ipv6 mld ssm-mapping ff66::1234
```

```
Group address: ff66::1234
```

```
Database      : Static
```

```
Source list   : 5555::1234
```

```
Ruijie# show ipv6 mld ssm-mapping
```

```
SSM Mapping   : Enabled
```

```
Database      : Static mappings configured
```

-	-

-	-

# 57 MLD Snooping

## 57.1

### 57.1.1 ipv6 mld profile

MLD profile profile profile-number mld  
profile

	<b>10.4</b>	

### 57.1.3 deny

	profile	profile	deny
	<b>deny</b>		
	profile	deny	
	profile		
	profile	range	
		FF77::100	profile :
	Ruijie(config)# <b>ipv6 mld profile 1</b>		
	Ruijie(config-profile)# <b>range FF77::100</b>		
	Ruijie(config-profile)# <b>deny</b>		
	ipv6 mld profile	profile	
	range		
	permit	profile	permit
	<b>10.4</b>		

### 57.1.4 permit

	profile	profile	permit
	<b>permit</b>		





VLAN

VLAN

VLAN

VLAN

mld snooping

ivgl



```
Ruijie(config)# ipv6 mld snooping svgl profile 1
```

<b>ipv6 mld snooping ivgl</b>	mld snooping      ivgl
<b>ipv6 mld snooping ivgl-svgl</b>	mld snooping

<b>10.4</b>	

### 57.1.8 ipv6 mld snooping svgl ivgl-svgl

mld snooping      ivgl-svgl

<b>ipv6 mld snooping ivgl-svgl</b>	mld snooping
10.4	

### 57.1.9 ipv6 mld snooping dyn-mr-aging-time

**ipv6 mld snooping dyn-mr-aging-time *time***  
**no ipv6 mld snooping dyn-mr-aging-time**

**ipv6 mld snooping dyn-mr-aging-time *time***  
**no ipv6 mld snooping dyn-mr-aging-time**

<i>time</i>	1-3600
-------------	--------

300s

Hello

MLD

IPv6 PIM

500s

Ruijie(config)# **ipv6 mld snooping dyn-mr-aging-time 500**

10.4	

### 57.1.10 ipv6 mld snooping query-max-response-time

```

ipv6 mld snooping query-max-response-time time MLD
no ipv6 mld snooping query-max-response-time
    
```

```

ipv6 mld snooping query-max-response-time time
no ipv6 mld snooping query-max-response-time
    
```

<i>time</i>	MLD 1-65535

10s

MLD

0

mld snooping

MLD

0

mld snooping

MLD

MLD

15s

```

Ruijie(config)# ipv6 mld snooping query-max-response-time 15
    
```

```

Q095ATTC6 /TT0 1 Tf 1.677 1.0Tj 10.02 0 0 1018296.215.241 1 Tf /C2_0 1 Tf 10.5
    
```

**no ipv6 mld snooping vlan vid**

<i>vid</i>	vlan id 1-4094

mld snooping vlan mld snooping

mld snooping vlan mld snooping  
 vlan mld snooping

VLAN 1 mld snooping

Ruijie(config)# **no ipv6 mld snooping vlan 1**


10.4

### 57.1.12 ipv6 mld snooping vlan mrouter learn

MLD query PIM  
**ipv6 mld snooping vlan mrouter learn** no

**ipv6 mld snooping vlan vid mrouter learn**  
**no ipv6 mld snooping vlan vid mrouter learn**

VLAN

no

mld snooping

Ruijie(config)# **ipv6 mld snooping vlan 1 mrouter learn**

<b>ipv6 mld snooping vlan mrouter interface</b>	

<b>10.4</b>	

### 57.1.13 ipv6 mld snooping vlan mrouter interface

**ipv6 mld snooping vlan mrouter**

**interface** no

**ipv6 mld snooping vlan vid mrouter interface interface-id**

**no ipv6 mld snooping vlan vid mrouter interface interface-id**

--	--



```
fastEthernet 0/1
```

ipv6 mld snooping vlan mrouter interface	

10.4	

### 57.1.15 ipv6 mld snooping fast-leave enable

```

          mld snooping fast-leave          ipv6 mld snooping
fast-leave enable          no          mld snooping fast-leave

```

```

ipv6 mld snooping fast-leave enable
no ipv6 mld snooping fast-leave enable

```


```

IPv6          MLD          IPv6          MLD
IPv6          MLD

```

```

          mld snooping fast-leave
Ruijie(config)# ipv6 mld snooping fast-leave

```


10.4	

### 57.1.16 ipv6 mld snooping suppression enable

```

mld snooping suppression          ipv6 mld snooping
suppression enable                 no    mld snooping suppression

ipv6 mld snooping suppression enable
no ipv6 mld snooping suppression enable
    
```


└──

└──

```

          MLD
IPv6      MLD
          MLD

          suppression          MLD v1 report
          MLD v2 report
    
```

```

          mld snooping suppression
Ruijie(config)# ipv6 mld snooping suppression
    
```


└──

10.4	

### 57.1.17 ipv6 mld source-check port

```
mld snooping
ipv6 mld snooping source-check port
no
ipv6 mld snooping source-check port
no ipv6 mld snooping source-check port
```


|

|

```
mld snooping          MLD          mld snooping
                        mld snooping
```

```
mld snooping
Ruijie(config)# ipv6 mld snooping source-check port
```


|

10.4	

### 57.1.18 ipv6 mld snooping filter

**no ipv6 mld snooping filter**

|

|

MLD Report

|

0/1 100

Ruijie(config)# **interface fastEthernet 0/1**

Ruijie(config-if)# **ipv6 mld snooping max-group 100**

|

<b>ipv6 mld snooping filter</b>	

|

<b>10.4</b>	

### 57.1.20 clear ipv6 mld snooping gda-table

**clear ipv6 mld snooping**

**gda-table**

**clear ipv6 mld snooping gda-table**

|


|

|

|

|

Ruijie# **clear ipv6 mld snooping gda-table**

|


┌

┌

10.4	

### 57.1.21 debug mld-snp

mld , debug mld-snp

debug mld-snp  
undebug mld-snp

┌


┌

┌

┌

mld

┌

mld  
Ruijie# debug mld-snp

┌


┌

┌

10.4	

## 57.2

### 57.2.1 show ipv6 mld snooping

mld snooping

**Show ipv6 mld snooping [gda-table | interfaces | mrouter/ statistics [vlan *vlan-id* ]**

	mld snooping
<b>gda-table</b>	
<b>interfaces</b>	mld snooping Filtering
<b>mrouter</b>	
<b>statistics [vlan <i>vlan-id</i>]</b>	snooping

mld snooping

```

1      show ipv6 mld snooping          mld snooping
Ruijie# show ipv6 mld snooping
MLD-snooping mode      : IVGL
SVGL vlan-id           : 1
SVGL profile number    : 0
Source check port      : Disabled
Query max response time : 10(Seconds)

2      show ipv6 mld snooping statistics  mld snooping

Ruijie# show ipv6 mld snooping statistics
GROUP      Interface      Last report      Last leave      Last
           time          time             reporter
-----
FF88::1 VL1:Gi4/2    0d:0h:0m:7s     ----          2003::1111
           Report pkts: 1             Leave pkts: 0

3      show ipv6 mld snooping mrouter    mld snooping

Ruijie# show ipv6 mld snooping mrouter
Vlan      Interface      State      MLD profile number
-----
1 GigabitEthernet 0/7    static     1
1 GigabitEthernet 0/12   dynamic    0

```



mld profile

```
1      show ipv6 mld profile      MLD profile
Ruijie# show ipv6 mld profile 1
MLD Profile 1
permit
range FF77::1 FF77::100
range FF88::123
```


10.4	

## 58 MPLS

### 58.1

#### 58.1.1 advertise-labels

IP FEC no

[no] advertise-labels [for host-routes | for bgp-routes [ acl *acl\_name* ] | for default-route | for acl *prefix-access-list* [to *peer-access-list*]

for host-routes			32
for bgp-routes [acl <i>acl_ame</i> ]	BGP		acl
for default-route		BGP	3
for acl <i>prefix-access-list</i>			
to <i>peer-access-list</i>			

**advertise-labels for bgp-routes** BGP  
**acl** BGP **acl**  
BGP **no advertise-labels for bgp-routes**  
BGP BGP LDP  
**advertise-labels for host-routes** 32  
**advertise-labels for default-route** 3  
LSP  
FEC  
acl fec no advertise-labels  
fec acl  
fec  
**no advertise-labelse** **advertise-labels**  
**for acl** LSP

r

```

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

```

-	-

10.4(2)	

## 58.1.2 backoff

LDP    no

**backoff** *initial-backoff maximum-backoff*

**no backoff**

<i>initial-backoff</i>	2147483	5
<i>maximum-backoff</i>	2147483	5

15                  120

config-mpls-router

```

LSR                                          LDP                                          LSR
           LDP                                          LDP

```



	<b>show mpls ldp neighbor</b>	LDP
A	<pre> i w &amp;" CSf - \$ @wiiiO À P V-r 10.4(2) </pre>	

### 58.1.4 discovery targeted-hello

hello

no

-	-

### 58.1.5 explicit-null

acl

no

**explicit-null** [*for prefix-acl* [*to peer-acl* ] ] [*to peer-acl*]

**no explicit-null**

<b>for prefix-acl</b>	( )
<b>to peer-acl</b>	( ) LDP

config-mpls-router

	1	FEC	LSP	L2 VPN	L3 VPN
			FEC		
	L3 VPN	L2 VPN			
<b>r</b>	2			acl	
	3	LDP		VRF	

LDP

Ruijie(config)# **mpls router ldp**

Ruijie(config-mpls-router)# **explicit-null**

LDP 192.168.0.0/16 1.1.1.1 LDP

2

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
```

-	-

<b>10.4(2)</b>	

### 58.1.6 label-merge

no

[no] label-merge

-	-

config-mpls-router

```
DU
LDP          FEC          FEC
```

```
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# label-merge
```

<b>show mpls ldp parameters</b>	VRF LDP
<b>mpls ldp distribution-mode</b>	

-	-

### 58.1.7 label-retention-mode

no

**label-retention-mode {liberal | conservative}**

**[no] label-retention-mode**

<b>liberal</b>	
<b>conservative</b>	

└──

└──

config-mpls-router

└──

FEC

└──

Ruijie(config)# **mpls router ldp**

Ruijie(config-mpls-router)# **label-retention-mode liberal**

└──

<b>show mpls ldp parameters</b>	VRF LDP

└──

--	--

**[no] label-switching**

-	-

MPLS

MPLS **label-switching**

MPLS **label-switching**

```
Ruijie(config)# interface Gi4/1
Ruijie(config-if)# label-switching
```

<b>show mpls label-pool</b>	
<b>show mpls summary</b>	
<b>mpls ip (            )</b>	LDP

-	-

### 58.1.9 Ldp router-id

LDP Router ID no

**ldp router-id** { *ip-address* | **interface** *interface-name* [**force**]}

```

Router ID      LDP      Router ID
config-mpls-router
IP             LDP      RouterID
                RouterID
IP             LDP      RouterID      force
RouterID
RouterID      RouterID
VRF           LDP      VRF
UP
force
force
IP             LDP      RouterID
RouterID      LDP           LDP
                LDP      Router ID
    
```

```

Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# ldp router-id interface vlan 10 force
    
```

<b>show mpls ldp parameters</b>	VRF LDP

<b>10.3</b>	<b>ldp router-id <i>ipaddress</i></b>
<b>10.4(2)</b>	<b>ldp router-id interface interface-name [force]</b>

### 58.1.10 loop-detection

```

no
[no] loop-detection
    
```

	-	-

┌

┌

config-mpls-router

┌

LDP

LDP

LDP

┌

Ruijie(config)# **mpls router ldp**

Ruijie(config-mpls-router)# **loop-detection**

┌

<b>show mpls ldp parameters</b>	VRF LDP
<b>mpls ldp max-path-vector</b>	LDP
<b>mpls ldp max-hop-count</b>	

┌

┌

-	-

### 58.1.11 lsp-control-mode

LDP

no

**lsp-control-mode {independent | ordered}**

**no lsp-control-mode**

┌

--	--

```
config-mpls-router
```

```
LDP
```

```
LDP
```

```
Ruijie(config)# mpls router ldp
```

```
Ruijie(config-mpls-router)# lsp-control-mode ordered
```

<b>show mpls ldp parameters</b>	vrf LDP

-	-

### 58.1.12 mpls ip

MPLS

no

MPLS

[no] mpls ip

-	-

MPLS

MPLS

MPLS

IP

MPLS

IP

MPLS

```
Ruijie(config)# mpls ip
```

--	--

	<b>mpls ip</b>	MPLS
	-	-

### 58.1.13 mpls ip

LDP                      no                      LDP

[no] mpls ip

	IP	MPLS	MPLS MTU
	<b>[no] mpls ip fragment</b>		
		-	-

	IP	MPLS	MPLS MTU
	IP		MPLS

--	--	--	--

			MTU	IP
	<b>no mpls ip fragment</b>			
	MPLS		MPLS MTU	

Ruijie(config)# **no mpls ip fragment**



MPLS  
ICMP

ICMP  
**mpls ip icmp-error pop labels**

MPLS TTL  
MPLS



<b>dod</b>	
<b>du</b>	

|

|

|

LDP

LDP

**du**

|  
Ruijie(config)# **interface vlan 10**  
Ruijie(config-if)# **mpls ldp distribution-mode dod**

LDP DOD

<b>loop detection-mode</b>	

|

## LDP Link Hello

MPLS

Keepalive Holdtime      LDP      targeted-session holdtime      LDP      LDP      LDP      Keepalive  
Ruijie(config) # **interface**  
Ruijie(config-if)# **mpls l**



**targeted-session holdtime**      keepalive



-	-

LDP      no  
**mpls ldp max-hop-count number no mpls ldp max-hop-count number**

---

*number*

	<i>loop-detection</i>	LDP
	-	-

### 58.1.22 mpls ldp max-label-requests

LDP no

**mpls ldp max-label-requests times**

**no mpls ldp max-label-requests**

	<i>times</i>	0-255

└──

└──

└──

LDP

LDP 0

└──

LDP 5

Ruijie(config) # **interface vlan 10**

Ruijie(config-if)# **mpls ldp max-label-requests 5**

	<b>mpls ldp distribution-mode</b>	

└──

└──

	-	-

### 58.1.23 mpls ldp max-path-vector

LDP

no

**mpls ldp max-path-vector** *number*

**no mpls ldp max-path-vector**



max-pdu	LDP	PDU 256-4096

4096

LDP LDP

LDP 256  
 Ruijie(config)# **interface vlan 10**  
 Ruijie(config-if)# **mpls ldp max-pdu 256**

-	-

-	-

### 58.1.25 mpls ldp transport-address

LDP no  
**mpls ldp transport-address [interface | ip-address]**

**no mpls ldp transport-address**

<b>interface</b>	LDP
<i>ip-address</i>	LDP IP

LDP LSR ID LDP

LDP LDP LDP

LDP  
Ruijie(config)# **interface vlan 10**  
Ruijie(config-if)#**mpls ldp transport-address interface**



**show mpls ldp parameters**

E

```

      8      MPLS MTU      MPLS      MPLS MTU
      MPLS      IP      MPLS MTU

      MTU      MTU      MTU
      mtu
  
```

```

Ruijie(config)# interface Gi4/1
Ruijie(config-if)# mpls mtu 1510
  
```

<b>mpls ip</b>	MPLS

-	-

### 58.1.27 mpls router ldp

```

      LDP      no      LDP

[no] mpls router ldp [vrf-name]
  
```

<i>vrf-name</i>	VRF LDP

```
LDP
```

```

      LDP      VRF      VRF      LDP
      VRF      VRF LDP
  
```

```

      VRF LDP      LDP
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# ldp router-id interface vlan 10 force
      VRF vpna LDP      LDP
Ruijie(config)# mpls router ldp vpna
  
```

-	-

└───┘

-	-

### 58.1.28 mpls static ftn

FTN FTN

**mpls static ftn ip-a**

**no mpls static ftn i**

<i>ip-address/mask</i>	FEC
<b>out-label</b> <i>label</i>	FEC
<b>nexthop</b> <i>interface-name</i>	FEC
<i>nexthop-ip</i>	IP

└───┘

└───┘

```

          FTN          FTN          MPLS          IP
          FTN          IP
IP          0 FTN          IP

```

```
Ruijie(config)# mpls static ftn 192.168.0.0/16 out-label 100 nexthop
gi4/1 10.10.10.1
```

<b>show mpls forwarding-table</b>	FTN

└───┘



┌

-	-

### 58.1.30 mpls static l2vc-ftn

VC FTN                  no                  FTN

**mpls static l2vc-ftn** *vc\_id vc\_peer\_ip out\_label label*

**no mpls static l2vc-ftn** *vc\_id vc\_peer\_ip*

┌  
┌  
┌

<i>vc_id</i>	vc      id
<i>vc_peer_ip</i>	Vc          PE   IP
<b>out_label label</b>	VC FTN

┌

┌

┌

vc                  ftn                  VC          AC                  ftn  
   vc peer      ip                  PE      LSP

┌

Ruijie(config)# **mpls static l2vc-ftn 1 10.10.10.1 out\_label 21**

┌  
┌

<b>show mpls l2vc ftn_table</b>	vc      ftn
<b>show mpls forwarding-table</b>	MPLS

┌

┌

-	-





```
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
```

<b>show mpls forwarding-table</b>	MPLS

-	-

### 58.1.32 mpls-work-mode

```
mpls no
mpls-work-mode { cem | mpls }
no mpls-work-mode
```

cem	
mpls	Mpls

```
mpls cem
```

```
mpls
MPLS IP
MPLS ( FTN ) MPLS
```

CEM

└── config-mpls-router

FEC IP

FEC

PW

FEC

<i>ip-address</i>	LSR	
[0   7]	0	7
<i>pwd-string</i>		

ldp no ldp

[no] neighbor ip-address

ip-address	LSR Router ID

LDP

config-mpls-router

LDP

LSR

LDP

10.10.10.1 LSR

Ruijie(config)# mpls router ldp

Ruijie(config-mpls-router)# neighbor 10.10.10.1

show mpls ldp discovery	LDP
show mpls ldp neighbor	LDP

-	-

### 58.1.36 ping mpls

mpls lsp ping 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]

ip-address/mask	FEC IPv4

<b>repeat</b> <i>repeat</i>	( ) 5	Echo Request 1-2147483647
<b>ttl</b> <i>time-to-live</i>	( ) 255	MPLS TTL 1-255
<b>timeout</b> <i>timeout</i>	( ) 0-3600	2
<b>size</b> <i>size</i>	( ) 84-18024	84
<b>interval</b> <i>mseconds</i>	( ) 0-3600000	Echo Request ( ) 0
<b>source</b> <i>ip-address</i>	( )	Echo Reply
<b>destination</b> <i>ip-address</i>	( ) 127/8 127.0.0.1	IP
<b>force-explicit-null</b>	( )	MPLS
<b>pad</b> <i>pattern</i>	( )	0xABCD
<b>reply mode</b> { <i>ipv4</i>   <i>router-alert</i> }	( )	Echo Reply Ipv4 = IPv4 UDP ( ) Router-alert = Router Alert IPv4 UDP
<b>dsmap</b>	( )	
<b>flags</b> <i>fec</i>	( )	FEC
<b>verbose</b>	( )	Echo Reply

ping mpls

MPLS LSP

v6

0

```

    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
  2                dsmap      ttl
  LSR
Ruijie# ping mpls ipv4 10.40.10.10/32 dsmap ttl 1
q2VchNfCai+â
Codes: '!' - success, 'Q' - r 0 Tnt, '.' - timeout,
'L'-labeled output interfacewn upstream indoutput interface,
'D'-DS Map mismatch, 'F'-no Freturn code 0
'M'-malformed request, remature ter 'N'-no label entry,
'P'-no rx intf label prot, 'p'-perfacewn upstream indmination of LSP,
'R'-transit router, 'I'-unknoreturn code 0
'fromuccess

```

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)

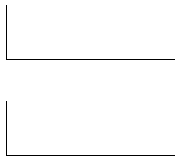
!	Reply	LSP
Q	Request FEC	LSP
.	Reply Reply	
L	Reply Reply	FEC LSP
B	Reply LSP	FEC
D	Downstream Mapping TLV Reply	
F	Reply FEC	TargetFec
f	Reply TargetFec	FEC
M	Reply	Request
m	Reply TLV	Request
N	Reply	
P	Reply TargetFec	
p		

R	
I	
X	
x	0

<b>traceroute mpls</b>	MPLS LSP LSR

**X**





MPLS Trap

XC Trap

1. XC Up Trap ILM FTN
2. XC Down Trap ILM FTN

**snmp-server enables mpls xc TRAP**  
**snmp server enables mpls xc [xc-up] [xc-down] TRA**

P

LDP Trap

1. LDP UP Trap LDP
2. LDP Down FTN

808152100 1Tc 824 0804>B1 @E 1

MPLS

	-	-

### 58.1.40 traceroute mpls

mpls lsp traceroute      MPLS    LSP

```

10.10.10.10/32  FEC  LSP      LSR      :
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

        ping mpls

```

<b>ping mpls</b>	MPLS LSP

<b>10.4(2)</b>	

### 58.1.41 transport-address

LDP no

**transport-address {interface | ip-address | interface-name }**

**no transport-address**

<b>interface</b>	IP LDP

<i>ip-address</i>	LDP	IP
<i>interface-name</i>	LDP	IP

---

LDP LSR ID LDP

config-mpls-router

LDP LDP L LSR ID LDP

<b>interface</b> <i>interface-name</i>	MPLS	ILM	FTN
<b>next-hop</b> <i>ip-address</i>	MPLS	ILM	FTN
<b>ftn</b>			
<b>ilm</b>			
<b>ip</b>	IP	L3 VPN	MPLS
<b>vc</b>	vc	MPLS	
<b>vrf</b> <i>vrf-name</i>	VRF	MPLS	
<b>detail</b>	mpls		
<b>global</b>			

```

ILM
    show mpls forwarding-table ftn          FTN
    show mpls forwarding-table ilm          ILM
    show mpls forwarding-table ftn vc
L2VPN  FTN
    show mpls forwarding-table ilm vc
L2VPN  ILM
    show mpls forwarding-table ftn detail   FTN
    show mpls forwarding-table ilm detail   ILM

```

## MPLS

```

Ruijie# Show mpls 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
Local Outgoing OP FEC          Outgoing      Next Hop
laebl label                    interface
--      1025      PH 119.1.1.0/24(V) Gi3/19      10.0.10.1
--      1026      PH 120.1.1.0/24   Gi3/18      10.0.2.1
--      imp-null  PH 130.1.1.0/24   Gi3/18      10.0.2.1
1025    1027      SP 100.1.1.0/24   V18         192.1.2.1
1026    1028      SW 120.1.2.0/24   Gi3/19      10.0.2.1
1027    imp-null  PP 121.1.1.0/24   Fa3/1       11.0.0.1
--      --          IP 167.168.195.0/24 Fa3/2       120.1.1.1
1028    --          PC 167.168.196.0/24 --           --
1029    --          PN 167.168.197.0/24(V) V14        1.0.0.1
1030    --          PI VRF(vpna)      --           --
1031    --          PV VC(20,1.1.1.1) V15        --

```

```
--      1029      PH VC(20,1.1.1.1)  V110      192.1.2.1
1032  --          PI 192.1.1.0/24(V) V1101      172.2.1.2
1033  1030      SW 193.1.1.0/24(V)  V1102      10.2.1.2
```

```
Local label                                ILM
  FTN                                         --
Outgoing label ILM  FTN                    --  ILM
  FTN                                         impl-null  3
OP                                           ILM  FTN
```

<b>PH</b>	IP 1  3 <b>show mpls</b> <b>forwarding-table detail</b> imp-null                          imp-null
<b>PP</b>	MPLS 2
<b>SW</b>	MPLS
<b>SP</b>	MPLS <b>show mpls</b> <b>forwarding-table detail</b> 1  2
<b>PN</b>	MPLS
<b>PI</b>	MPLS IP MPLS
<b>PC</b>	

<b>PV</b>	MPLS (VPWS )			
<b>IP</b>	IP	VRF	PE	IP VPN
<b>DP</b>	VRF	VRF		

**FEC**

1. FTN -- IP FTN FEC  
 VC FTN IP (V) FTN VRF FTN  
 VC ID VC IP
2. ILM IP FEC IP  
 (V) ILM VRF ILM L3  
 VPN VRF VPN VRF ILM FEC  
 VRF VRF(vpna) VC FEC  
 VC ID VC IP VC(20,1.1.1.1)

**Outgoing interface**

**Next Hop**

--

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 faild changes:0
L2 FTN entrys:0
L2 FTN changes:0
L2 FTN faild changes:0
In label packets:0
Out label packets:0
Send label packets:0
In ip packets:0
Out ip packets:0
Out ip statck packets:0
Forwarding packets:0
Fragment packets:0
    
```



```
CLI: 0, 1 (Include label [16,1023], reserved)
LDP: 3, 4
```

<b>label-switching</b>	

-	-

### 58.2.3 show mpls ldp bindings

LDP    VRF    FEC

**show mpls ldp bindings** [*all* | *vrf vrf-name*] [*ip-address* | *mask*] [*label label*] [*remote* | *local*]

<b>all</b>	VRF
<b>vrf</b> <i>vrf-name</i>	VRF
<i>ip-address</i>   <i>mask</i>	FEC
<b>label</b> <i>label</i>	0-1048575
<b>remote</b>	LDP
<b>local</b>	

VRF

```

FEC                                          LDP                                          LDP
FEC                                          FEC                                         
VRF                                          VRF
```

VRF

```
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: 10.20.10.10/32
  local binding: to lsr: 10.20.10.10:0, label: 1027
  remote binding: from lsr: 10.20.10.10:0, label: imp-null

```

<b>local binding</b>	LSR	FEC	not in FIB
<b>remote binding</b>	LDP		not in FIB

<b>show mpls ldp neighbor</b>	LDP
-------------------------------	-----

-	-
---	---

VRF LDP

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

Local LDP Identifier	LDP
Interfaces	LDP
xmit	LDP Hello
recv	LDP Hello
Targeted Hellos	targeted Hello
active	LSR targeted Hello
passive	LSR targeted Hello LSR Targeted Hello

<b>show mpls ldp interface</b>	LDP
<b>neighbor ip-address</b>	ldp

-	-

## 58.2.5 show mpls ldp interface

LDP

vrf

**show mpls ldp interface** [*all* | *vrf vrf-name* | *interface-name*]

<b>all</b>	VRF LDP
<b>vrf vrf-name</b>	VRF LDP
<b>interface-name</b>	

|

|

|

VRF LDP up down VRF

|

```

VRF      LDP
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
    
```

Operational	LDP
Status	

|

-	-

|

|

-	-

## 58.2.6 show mpls ldp neighbor

VRF LDP

**show mpls ldp neighbor** [**all** | **vrf** *vrf-name*] [**detail**]

<b>all</b>	VRF LDP
<b>vrf</b> <i>vrf-name</i>	VRF LDP
<b>detail</b>	LDP

LDP

LDP



Targeted Session Keepalive HoldTime/Interval: 180/60 sec  
Targeted Hello HoldTime/Interval: 45/5 sec  
LDP initial/maximum backoff: 15/120 sec

<b>ldp router-id</b>	ldp router-id
<b>lsp-control-mode</b>	LDP

Lab - I a ://  
I a Lab a  
G ab E 4/1 0  
G ab E 4/2 0

# 59 BGP/MPLS L3 VPN

## 59.1

### 59.1.1 address-family ipv4 vrf

	VRF	VRF
	<b>[no] address-family ipv4 vrf vrf_name</b>	
	<i>vrf_name</i>	VRF
	VRF	
	Router	
	BGP	PE CE exit-address-family
	Ruijie(config)# <b>router bgp 100</b>	
	Ruijie(config-router)# <b>address-family ipv4 vrf vrf1</b>	
	<b>neighbor activate</b>	
	<b>exit-address-family</b>	
	-	-

### 59.1.2 address-family vpnv4

vpn

PE

vpn

[no] address-family vpnv4 [unicast]

	<b>unicast</b>	

vpn

Router

	PE	VPN	address-family VPN
	<b>exit-address-family</b>		<b>address-family VPN</b>

```
Ruijie(config)# router bgp 100
Ruijie(config-router)# address-family vpnv4
```

	<b>neighbor activate</b>	
	<b>exit-address-family</b>	

	-	-

### 59.1.3 bgp default route-target filter

<b>bgp default route-target filter</b>	BGP	route-target
<b>no bgp default route-target filter</b>	BGP	route-target

**bgp default route-target filter**  
**no bgp default route-target filter**

	-	-

BGP	route-target
-----	--------------

BGP

```

                PE      PE      ASBR      VPN      VPN
                VRF      PE      PE      no bgp default
route-target filter PE      PE      ASBR      VPN
                VRF      VPN
                VPN OptionB      ASBR      VRF
ASBR      VPN      PE      ASBR      no bgp default
route-target filter
-----
                BGP      VPN
                VPN      VPN      clear ip bgp
                BGP      BGP      VPN
r                VPN      route-target
                bgp default route-target filter
                BGP      VPN
                route-target      no bgp default route-target
                filter      clear ip bgp      BGP
    
```

```

Ruijie(config)# router bgp 100
Ruijie(config-router)# no bgp default route-target filter
    
```

-	-

10.4(2)	

### 59.1.4 clear ip bgp vrf

vrf

**clear ip bgp vrf** *vrf-name* [\* | *address*] [[*soft*] [*in* | *out*]]

<i>vrf-name</i>	vrf
*	vrf BGP

<i>address</i>	vrf	peer	BGP
<b>ipv4 unicast</b>	ipv4		
<b>in</b>	<b>soft</b>		
<b>out</b>	<b>soft</b>	BGP speaker	ET141.6 760.02 0 0 10.67(ipv4)

VRF

RFC4364 L3VPN 2

VRF

ILM

ILM

VRF

VRF

ILM

2

ILM

VRF

VRF

IP

VPNA

```
Ruijie(config)# ip vrf VPNA
```

```
Ruijie(config-vrf)# alloc-label per-route
```



		match ip address	set
	<b>extcommunity</b>		
	VPNA	rma	
	Ruijie(config)# <b>ip vrf VPNA</b>		
	Ruijie(config-vrf)# <b>export map rma</b>		
	<b>route-target</b>	VRF	RT
	-	-	-

### 59.1.7 exit address-family

	VRF	vpn
	<b>exit address-family</b>	
	-	-
	Ruijie(config)# <b>router bgp 100</b>	
	Ruijie(config-router)# <b>address-family vpnv4 unicast</b>	
	Ruijie(config-router-af)# <b>exit address-family</b>	
	-	-


### 59.1.8 import map

		VPN	VRF
	<b>[no] import map</b> <i>routermap-name</i>		
	<i>routermap-name</i>		RouteMap
	VRF		
		VRF	
		<b>Import map</b>	VRF
	<b>import</b>	VPN	VRF
		<b>import map</b>	<b>route-target</b>
		<b>match ip address</b>	<b>match extcommunity</b>
	VPNA	rma	
	Ruijie(config)# ip vrf VPNA		
	Ruijie(config-vrf)# import map rma		
	<b>route-target</b>	VRF	RT
	<b>10.4(2)</b>		

### 59.1.9 ip extcommunity-list

Route Map  
BGP/MPLS VPN

VPN

Route Map  
no

**ip extcommunity-list** {*expanded-list* | **expanded** *list-name* 6[(*exp*)28(*anded* )]}T/Expanded

<b>standard list-name</b>	extcommunity extcommunity ' &
<b>permit</b>	extcommunity
<b>deny</b>	extcommunity
<i>regular-expression</i>	extcommunity
<i>sequence-number</i>	2147483647 1 10 10
<b>rt</b>	RT extcommunity extcommunity
<b>soo</b>	SOO extcommunity extcommunity
<i>value</i>	RT SOO

ip extcommunity-list

**ip extcommunity-list** extcommunity extcommunity  
Fci hYALd **match extcommunity** 6, D

extcommunity	<i>regular-expression</i>
"	
!	
~	
^	
R	
.	
S	
∅	

```
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]
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
```

**no ip route static inter-vrf**

vrf

vrf

vrf

\*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.**

Ruijie(config)# **no ip route static inter-vrf**

-	-

-	-

### 59.1.11

VRF

no

**[no] vrf** *vrf\_name ip\_addr mask interface next-hop-address [global]*

<i>vrf_name</i>	VRF
<i>ip_ad</i>	
<i>mask</i>	
<i>interface</i>	
<i>next_</i>	
F5global>-62CD54782154E2>JTJ/TT1 1 Tf0 Tr42.012 0 TdRf/TT0 1 Tf.6767 0.006 Td10.02 0 0 10.02	

<b>r</b>	global	VRF	no ip route static
	inter-vrf		

---

```
Ruijie(config)# ip route vrf vrf1 10.10.10.0 255.255.255.0 gi3/1  
192.168.18.1
```



|

|

-	-

### 59.1.13 ip vrf forwarding

VRF no

[no] ip vrf forwarding *vrf\_name*

|

<i>vrf_name</i>	VRF

|

VRF

|

|

|

Ruijie(config)# **int eth1**  
 Ruijie(config-if)# **ip vrf forwarding vrf1**

|

<b>ip vrf</b>	VRF
<b>show ip vrf</b>	VRF

|

|

-	-

### 59.1.14 match extcommunity

BGP  
 no match extcommunity

**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}*

		[1~99]	id
<i>standard-list-number</i>	extcommunity		extcommunity
	extcommunity		
	extcommunity		
<i>standard-list-name</i>	extcommunity		extcommunity
	extcommunity		
		[100~199]	id
<i>expanded-list-num</i>	extcommunity		extcommunity
	extcommunity		
	extcommunity		
<i>expanded-list-name</i>	extcommunity		extcommunity
	extcommunity		

```

1 import map RT VRF
2 neighbor route-map in neighbor route-map out
   BGP VPNv4 RT BGP
   BGP VPNv4

```

```

1. extcommunity
Ruijie(config)# ip extcommunity-list 1 permit rt 100 1
Ruijie(config)# ip extcommunity-list 1 permit rt 100 2

2. match
Ruijie(config)# route-map rt
Ruijie(config-route-map)# match extcommunity 1

3.
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>ip extcommunity-list</b>	extcommunity
<b>show ip extcommunity-list</b>	extcommunity

<b>10.4(2)-</b>	-

### 59.1.15 match mpls-label

BGP

**no match mpls-label**

**match mpls-label**

**no match mpls-label**


MPLS

**neighbor route-map in**

BGP

match

```
r VPNv4 , IPv4
```

```
1. acl1
```

## 2. MPLS

```
Ruijie(config)# route-map infilter 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)#
```

VRF

VRF warning-only

```
Ruijie(config)# ip vrf vrf1
Ruijie(config-vrf)# rd 200:1
Ruijie(config-vrf)# maximum routes 1000 warning-only
```

-	-

-	-

ipv4

```
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
```

<b>router bgp</b>	BGP
<b>neighbor remote-as</b>	BGP

-	-

### 59.1.18 neighbor allowas-in

PE PE PE PE

CE

vrf

CE

PE

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 100
Ruijie(config-router)# address-family ipv4 vrf vpn1
Ruijie(config-router-af)# neighbor 10.0.0.1 as-override
```

<b>router bgp</b>	BGP
<b>neighbor remote-as</b>	BGP

-	-

### 59.1.20 neighbor description

( ) no

**neighbor** {*peer-address* | *peer-group-name*} **description** *text*

**no neighbor** {*peer-address* | *peer-group-name*} **description**

<i>peer-address</i>	
<i>peer-group-name</i>	32
<i>text</i>	( ) 80

BGP  
BGP IPV4 vrf

```
Ruijie(config)# router bgp 60
```



```
Ruijie(config-router)# address-family vpnv4
Ruijie(config-router-af)# neighbor 10.1.1.1 next-hop-self
```

<b>router bgp</b>	BGP
<b>neighbor remote-as</b>	BGP ( )

<b>10.4(2)</b>	

### 59.1.22 neighbor next-hop-unchanged

( ) no

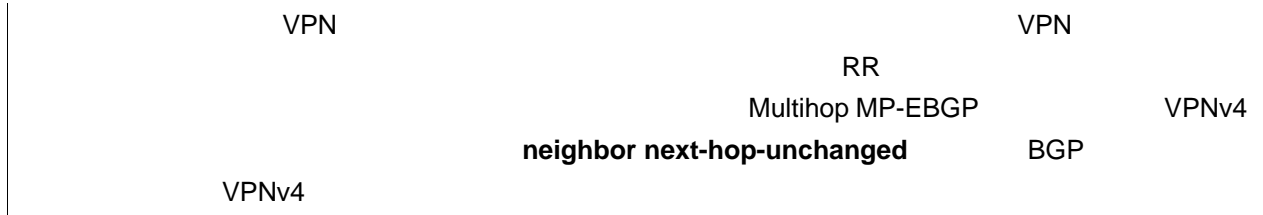
**neighbor {peer-address | peer-group-name} next-hop-unchanged**  
**no neighbor {peer-address | peer-group-name} next-hop-unchanged**

<i>peer-address</i>	
<i>peer-group-name</i>	32
<b>next-hop-unchanged</b>	BGP

EBGP

BGP  
 BGP IPV4  
 BGP VPN

VPN OptionC Multihop MP-EBGP VPN  
 PE  
 Multihop MP-EBGP Í ñ á á0f10ÿ



```
Ruijie(config)# router bgp 60
Ruijie(config-router)# address-family vpnv4
Ruijie(config-router-af)# neighbor 10.1.1.1 next-hop-unchanged
```

<b>router bgp</b>	BGP
<b>neighbor remote-as</b>	BGP ( )

<b>10.4(2)</b>	
----------------	--

### 59.1.23 neighbor remote-as

BGP ( ) no ( )

**neighbor** {peer-address | peer-group-name} remote-as as-number

**no neighbor** {peer-address | peer-group-name} remote-as as-number

<i>peer-address</i>	IPv4 IPv6
<i>peer-group-name</i>	32
<i>as-number</i>	BGP ( ) <1-65535>

BGP



MPLS

IPv4

┌

┌

10.4(2)	

### 59.1.25 neighbor shutdown

( )                    BGP                    BGP                    no                    BGP

**neighbor** {*peer-address* | *peer-group-name*} **shutdown**

**no neighbor** {*peer-address* | *peer-group-name*} **shutdown**

┌

<i>peer-address</i>	IPv4 IPv6
<i>peer-group-name</i>	32

┌

@=Ñ @



	-	-

### 59.1.27 rd

VRF rd

rd rd\_value

	rd_value	RD

RD RD 0:0.

VRF

VRF RD RD RD RD  
 vrf RD RD  
 VRF RD RD

```
Ruijie(config)# ip vrf vrf1
Ruijie(config-vrf)# rd 100:1
```

	ip vrf	VRF
	show ip vrf	VRF

	-	-

### 59.1.28 redistribute

no BGP

**redistribute** *protocol-type* [**route-map** *map-tag*] [**metric** *metric-value*]

**no redistribute** *protocol-type* [**route-map** *map-tag*] [**metric** *metric-value*]

<i>protocol-type</i>	connected static rip	
<b>route-map</b> <i>map-tag</i>	<b>route-map</b>	<b>route-map</b>
<b>metric</b> <i>metric-value</i>	metric	

┌

┌  
BGP  
BGP IPv4  
BGP IPv6  
BGP IPv4 VRF

IP

no

no

redistribute

no

-	-

### 59.1.29 redistribute ospf

```

no
    OSPF
    BGP
    redistribute ospf process-id [
        map-tag] [metric metric-value] [match internal
    external [1|2] nssa-external [1|2]]
no redistribute ospf process-id [
    map-tag] [metric metric-value] [match
{
    external [1|2]|nssa-external [1|2]]

```

<i>process-id</i>	OSPF
<b>poute-map</b> <i>map-ta</i>	<b>poute-map</b>
<b>metric</b> <i>metric-value</i>	metric
<b>match</b>	OSPF
	OSPF internal ospf match
<b>external</b> [1 2] OSPF, Xexternal2O_CAK', XABO_	
	1 2
<b>nssa-external</b> [1  ]	OSPF nssa-external 1 2 1 2

OSPF

- BGP
- BGP IPv4
- BGP IPv6
- BGP IPv4 VRF



VRF RT

```
Ruijie(config)# ip vrf vrf1
Ruijie(config-vrf)# route-target import 100:1
Ruijie(config-vrf)# route-target export 100:2
Ruijie(config-vrf)# route-target both 100:4
```

<b>ip vrf</b>	vrf

-	-

### 59.1.31 set extcommunity

BGP  
 extcommunity  
**set extcommunity** {rt *extended-community-value* [additive] | soo *extended-community-value*}  
**no set extcommunity** {rt *extended-community-value* [additive] | soo *extended-community-value*}

<b>rt</b>	RT
<b>soo</b>	SOO
<b>additive</b>	RT RT
<i>extended-community-value</i>	RT

**additive**

RT

**export map**

VPN

**set extcommunity rt**

**additive\* l" @ x6p ;b"c ð A!•ÿ ð wHtß ñgr< !a8a0**

**neighbor route-map out**

10.4(2)

## 59.2

### 59.2.1 show bgp ipv4 unicast labels

```
show                BGP                MPLS
```



\*>i 192.168.1.0/32 192.168.0.2 0 100 ?

AS	BGP	AS	
MsgRcvd	BGP	BGP	
Msgsend	BGP	BGP	
TblVer	BGP VPN	VPN	BGP
		VPN	BGP

<i>extcommunity-list-name</i>	extcommunity
-------------------------------	--------------

┌

┌

┌

```
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
```

<b>ip extcommunity-list</b>	
<b>match extcommunity</b>	
<b>set extcommunity</b>	

┌

<b>10.4(2)</b>	

### 59.2.4 show ip route vrf

VRF

**show ip route vrf** *vrf\_name* [*ip-address mask*] **bgp** | **connected** | **isis** | **ospf** | **rip** | **static**

<i>vrf_name</i>	VRF
<i>ip-address mask</i>	

<b>bgp</b>	BGP
<b>connected</b>	
<b>isis</b>	ISIS
<b>ospf</b>	OSPF
<b>rip</b>	RIP
<b>static</b>	



---

# 60

## 60.1

### 60.1.1 protected-ports route-deny

3

3

**protected-ports route-deny**

**no protected-ports route-deny**

	-	-

|

|

|

3

3

**show running-config**

|

Ruijie(config)# **protected-ports route-deny**

|

<b>show running-config</b>	3

|

|

-	-

### 60.1.2 storm-control

**no**

**storm-control** {broadcast | multicast | unicast} [{level percent | pps packets | rate-bps}]

**no storm-control** {**broadcast** | **multicast** | **unicast**} [ {**level** *percent* | **pps** *packets* | *rate-bps*}]

<b>broadcast</b>	
<b>multicast</b>	
<b>unicast</b>	
<i>percent</i>	20 20%
<i>packets</i>	pps packets per second
<i>Rate-bps</i>	
<i>64k-2M</i>	64k
<i>2-100M</i>	1M
<i>100M</i>	8M

---

	-	-

### 60.1.3 switchport protected

no

**switchport protected**

**no switchport protected**

	-	-

|

|

|

3

**show interfaces**

|

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# switchport protected
```

	<b>show interfaces</b>	

|

-

	-	-

### 60.1.4 switchport port-security

no

**switchport port-security [violation {protect | restrict | shutdown}]**

---

**no switchport port-security [violation]**



no

**switchport port-security aging {static | time time }**

**no switchport port-security aging {static | time }**

<b>Static</b>			
<b>time time</b>	1440	0	0

**no switchport port-security aging time**  
**no switchport port-security aging static**

**show port-security**

```
Ruijie(config)# interface gigabitethernet 1/1  
Ruijie(config-if)# switchport port-security aging time 8  
Ruijie(config-if)# switchport port-security aging static
```

<b>show port-security</b>	

-	-

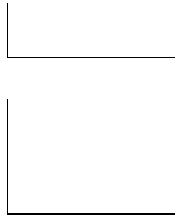
## 60.1.6 switchport port-security binding

---

IP+ MAC IP

no

[



-	-

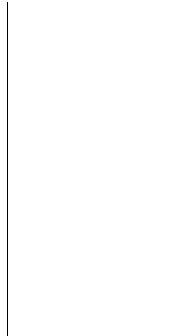
**60.1.7 switchport port-security binding interface**

IP+    MAC            IP

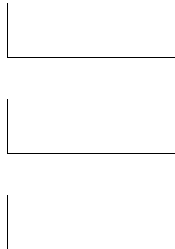
no

[no] **switchport port-security binding interface** *interface-id* *mac-address* **vlan** *vlan\_id* *ipv4-address* | *ipv6-address*

[no] **switchport port-security binding interface** *interface-id* *ipv4-address* | *ipv6-address*



<i>interface-id</i>	ID
<i>mac-address</i>	MAC
<i>Vlan_id</i>	MAC    VID
<i>Ipv4-address</i>	Ipv4    Ip
<i>Ipv6-address</i>	Ipv6    Ip



1        192.168.1.100        10

Ruijie(config)# **switchport port-security binding interface** *g0/10* *192.168.1.100*

2        192.168.1.100 MAC        00d0.f800.5555, VID= 1        10

Ruijie(config)# **switchport port-security binding interface** *g0/10* *00d0.f800.5555* **vlan** *1* *192.168.1.100*



<b>switchport port-security</b>	

<b>switchport port-security binding</b>	
<b>Switchport port-security mac-address</b>	
<b>switchport port-security aging</b>	
<b>show port-security</b>	

└──

-	-

### 60.1.8 switchport port-security maximum

no

**switchport port-security maximum *value***

**[no] switchport port-security maximum**

value	1-128

└── 128

└──

└── 128

```

1      10      2
Ruijie(config)#inter g0/10
Ruijie(config-if)# switchport port-security maximum 2

```

<b>switchport port-security</b>	
<b>switchport port-security binding</b>	

<b>Switchport port-security mac-address</b>	
<b>switchport port-security aging</b>	
<b>show port-security</b>	

-	-
---	---

### 60.1.9 switchport port-security mac-address

no

[no] **switchport port-security mac-address** *mac-address* [*vlan vlan-id*]

<i>mac-address</i>	
<i>vlan-id</i>	MAC      VID TRUNK      vlan-id

```

1      TRUNK      10                      00d0.f800.5555 VID=2
Ruijie(config)#inter g0/10
Ruijie(config-if)#      switchport      port-security      mac-address
00d0.f800.5555 vlan 2

```

<b>switchport port-security</b>	
<b>switchport port-security binding</b>	

<b>switchport port-security mac-address interface</b>	
<b>switchport port-security aging</b>	
<b>show port-security</b>	
-	-

### 60.1.10 switchport port-security mac-address interface

no

**[no] switchport port-security interface** *interface-id* **mac-address** *mac-address* [*vlan* *vlan-id*]

<i>interface-id</i>	ID
<i>mac-address</i>	
<i>vlan-id</i>	MAC      VID TRUNK      vlan-id

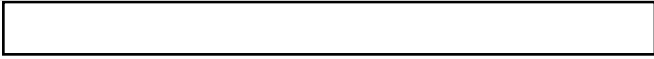

```

1      TRUNK      10                      00d0.f800.5555 VID=2
Ruijie(config)#    switchport   port-security   interface   g0/10
mac-address   00d0.f800.5555   vlan   2

```

<b>switchport port-security</b>	
<b>switchport port-security binding</b>	





---

	-	-

---

# 61 802.1X

## 61.1 dot1x

### 61.1.1 dot1x auto-req

802.1X

dot1x auto-req

no

[no] dot1x auto-req

-	-

└───┘

└───┘

└───┘

802.1x

show dot1x auto-req

└───┘

802.1x

```

Ruijie# configure terminal
Ruijie(config)# dot1x auto-req
Ruijie(config)# end
Ruijie# show dot1x auto-req
Ruijie(config)# dot1x auto-req
Auto-Req: Enabled
User-Detect : Enabled
Packet-Num : 0
Req-Interval: 30 Second

```

└───┘

show dot1x auto-req	

└───┘



	-	-

### 61.1.3 dot1x auto-req req-interval

no

**dot1x auto-req req-interval** *interval*

**no dot1x auto-req req-interval**

<i>interval</i>		s

30

**show dot1x auto-req**

```

802.1x          60s
Ruijie# configure terminal
Ruijie(config)# dot1x auto-req req-interval 60
Ruijie(config)# end
Ruijie# show dot1x auto-req
Auto-Req: Enabled
User-Detect : Enabled
Packet-Num  : 0
Req-Interval: 60 Second

```

### 61.1.4 dot1x auto-req user-detect

no

**dot1x auto-req user-detect**

**no dot1x auto-req user-detect**

	-	-

|

|

## 61.2 dot1x

### 61.2.1 dot1x timeout quiet-period

**no**

**dot1x timeout quiet-period** *seconds*

**no dot1x timeout quiet-period**

<i>seconds</i>	0 65535 s

10

**show dot1x**

```

1000s
Ruijie# configure terminal
Ruijie(config)# dot1x timeout quiet-period 1000
Ruijie(config)# end
Ruijie# show dot1x
802.1X Status:      Enabled
Authentication Mode: EAP-MD5
Authed User Number: 0
Re-authen Enabled:  Disabled
Re-authen Period:   3600 sec
Quiet Timer Period: 1000 sec
Tx Timer Period:    3 sec
Supplicant Timeout: 3 sec
Server Timeout:     5 sec
Re-authen Max:      3 times
Maximum Request:    3 times
Filter Non-RG Supp: Disabled

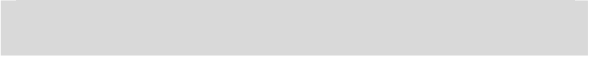
```

Client Oline Probe: Disabled  
Eapol Tag Enable: Disabled  
Authorization Mode: Group Server

<b>show dot1x</b>	802.1x

--	--

Re-authen Period: 1000 sec  
Quiet Timer Period: 1000 sec  
Tx Timer Period: 3 sec  
Supplicant Timeout: 3 sec  
Server Timeout: 5 sec  
Re-authen Max: 3 times  
Maximum 2Request: 3 times  
Filter Non-RG Supp: Disabled  
Client Oline Probe: Disabled  
Eapol Tag Enable: Disabled  
Authorization Mode: Group Server



10s

```
Ruijie# configure terminal
Ruijie(config)# dot1x timeout server-timeout 10
Ruijie(config)# end
Ruijie# show dot1x
802.1X Status:          Enabled
Authentication Mode:    EAP-MD5
Authed User Number:    0
Re-authen Enabled:     Disabled
Re-authen Period:      1000 sec
Quiet Timer Period:    1000 sec
Tx Timer Period:        3 sec
Supplicant Timeout:    3 sec
Server Timeout:        10 sec
Re-authen Max:         3 times
Maximum Request:       3 times
Filter Non-RG Supp:    Disabled
Client Oline Probe:    Disabled
```



-	-
---	---

## 61.2.5 dot1x timeout tx-period

no

**dot1x timeout tx-period** *seconds*

**no dot1x timeout tx-period**

<i>seconds</i>	0 65535

3

**show dot1x** 802.1x

10s

```

Ruijie# configure terminal
Ruijie(config)# dot1x timeout tx-period 10
Ruijie(config)# end
Ruijie# show dot1x
802.1X Status:      Enabled
Authentication Mode: EAP-MD5
Authed User Number: 0
Re-authen Enabled: Disabled
Re-authen Period:  1000 sec
Quiet Timer Period: 1000 sec
Tx Timer Period:   10 sec
Supplicant Timeout: 10 sec
Server Timeout:    10 sec
Re-authen Max:     3 times
Maximum Request:   3 times
Filter Non-RG Supp: Disabled
Client Oline Probe: Disabled
Eapol Tag Enable:  Disabled

```

```
Authorization Mode: Group Server
```

<b>show dot1x</b>	802.1x

-	-

## 61.3 dot1x

### 61.3.1 dot1x re-authentication

no

[no] dot1x re-authentication

-	-

```
show dot1x      802.1x
```

```
Ruijie# configure terminal
Ruijie(config)# dot1x re-authentication
Ruijie(config)# end
Ruijie# show dot1x
802.1X Status:      Enabled
Authentication Mode: EAP-MD5
Authed User Number: 0
Re-authen Enabled:  Enabled
```

```

Re-authen Period:    1000 sec
Quiet Timer Period:  1000 sec
Tx Timer Period:     10 sec
Supplicant Timeout:  10 sec
Server Timeout:      10 sec
Re-authen Max:       3 times
Maximum Request:     3 times
Filter Non-RG Supp:  Disabled
Client Oline Probe:  Disabled
Eapol Tag Enable:    Disabled
Authorization Mode:   Group Server

```

<b>show dot1x</b>	802.1x

-	-

### 61.3.2 dot1x reauth-max

**no**

**dot1x reauth-max** *count*

**no dot1x reauth-max**

<i>count</i>	

3

**show dot1x**

802.1x

```

Ruijie# configure terminal
Ruijie(config)# dot1x reauth-max 5
Ruijie(config)# end
Ruijie# show dot1x
802.1X Status:          Enabled
Authentication Mode:    EAP-MD5
Authed User Number:    0
Re-authen Enabled:     Enabled
Re-authen Period:      1000 sec
Quiet Timer Period:    1000 sec
Tx Timer Period:        10 sec
Supplicant Timeout:    10 sec
Server Timeout:         10 sec
Re-authen Max:          5 times
Maximum Request:        3 times
Filter Non-RG Supp:    Disabled
Client Oline Probe:    Disabled
Eapol Tag Enable:      Disabled
Authorization Mode:     Group Server

```

<b>show dot1x</b>	802.1x
-	-

## 61.4 dot1x

### 61.4.1 dot1x probe-timer

**dot1x probe-timer**{interval | alive}*interval*

**no dot1x probe-timer**

<b>no</b>	
<i>interval</i>	hello
<b>alive</b>	
<b>interval</b>	

Hello            20  
                      250

**show dot1x**            802.1x

hello            30 ,            120            **G!5B**

	-	-
--	---	---

|

|

|

```
Ruijie# configure terminal
Ruijie(config)# dot1x client-probe enable
Ruijie(config)# end
Ruijie# show dot1x
```

## 61.5 dot1x

### 61.5.1 dot1x authentication

AAA

AAA

**no****dot1x authentication {default | list-name}****no dot1x authentication {default | list-name}**

<b>default</b>	
<i>list-name</i>	

AAA

AAA

AAA

dot1x

group radius

```

Ruijie# configure terminal
Ruijie(config)# aaa new-model
Ruijie(config)# aaa authentication dot1x default group radius
Ruijie(config)# interface fastEthernet0/1
Ruijie(config-if)# dot1x authentication default
Ruijie(config-if)# end

```

<b>aaa new-model</b>	AAA
<b>aaa authentication dot1x</b>	

-	-

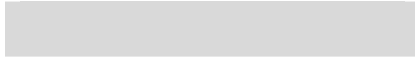
## 61.5.2 dot1x auth-address-table

802.1X

no

**dot1x auth-address-table address** *mac-addr* **interface** *interface*

**no dot1x auth-address-table address** *mac-addr* **interface** *interface*



**dot1x auth-mode {eap-md5 | chap | pap}**

**no dot1x auth-mode**

<b>eap-md5</b>	802.1x	EAP-MD5
<b>chap</b>	802.1x	CHAP
<b>pap</b>	802.1x	PAP

EAP-MD5

**show dot1x**            802.1x

802.1x

```
Ruijie# configure terminal
Ruijie(config)# dot1x auth-mode chap
Ruijie(config)# end
Ruijie#
```

<b>show dot1x</b>	802.1x
-------------------	--------

-

-

## 61.5.4 dot1x default



```
Ruijie(config)# dot1x dynamic-vlan enable  
Ruijie(config)# end  
Ruijie#
```

<b>show dot1x</b>	802.1x

--	--

<b>show running-config</b>	802.1x

┌

-	-

### 61.5.7 dot1x eapol-tag

EAPOL TAG

**dot1x eapol-tag**

**no dot1x eapol-tag**

-	-

┌

┌

┌

**show dot1x** 802.1x

┌  
 802.1X tag  
 Ruijie# **configure terminal**  
 Ruijie(config)# **dot1x eapol-tag**  
 Ruijie(config)# **end**  
 Ruijie#

<b>show dot1x</b>	802.1x

┌

-	-

## 61.5.8 dot1x max-req

DOT1X	DOT1X
DOT1X no dot1x max-req <i>count</i> no dot1x max-req	
	<i>count</i>
	3
<b>show dot1x</b>	802.1x
802.1x	7
Ruijie# <b>configure terminal</b>	
Ruijie(config)# <b>dot1x max-req 7</b>	
Ruijie(config)# <b>end</b>	
Ruijie#	
	<b>show dot1x</b>
	802.1x
	-
	-

## 61.5.9 dot1x private-supPLICANT-only

no

dot1x private-supPLICANT-only



```
show dot1x      802.1x
```

```
802.1x
```

```
Ruijie# configure terminal
Ruijie(config)# interface g0/1
Ruijie(config-if)# dot1x port-control auto
Ruijie(config-if)# end
Ruijie#
```

<b>show dot1x</b>	802.1x

-	-

### 61.5.11 dot1x port-control-mode

802.1x

MAC

**dot1x port-control-mode** {mac-based | {port-based [single-host]} }

**no dot1x port-control-mode**

<b>mac-based</b>	mac 802.1X
<b>port-based</b>	802.1X
<b>single-host</b>	802.1x



mac-based



802.1x

802.1X

**dot1x stationarity enable**

**no dot1x stationarity enable**

-	-

┌

┌

┌

```

802.1x
Ruijie# configure terminal
Ruijie(config)# dot1x stationarity enable
Ruijie(config)# end
Ruijie#
    
```

-	-

┌

-	-

### 61.5.13 dot1x redirect url

```

802.1x
URL          URL      http://
http://ruijie.net/web  http://  https://
url          url      no
url
dot1x redirect url [url-string]
    
```

**[no ] dot1x redirect url**

<i>url-string</i>	URL

┌

┌

┌

```

1                ruijie.net/web
Ruijie(config)# dot1x redirect url http://ruijie.net/web

```

<b>dot1x redirect for special tcp-destination port</b>	web ip ip
<b>dot1x redirect time-out</b>	
<b>dot1x redirect num for special source-ip</b>	
<b>show dot1x</b>	dot1x

┌

┌

tcp 80 8080 no

TCP 1-65535

1 TCP 8443

Ruijie(config)#dot1x redirect for special tcp-destination port  
8443



**dot1x redirect url**

**dot1x redirect time-out**

802.1X

```
1 3
```

```
Ruijie(config)# dot1x redirect num for special source-ip 3
```

<b>dot1x redirect url</b>	
<b>dot1x redirect for special tcp-destination port</b>	web ip ip
<b>dot1x redirect time-out</b>	
<b>show dot1x</b>	dot1x

-	-

## 61.6 dot1x

### 61.6.1 show dot1x

```
802.1x
```

```
show dot1x
```

-	-

```
Ruijie# show dot1x
```

```
802.1X Status: Enabled
```

```
Authentication Mode: EAP-MD5
```

```

Authenticated User Number: 0
Re-authen Enabled: Disabled
Re-authen Period: 3600 sec
Quiet Timer Period: 10 sec
Tx Timer Period: 3 sec
Supplicant Timeout: 3 sec
Server Timeout: 5 sec
Re-authen Max: 3 times
Maximum Request: 3 times
Filter Non-RG Supp: Disabled
Client Oline Probe: Disabled
Eapol Tag Enable: Disabled
Authorization Mode: Group Server
Ruijie#

```

<b>dot1x auth-mode</b>	802.1x
<b>dot1x max-req</b>	
<b>dot1x port-control auto</b>	
<b>dot1x reauth-max</b>	
<b>dot1x re-authentication</b>	
<b>dot1x timeout quiet-period</b>	
<b>dot1x timeout re-authperiod</b>	
<b>dot1x timeout server-timeout</b>	
<b>dot1x timeout supp-timeout</b>	
<b>dot1x timeout tx-period</b>	

-	-

## 61.6.2 show dot1x auth-address-table

802.1X

**show dot1x auth-address-table***[address mac-addr][interface interface]*

<i>mac-addr</i>	
<i>interface</i>	

```
Ruijie# show dot1x auth-address-table
interface:g3/1
-----
mac addr: 00D0.F800.0001
Ruijie#
```

<b>dot1x auth-mode</b>	802.1x
<b>dot1x max-req</b>	
<b>dot1x port-control auto</b>	
<b>dot1x reauth-max</b>	

07(1) (e-auth) (e-car) (e-out 21.952 0.006 Td [<Td [<41923542164 T0-FA>6<33 t [<490Atf 4>]TJ /

**dot1x timeout tx-period**

<b>dot1x timeout quiet-period</b>	
<b>dot1x timeout re-authperiod</b>	
<b>dot1x timeout server-timeout</b>	
<b>dot1x timeout supp-timeout</b>	
<b>dot1x timeout tx-period</b>	

-	-

#### 61.6.4 show dot1x private-supPLICANT-only

**show dot1x private-supPLICANT-only**

-	-

└───

└───

└───

```
Ruijie# show dot1x private-supPLICANT-only
private-supPLICANT-only:: disabled
Ruijie#
```

<b>dot1x auth-mode</b>	802.1x

<b>dot1x max-req</b>	
<b>dot1x port-control auto</b>	
<b>dot1x reauth-max</b>	
<b>dot1x re-authentication</b>	
<b>dot1x timeout quiet-period</b>	
<b>dot1x timeout re-authperiod</b>	
<b>dot1x timeout server-timeout</b>	
<b>dot1x timeout supp-timeout</b>	
<b>dot1x timeout tx-period</b>	

-	-

### 61.6.5 show dot1x max-req

show dot1x max-req

-	-

└───

└───

└───

```
Ruijie# show dot1x max-req
max-req: 2 times
```

Ruijie#

<b>dot1x auth-mode</b>	802.1x
<b>dot1x max-req</b>	
<b>dot1x port-control auto</b>	
<b>dot1x reauth-max</b>	
<b>dot1x re-authentication</b>	
<b>dot1x timeout quiet-period</b>	
<b>dot1x timeout re-authperiod</b>	
<b>dot1x timeout server-timeout</b>	
<b>dot1x timeout supp-timeout</b>	
<b>dot1x timeout tx-period</b>	

G

Ä

A

È

â

-	-

### 61.6.6 show dot1x port-control

**show dot1x port-control [interface *interface*]**

--	--

```

Ruijie# show dot1x port-control
interface dyn-user static-user max-user qos
ctrl-mode status
-----
Gi0/1      0          1          6000      dscp: 0 mac-base Authed
Ruijie#

```

<b>dot1x auth-mode</b>	802.1x
<b>dot1x max-req</b>	
<b>dot1x port-control auto</b>	
<b>dot1x reauth-max</b>	
<b>dot1x re-authentication</b>	
<b>dot1x timeout quiet-period</b>	
<b>dot1x timeout re-authperiod</b>	
<b>dot1x timeout server-timeout</b>	
<b>dot1x timeout supp-timeout</b>	
<b>dot1x timeout tx-period</b>	

-	-
---	---

### 61.6.7 show dot1x probe-timer

```
show dot1x probe-timer
```

-	-

┌

┌

┌

```
Ruijie# show dot1x probe-timer
Hello Interval: 20 Seconds
Hello Alive: 250 Seconds
Ruijie#
```

<b>dot1x auth-mode</b>	802.1x
<b>dot1x max-req</b>	
<b>dot1x port-control auto</b>	
<b>dot1x reauth-max</b>	
<b>dot1x re-authentication</b>	
<b>dot1x timeout quiet-period</b>	
<b>dot1x timeout re-authperiod</b>	
<b>dot1x timeout server-timeout</b>	
<b>dot1x timeout supp-timeout</b>	
<b>dot1x timeout tx-period</b>	

┌

-	-

## **61.6.8 show dot1x re-authentication**

**show dot1x re-authentication**

-	-

### 61.6.9 show dot1x reauth-max

#### show dot1x reauth-max

-	-

┌

┌

┌

┌

```
Ruijie# show dot1x reauth-max
reauth-max: 2 times
Ruijie#
```

<b>dot1x auth-mode</b>	802.1x
<b>dot1x max-req</b>	
<b>dot1x port-control auto</b>	
<b>dot1x reauth-max</b>	
<b>dot1x re-authentication</b>	
<b>dot1x timeout quiet-period</b>	
<b>dot1x timeout re-authperiod</b>	
<b>dot1x timeout server-timeout</b>	

	<b>dot1x timeout supp-timeout</b>	
	<b>dot1x timeout tx-period</b>	
	-	-

### 61.6.10 show dot1x summary

802.1X

**show dot1x summary**

	-	-



```

Mac address is 0013.2049.8272
Vlan id is 217
Access from port Gi0/13
User ip address is 192.168.217.64
Max user number on this port is 6000
COS on this port is 5
Up-bandwidth is 1024 kbps
Down-bandwidth is 1024 kbps
Authorization vlan is dep7
Authorization session time is 1000000 seconds
Authorization ip address is 192.168.217.64
Start accounting
Permit proxy user
Permit dial user
IP privilege is 2

```

<b>dot1x auth-mode</b>	802.1x
<b>dot1x max-req</b>	
<b>dot1x port-control auto</b>	
<b>dot1x reauth-max</b>	
<b>dot1x re-authentication</b>	
<b>dot1x timeout quiet-period</b>	
<b>dot1x timeout re-authperiod</b>	
<b>dot1x timeout server-timeout</b>	
<b>dot1x timeout supp-timeout</b>	
<b>dot1x timeout tx-period</b>	

-	-

## 61.6.12 show dot1x timeout

802.1X

**show dot1x timeout quiet-period**

**show dot1x timeout re-authperiod**

**show dot1x timeout server-timeout**

**show dot1x timeout supp-timeout**

**show dot1x timeout tx-period**

-	-

┌

┌

┌

┌

```
Ruijie# show dot1x timeout quiet-period
quiet-period: 60 sec
Ruijie#
```

<b>dot1x auth-mode</b>	802.1x
<b>dot1x max-req</b>	
<b>dot1x port-control auto</b>	
<b>dot1x reauth-max</b>	
<b>dot1x re-authentication</b>	
<b>dot1x timeout quiet-period</b>	
<b>dot1x timeout re-authperiod</b>	
<b>dot1x timeout server-timeout</b>	
<b>dot1x timeout supp-timeout</b>	

	<b>dot1x timeout tx-period</b>	
	-	-

# 62 AAA

## 62.1

### 62.1.1 aaa authentication dot1x

AAA 802.1X **aaa authentication dot1x**  
802.1X no 802.1X

**aaa authentication dot1x** {**default** | *list-name*} *method1* [*method2...*]

**no aaa authentication dot1x** {**default** | *list-name*}

<b>default</b>	802.1X
<i>list-name</i>	802.1X

<b>aaa new-model</b>	AAA
<b>dot1x authentication</b>	802.1X
<b>username</b>	

AAA Enable

RADIUS

RADIUS

```
Ruijie(config)# aaa authentication enable default group radius local
```

|

|

```
AAA
aaa authentication login
Login
Login
```

|

```
list-1 AAA Login
RADIUS RADIUS
Ruijie(config)# aaa authentication login list-1 group radius local
```

|

<b>aaa new-model</b>	AAA
<b>username</b>	
<b>login authentication</b>	Login

|

|

ppp2 0	1	Tf0	Tc
--------	---	-----	----

AAA

<b>default</b>	Login
<i>list-name</i>	Login

┌

┌

┌

```

Login
Login
                                Login
                                Login
                                Login

```

┌

```

list-1 AAA Login
VTY 0 - 4
Ruijie(config)# aaa authentication login list-1 local
Ruijie(config)# line vty 0 4
Ruijie(config-line)# login authentication list-1

```

┌

<b>aaa new-model</b>	AAA
<b>username</b>	
<b>login authentication</b>	Login

┌

┌

-	-

## 62.2

### 62.2.1 aaa authorization commands

	NAS	CLI	AAA	<b>aaa authorization</b>
<b>commands</b>		no	AAA	
<b>aaa authorization commands</b> <i>level</i> { <b>default</b>   <i>list-name</i> } <i>method1</i> [ <i>method2...</i> ]				

**no aaa authorization commands** *level* {**default** | *list-name*}

<i>level</i>	0~15
<b>default</b>	Q

## 62.2.2 aaa authorization config-commands

AAA

**aaa authorization config-commands**

no

AAA

**aaa authorization config-commands**

**no aaa authorization config-commands**



	-	-

|

|

|

RGOS

|

Ruijie(config)# **aaa authorization console**

|

<b>aaa new-model</b>	AAA

AAA

<b>default</b>	Network
<i>method</i>	none group 4
<b>none</b>	
<b>group</b>	TACACS+ RADIUS

AAA Network

RGOS

PPP SLIP

RADIUS TACACS+

RADIUS

Ruijie(config)# **aaa authorization network default group radius**

<b>aaa new-model</b>	AAA
<b>aaa accounting</b>	AAA
<b>aaa authentication</b>	AAA

## authorization

**commands** no

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

**no authorization commands** *level*

<i>level</i>	0~15
<b>default</b>	
<i>list-name</i>	

AAA

cmd 15 TACACS+  
none VTYP 0-4

```
Ruijie(config)# aaa authorization commands 15 cmd group tacacs+ none
Ruijie(config)# line vty 0 4
Ruijie(config-line)# authorization commands 15 cmd
```

<b>aaa new-model</b>	AAA
<b>aaa authorization commands</b>	AAA

-	-
---	---

## 62.2.7 authorization exec

Exec

authorization exec

no

Exec

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

<b>default</b>	Exec
<i>list-name</i>	Exec

AAA Exec

Exec

Exec

Exec

Exec

exec-1 Exec

RADIUS

none

VTY 0 – 4

Ruijie(config)# **aaa authorization exec exec-1 group radius none**Ruijie(config)# **line vty 0 4**Ruijie(config-line)# **authorization exec exec-1**

<b>aaa new-model</b>	AAA
<b>aaa authorization commands</b>	AAA Exec

-	-

## 62.3

### 62.3.1 aaa accounting commands

## NAS

**aaa accounting commands** no

**aaa accounting commands** *level* {**default** | *list-name*} **start-stop** *method1* [*method2...*]

**no aaa accounting commands** *level* {**default** | *list-name*}

<i>level</i>	0~15
<b>default</b>	
<i>list-name</i>	
<i>method</i>	<b>none group</b> 4
<b>none</b>	
<b>group</b>	TACACS+

RGOS

-	-

### 62.3.2 aaa accounting exec

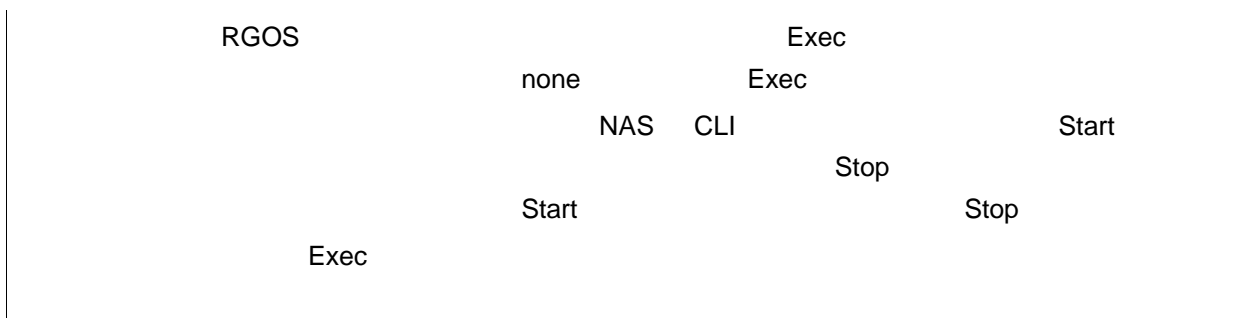
NAS aaa

accounting exec                      no                      Exec

**aaa accounting exec {default | list-name} start-stop method1 [method2...]**

**no aaa accounting exec {default | list-name}**

<b>default</b>	Exec
<i>list-name</i>	Exec
<i>method</i>	<b>none group</b> 4
<b>none</b>	
<b>group</b>	RADIUS TACACS+



RADIUS                      NAS

Ruijie(config)# **aaa accounting exec default start-stop group radius**

--	--

<b>aaa new-model</b>	AAA
<b>aaa authentication</b>	AAA
<b>accounting commands</b>	Exec
-	-

### 62.3.3 aaa accounting network

**aaa accounting network** no

**aaa accounting network** {default | *list-name*} **start-stop** *method1* [*method2*...]

**no aaa accounting network** {default | *list-name*}

<b>default</b>	Network
<i>list-name</i>	
<b>start-stop</b>	
<i>method</i>	4
<b>none</b>	
<b>group</b>	TACACS+ RADIUS

RGOS **start-stop**

RADIUS

```
Ruijie(config)# aaa accounting network default start-stop group
radius
```

aaa new-model	AAA
aaa authorization network	AAA
aaa authentication	AAA
username	

-	-

### 62.3.4 aaa accounting update

aaa accounting update

no

aaa accounting update

no aaa accounting update

-	-

AAA

AAA

```
Ruijie(config)# aaa new-model
```

```
Ruijie(config)#
```

--	--

	<b>aaa new-model</b>	AAA
	<b>aaa accounting network</b>	

┌

---



-	-

## 62.3.6 accounting commands

### accounting commands

no

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

**no accounting commands** *level*

<i>level</i>	0~15
<b>default</b>	
<i>list-name</i>	

└──

└──

└──

cmd

15

TACACS+

none

VTY 0-4

```
Ruijie(config)# aaa accounting commands 15 cmd group tacacs+ none
```

```
Ruijie(config)# line vty 0 4
```

```
Ruijie(config-line)# accounting commands 15 cmd
```

<b>aaa new-model</b>	AAA
<b>aaa accounting commands</b>	AAA

└──

-	-

## 62.3.7 accounting exec

Exec

no

Exec

**accounting exec****accounting exec** {default | *list-name*}**no accounting exec**

<b>default</b>	Exec
<i>list-name</i>	Exec

└───┘

└───┘

└───┘

└───┘

```

Exec
Exec
                                Exec
                                Exec

```

└───┘

```

                                exec-1  Exec          RADIUS
                                none      VTY 0 - 4
Ruijie(config)# aaa accounting exec exec-1 group radius none
Ruijie(config)# line vty 0 4
Ruijie(config-line)# accounting exec exec-1

```

└───┘

<b>aaa new-model</b>	AAA
<b>aaa accounting commands</b>	AAA Exec

└───┘

└───┘

--	--

-	-
---	---

## 62.4 AAA

### 62.4.1 aaa domain

no

**aaa domain** {**default** | *domain-name*}

**no aaa domain** {**default** | *domain-name*}

<b>default</b>	
<i>domain-name</i>	

┌

┌

┌

AAA            default  
                 *domain-name*

32

┌

```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)#
```

<b>aaa new-model</b>	AAA
<b>aaa domain enable</b>	AAA
<b>show aaa domain</b>	

┌

-	-
---	---

## 62.4.2 aaa domain enable

AAA  
AAA no

**aaa domain enable**

**no aaa domain enable**

	-	-

--	--

AAA

--	--

--	--

AAA

--	--

AAA  
Ruijie(config)# **aaa domain enable**

	<b>aaa new-model</b>	AAA
	<b>show aaa domain</b>	

--	--

	-	-

## 62.4.3 access-limit

IEEE802.1x no

**access-limit** *num*



default

Network

Network

Ruijie(config)# **aaa domain ruijie.com**

Ruijie(config-aaa-domain)# **accounting network default**

<b>aaa new-model</b>	AAA
<b>aaa domain enable</b>	AAA
<b>show aaa domain</b>	

-	-

### 62.4.5 authentication dot1x

IEEE802.1x

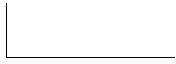
no

**authentication dot1x {default | list-name}**

**no authentication dot1x**

<b>default</b>	
<i>list-name</i>	

default



IEEE802.1x

---

```
Ruijie(config-aaa-domain)# authorization network default
```

<b>aaa new-model</b>	AAA
<b>aaa domain enable</b>	AAA
<b>show aaa domain</b>	



<b>aaa new-model</b>	AAA
<b>aaa domain enable</b>	AAA

-	-
---	---

### 62.4.9 username-format

NAS

no

**username-format {without-domain | with-domain}**

**no username-format**

<b>without-domain</b>	
<b>with-domain</b>	

NAS

```
Ruijie(config)# aaa domain ruijie.com
```

```
Ruijie(config-aaa-domain)# username-domain without-domain
```

<b>aaa new-model</b>	AAA
----------------------	-----

	-	-

## 62.5 AAA

### 62.5.1 aaa group server

AAA no

**aaa group server {radius | tacacs+} name**

**no aaa group server {radius | tacacs+} name**

--	--	--

	-	-

## 62.5.2 ip vrf forwarding

AAA vrf no

**ip vrf forwarding** *vrf\_name*

**no ip vrf forwarding**

	<i>vrf_name</i>	vrf

└──

└──

└──

vrf

└──

```
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
```

	<b>aaa group server</b>	aaa
	<b>show aaa group</b>	aaa

└──

└──

	-	-

## 62.5.3 server

AAA no

**server ip-addr [authen-port port1] [acct-port port2]**

**no server ip-addr [authen-port port1] [acct-port port2]**

<i>ip-addr</i>	ip
<i>port1</i>	RADIUS
<i>port2</i>	RADIUS

```
Ruijie(config)# aaa group server radius ss
Ruijie(config-gs-radius)# server 192.168.4.12
acct-port 5 authen-port 6
Ruijie(config-gs-radius)# end
Ruijie# show aaa group
Group Name: ss
Group Type: radius
Referred: 2
Server List:
IP Address: 192.168.4.12
Authentication Port: 6
Accounting Port: 5
Referred: 1
```

<b>aaa group server</b>	aaa
<b>show aaa group</b>	aaa



## 62.6.1 aaa local authentication attempts

login

**aaa local authentication attempts** *max-attempts*

<i>max-attempts</i>	1~2147483647

3

Login

```
Ruijie# configure terminal
```

```
Ruijie(config)# aaa local authentication attempts 6
```

<b>Show running-config</b>	
<b>Show aaa lockout</b>	login

-	-
---	---

## 62.6.2 aaa local authentication lockout-time

login

**aaa local authentication lockout-time** *lockout-time*

|

| login

|

Ruijie# **configure terminal**  
 Ruijie(config)# **aaa local authentication lockout-time 5**

|

<b>Show running-config</b>	
<b>Show aaa lockout</b>	login

|

|

-	-

### 62.6.3 aaa new-model

RGOS AAA **aaa new-model** AAA  
 no AAA

**aaa new-model**

**no aaa new-model**

|

-	-

| AAA

|

|

AAA AAA **aaa new-model**  
 AAA AAA AAA

|

AAA  
 Ruijie(config)# **aaa new-model**

	<b>aaa authentication</b>	
	<b>aaa authorization</b>	
	<b>aaa accounting</b>	

└───┘

	-	-

## 62.6.4 clear aaa local user lockout

**clear aaa local user lockout {all | user-name <word>}**

	<word>	ID

## 62.6.5 debug aaa

AAA

no

**debug aaa event****no debug aaa event**

	-	-

--

EXEC
------

--

--

	-	-

--

	-	-

## 62.6.6 show aaa method-list

AAA

**show aaa method-list**

	-	-

--

AAA

AAA

```

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 authorizing network default group radius

```

<b>aaa authentication</b>	
<b>aaa authorization</b>	
<b>aaa accounting</b>	

-	-

## 62.6.7 show aaa user lockout

**show aaa user lockout {all | user-name <word>}**

<word>	ID

|

|

Ruijie# **show aaa user lockout all**

|

<b>show running-config</b>	
<b>show aaa lockout</b>	login

|

|

-	-



## 63.1.2 radius attribute

**radius ttribute**{<id> | **down-rate-limit** | **dscp** | **mac-limit** | **up-rate-limit**} **vendor-type**  
<type>

**no radius attribute** {<id>|**down-rate-limit** | **dscp** | **mac-limit** | **up-rate-limit**} **vendor-type**

<i>id</i>	id <1-255>
<i>type</i>	type

id		type
1	max down-rate	1
2	qos	2
3	user ip	3
4	vlan id	4
5	version to client	5
6	net ip	6
7	user name	7
8	password	8
9	file-diractory	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	version to server	17
18	flux-max-high32	18
19	flux-max-low32	19
20	proxy-avoid	20
21	dailup-avoid	21
22	ip privilege	22

23	login privilege	42
<b>id</b>		<b>type</b>
1	max down-rate	76
2	qos	77
3	user ip	3
4	vlan id	4
5	version to client	5
6	net ip	6
7	user name	7
8	password	8
9	file-diractory	9
10	file-count	10
11	file-name-0	11
12	file-name-1	12
13	file-name-2	13
14	file-name-3	14
15	file-name-4	15
16	max up-rate	75
17	version to server	17
18	flux-max-high32	18
19	flux-max-low32	19
20	proxy-avoid	20
21	dailup-avoid	21
22	ip privilege	22
23	login privilege	42
24	limit to user number	50

max up-rate





<b>radius-server key</b>	RADIUS
<b>radius-server retransmit</b>	RADIUS
<b>radius-server timeout</b>	RADIUS
-	-

### 63.1.5 radius-server key

RADIUS  
no

**radius-server key** *text-string*

**no radius-server key**

<i>text-string</i>	

L-shaped corner symbol

L-shaped corner symbol

RADIUS

RADIUS

RADIUS

RADIUS

aaa

Ruijie(config)# **radius-server key** aaa

<b>radius-server host</b>	RADIUS
<b>radius-server retransmit</b>	RADIUS
<b>radius-server timeout</b>	RADIUS

L-shaped corner symbol



RADIUS

**radius-server timeout no**

**radius-server timeout *seconds***

**no radius-server timeout**





qos

dscp



qos

/GS0 gsBT/C2\_0 1 Tf0 Tc 0 Tw 0 Ts 100 Tz 0 Tr 9 0 0 9 62.34 790.4003 Tm<47213542>Tj/TT0 1 Tf-0.0006 Tc 2.24!\*S



RADIUS

**show radius parameter**

-	-

|

|

|

radius

|

```
Ruijie# show radius parameter
Server Timeout: 5 Seconds
Server Deadtime: 5 Minutes
Server Retries: 3
Server Key: *****
```

|

<b>radius-server host</b>	RADIUS
<b>radius-server retransmit</b>	RADIUS
<b>radius-server key</b>	RADIUS
<b>radius-server timeout</b>	RADIUS

|

|

-	-

**63.2.3 show radius server**

RADIUS

**show radius server**

-	-

┌

┌

┌

radius

┌

```
Ruijie# show radius server
server ip : 192.168.4.12
acct port: 23
authen port: 77
server state: ready
server ip : 192.168.4.13
acct port: 45
authen port: 74
server state: ready
```

┌

radius-server host	RADIUS
radius-server retransmit	RADIUS
radius-server key	RADIUS
radius-server timeout	RADIUS

┌

┌

-	-

### 63.2.4 show radius vendor-specific

RADIUS

show radius vendor-specific

┌

-	-

┌

|  
|  
|

|  
|  
|

radius

```
Ruijie# show radius vendor-specific
id   vendor-specific      type-value
-----
1    max down-rate        76
2    qos                  77
3    user ip              3
4    vlan id              4
5    version to client    5
6    net ip               6
7    user name            7
8    password             8
```

RADIUS

---

L

L

-	-

# 64 TACACS+

## 64.1 TACACS+

### 64.1.1 aaa group server tacacs+

TACACS+

TACACS+

```
aaa group server tacacs+ group-name
```

```
no aaa group server tacacs+ group-name
```

	<i>group-name</i>	TACACS+

```
TACACS+
```

```
TACACS+
```

```

tac1 TACACS+ 1.1.1.1
TACACS+
Ruijie(config)# aaa group server tacacs+ tac1
Ruijie(config-gs-tacacs)# server 1.1.1.1
```

<b>server</b>	TACACS+	server
<b>ip vrf forwarding</b>	TACACS+	VRF

-	-	-

## 64.1.2 ip tacacs source-interface

TACACS+

**ip tacacs source-interface** *interface*

**no ip tacacs source-interface**



	<i>vrf-name</i>	vrf

```
TACACS+
host
```

**aaa group server tacacs+**

```
TACACS+
tacacs-server
```

```
TACACS+
tac1 TACACS+ 1.1.1.1
```

```
TACACS+
Ruijie(config)# aaa group server tacacs+ tac1
Ruijie(config-gs-tacacs+)# server 1.1.1.1
```



|

|

TACACS+    AAA    TACACS+  
**tacacs-server**    TACACS+

|

TACACS+  
 Ruijie(config)# **tacacs-server host** 192.168.12.1  
 Ruijie(config)# **tacacs-server host** 2001::1

|

<b>aaa authentication</b>	AAA
<b>tacacs-server key</b>	TACACS+
<b>tacacs-server timeout</b>	TACACS+

|

|

-	-

### 64.1.6 tacacs-server key

|

TACACS+  
**tacacs-server key** [0 | 7] *string*  
**no tacacs-server key**

|

<i>string</i>	
0   7	0    7

|

|

|

TACACS+    TACACS+    TACACS+

	key	host	key
	TACACS+	aaa	
	Ruijie(config)# <b>tacacs-server key aaa</b>		
	<b>tacacs-server host</b>	TACACS+	
	<b>tacacs-server timeout</b>	TACACS+	
	-	-	

### 64.1.7 tacacs-server timeout

	TACACS+
	<b>tacacs-server timeout <i>seconds</i></b>
	<b>no tacacs-server timeout</b>
	<i>seconds</i>
	1-1000
	5

host timeout /!

	<b>tacacs-server host</b>	TACACS+
	<b>tacacs-server key</b>	TACACS+

┌  
└

	-	-

## 64.2 TACACS+

### 64.2.1 debug tacacs+

TACACS+                      no                      TACACS+

**debug tacacs+**

**no debug tacacs+**



## 64.2.2 show tacacs

TACACS+

**show tacacs**

	-	-

|

|

|

TACACS+

```
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
```

<b>tacacs-server host</b>		TACACS+

|

	-	-

# 65 SSH

## 65.1 SSH

### 65.1.1 crypto key generate

**crypto key generate {rsa | dsa}**

<b>rsa</b>	RSA
<b>dsa</b>	DSA

SSH Server

```

SSH Server          SSH
enable service ssh-server  SSH Server  SSH 1  RSA  SSH
2  RSA  DSA          RSA          SSH1  SSH2
          DSA          SSH2
no crypto key generate
r          crypto key zeroize

```

```

Ruijie# configure terminal
Ruijie(config)# crypto key generate rsa

```

<b>show ip ssh</b>	SSH Server

**crypto key zeroize {rsa | dsa}60<14 04 0 Td58 6<1CDD>79sa |T2 <ua56 394.98 1.5 ref6684 2DA7**

SSH

---

	-	-
--	---	---

## 65.1.2 crypto key zeroize

SSH

**crypto key zeroize {rsa / dsa}**

<b>rsa</b>	RSA
<b>dsa</b>	DSA



┌

SSH Server  
 120s  
**show ip ssh**      SSH server

┌

100s  
 Ruijie# **configure terminal**  
 Ruijie(config)# **ip ssh time-out 100**

┌

<b>show ip ssh</b>	ssh-server

┌

RGOS10.1

┌

-	-

### 65.1.5 ip ssh version

SSH server      no

**ip ssh version {1 / 2}**

**no ip ssh version**

┌

<b>1</b>	SSH Server      SSH1
<b>2</b>	SSH Server      SSH2

┌

SSH    1    2      SSH  
**no ip ssh version**

┌

SSH Server      SSH      SSH Server  
 SSH1    SSH2    SSH 1    SSH 2  
 1    2      SSH

2

Ruijie# **configure terminal**

Ruijie(config)# **ip ssh version 2**

**show ip ssh**

SSH Server

RGOS10.1

	Clear line vty <i>line_number</i>	VTY
	RGOS10.1	
	-	-

## 65.2.2 show crypto key mypubkey

SSH Server

**show crypto key mypubkey {rsa/dsa}**

	<b>rsa</b>	RSA
	<b>dsa</b>	DSA

SSH Server

Ruijie# **show crypto key mypubkey rsa**

	<b>crypto key generate {rsa   dsa}</b>	DSA RSA
	RGOS10.1	
	-	-

## 65.2.3 show ip ssh

SSH Server

**show ip ssh**

-	-

└───┘

└───┘

SSH Server	SSH Server
r	SSH
SSH	

└───┘

Ruijie# **show ip ssh**

<b>ip ssh version {1   2}</b>	SSH Server
<b>ip ssh time-out time</b>	SSH Server
<b>ip ssh authentication-retries retry times</b>	SSH Server

└───┘

RGOS10.1

-	-

**65.2.4 show ssh**

SSH

**show ssh**

-	-

└───┘



## 66 CPU

### 66.1

#### 66.1.1 `cpu-protect type packet-type pps pps_value`

CPU

`cpu-protect type { arp | bpdu | dhcp | ipv6mc | igmp | rip | ospf | vrrp | pim | ttl1 |  
unknown-ipmc | dvmrp | ... } pps pps_value`

CPU

CPU

```

S8610 CPU
Ruijie# show cpu-protect mboard
type      Pps      Total    Drop
-----
arp        500      19       0
bpdu       200      24       0
dhcp        0        0        0
gvrp        0        0        0
ipv6-mc    0        0        0
dvmrp      0        0        0
igmp        0        0        0
ospf        0        0        0
pim         0        0        0
rip         0        0        0
vrrp        0        0        0
unknow-ipmc 0        0        0
ttl1        0        0        0
...

```

<b>show cpu-protect slot <i>slot-num</i></b>	CPU

-	-

### 66.2.2 show cpu-protect slot

CPP

**show cpu-protect slot *slot\_num***

--	--

<i>slot_num</i>	1-16
-----------------	------

CPP

2 CPU

Ruijie(config)# **show cpu-protect slot 2**

Type	Pps	Total	Drop
arp	200	200	15
bpdu	200	8	0
dhcp	200	0	0
gvrp	200	0	0
ipv6-mc	200	0	0
dvmrp	200	0	0
igmp	200	0	0
ospf	200	0	0
pim	200	0	0
rip	200	0	0
vrrp	200	0	0
unknow-ipmc	200	0	0
ttl1	20	3	0

<b>show cpu-protect mboard</b>	CPU
--------------------------------	-----

-	-
---	---

### 66.2.3 show cpu-protect type

**show cpu-protect type** { arp | bpdu | dhcp | ipv6mc | igmp | rip | ospf | vrrp | pim | ttl1 | unknown-ipmc | dvmrp | ...} *dvmrp*

<i>slot_num</i>	1-16

|

|

|

```

show cpu-protect type bpdu          BPDU
Ruijie(config)# show cpu-protect type arp
Slot      Type      Pps      Total     Drop
-----
MainBoard bpdu      100      30        0
Slot-2    bpdu      100      30        0
    
```

<b>show cpu-protect type</b> <i>packet-type</i>	CPU

-

-	-

r            CPP            "..."            CPP

# 67 DoS

## 67.1

### 67.1.1 ip deny invalid-l4port

no

ip deny invalid-l4port

no ip deny invalid-l4port

	-	-

└───

└───

└───

└───  
1  
Ruijie(config)# ip deny invalid-l4port  
2  
Ruijie(config)# no ip deny invalid-l4port

	show ip deny invalid-l4port	

└───  
-

	-	-

### 67.1.2 ip deny invalid-tcp



|

|

|

```
1          Land
Ruijie(config)# ip deny land
2          Land
Ruijie(config)# no ip deny land
```

|

show ip deny land	Land

|

-

|

-	-

## 67.2

### 67.2.1 show ip deny invalid-l4port

#### show ip deny invalid-l4port

|

-	-

|

|

|

|

```
Ruijie# show ip deny invalid-l4port
DoS Protection Mode          State
-----
```

protect against invalid l4port attack Off

	-	-

### **67.2.3 show ip deny land**

Land

**show ip deny land**

# 68 DAI

## 68.1 VLAN DAI

### 68.1.1 ip arp inspection vlan

*vlan-id* VLAN DAI *vlan-id* no VLAN  
DAI

**ip arp inspection vlan** *vlan-id*

**no ip arp inspection vlan** [*vlan-id*]



## 68.2

### 68.2.1 ip arp inspection trust

ip arp inspection trust                      no

ip arp inspection trust

no ip arp inspection trust

	-	-

┌

┌

ARP	DAI
NFPP(	)
DAI	NFPP
	<b>show ip arp inspection interface</b>





	<b>show ip source binding</b>	IP
	-	-

## 69.2 IP Source Guard

### 69.2.1 ip verify source

```

IP Source Guard      no
[no] ip verify source [port-security]

```

	<b>port-security</b>	IP Source Guard      IP+MAC

```

IP Source Guard      IP
IP+MAC
IP Source Guard      DHCP Snooping      Trust
DHCP Snooping      IP Source Guard      IP Source Guard

```

```

1 IP Source Guard
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip verify source
Ruijie(config-if)# end

```

-	-

## 69.3 IP Source Guard

### 69.3.1 show ip source binding

IP

**show ip source binding** [*ip-address*] [*mac-address*] [**dhcp-snooping**] [**static**] [**vlan** *vlan-id*] [**interface** *interface-id*]

<i>ip-address</i>	ip
<i>mac-address</i>	mac
dhcp-snooping	
static	
<i>vlan-id</i>	vlan
<i>interface-id</i>	

└───┘

└───┘

└───┘

```
Ruijie# show ip source binding static
MacAddress  IpAddress  Lease(sec)  Type   VLAN  Interface
-----
0000.0000.0001 1.0.0.1  infinite   static    1  FastEthernet 0/1
Total number of bindings: 1
```

<b>ip source binding</b>	IP

┌

┌

-	-

### 69.3.2 show ip verify source

IP Source Guard

**show ip verify source [interface *interface-id*]**

┌

<i>interface-id</i>	

┌

┌

┌

```

interface                               IP Source Guard
      "IP source guard is not configured on the interface FastEthernet 0/10"
IP Source Guard                             ( mode )
inactive-no-snooping-vlan                 DHCP Snooping
inactive-trust-port                       DHCP Snooping
active                                     DHCP Snooping
    
```

┌

```

Ruijie # show ip verify source
Interface Filter-type Filter-mode Ip-address Mac-address VLAN
-----
FastEthernet 0/3 ip active 3.3.3.3 1
FastEthernet 0/3 ip active deny-all
FastEthernet 0/4 ip+mac active 4.4.4.4 0000.0000.0001 1
FastEthernet 0/4 ip+mac active deny-all
    
```

┌

<b>ip verify source</b>	IP Source Guard

|

---

|

---

-	-



**cpu-protect sub-interface {manage|protocol|route} percent percent\_vaule**

<i>percent_vaule</i>	1	100

(Manage)	30
(Route)	25
(Protocol)	45

┌

┌

Ruijie(config)# **cpu-protect sub-interface manage percent 60**

<b>cpu-protect sub-interface { manage   protocol / route } pps</b>	

┌

-	-

## 70.3 ARP

### 70.3.1 arp-guard attack-threshold

**arp-guard attack-threshold** {per-src-ip | per-src-mac | per-port} *pps*

<b>per-src-ip</b>		IP
<b>per-src-mac</b>		MAC
<b>per-port</b>		
<i>pps</i>		[1,9999]

IP	MAC	8
200		

NFPP

```
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
```

**nfpp arp-guard policy**

### 70.3.2 arp-guard enable

ARP

arp-guard enable

	-	-

ARP

NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard enable
```

<b>nfp arp-guard enable</b>		ARP
<b>show nfp arp-guard summary</b>		

	-	-

### 70.3.3 arp-guard isolate-period

arp-guard isolate-period {seconds | permanent}

seconds	0	[30, 86400]
permanent		

0

└── NFPP

└──

```
Ruijie(config)# nfpp
```

```
Ruijie(config-nfpp)#(ard su)6(mmar)-6(y)11( )PC2_0 1 10 0 0 211.527 0.006
```

```
Ruijie(config-nfpp)# arp-guard monitor-period 180
```

<b>show nfpp arp-guard summary</b>	
<b>show nfpp arp-guard hosts</b>	
<b>clear nfpp arp-guard hosts</b>	

-	-

### 70.3.5 arp-guard monitored-host-limit

**arp-guard monitored-host-limit** *number*

<i>number</i>	1
	4294967295

1000

NFPP

```

1000
1000 %ERROR The value that you
configured is smaller than current monitored hosts 1000
please clear a part of monitored hosts.
```

```

% NFPP_ARP_GUARD-4-SESSION_LIMIT: Attempt
to exceed limit of 1000 monitored hosts.
```

```
Ruijie(config)# nfpp
```

```
Ruijie(config-nfpp)# arp-guard monitored-host-limit 200
```

--	--

	<b>show nfpp arp-guard summary</b>	
	-	-

### 70.3.6 arp-guard rate-limit

	-	-

### 70.3.7 arp-guard scan-threshold

**clear nfpp arp-guard hosts** [vlan *vid*] [interface *interface-id*] [*ip-address* | *mac-address*]

<i>vid</i>	
<i>interface-id</i>	
<i>ip-address</i>	IP
<i>mac-address</i>	MAC

┌  
└

┌  
└

┌  
└

VLAN 1      g 0/1

|

|

|

Ruijie# **clear nfpp arp-guard scan**

|

<b>arp-guard scan-threshold</b>	
<b>nfpp arp-guard scan-threshold</b>	
<b>show nfpp arp-guard scan</b>	ARP

|

|

-	-

### 70.3.10 nfpp arp-guard enable

ARP

**nfpp arp-guard enable**

|

-	-

|

ARP

|

|

ARP

ARP

|

Ruijie(config)# **interface G0/1**  
 Ruijie(config-if)# **nfpp arp-guard enable**

|

<b>arp-guard enable</b>	ARP

┌

┌

10.4	

### 70.3.11 nfpp arp-guard isolate-period

**nfpp arp-guard isolate-period** {*seconds* | **permanent**}

┌

<i>seconds</i>	0 [30, 86400]
<b>permanent</b>	0

┌

┌

┌

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp arp-guard isolate-period 180
```

┌

<b>arp-guard isolate-period</b>	
<b>show nfpp arp-guard summary</b>	

┌

┌

10.4	

### 70.3.12 nfpp arp-guard policy

```

nfpp arp-guard policy {per-src-ip | per-src-mac | per-port} rate-limit-pps
attack-threshold-pps

```

<b>per-src-ip</b>	IP
<b>per-src-mac</b>	MAC
<b>per-port</b>	
<i>rate-limit-pps</i>	1 9999
<i>attack-threshold-pps</i>	1 9999

```

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

```

<b>arp-guard attack-threshold</b>	
<b>arp-guard rate-limit</b>	
<b>show nfpp arp-guard summary</b>	
<b>show nfpp arp-guard hosts</b>	
<b>clear nfpp arp-guard hosts</b>	

**nfpp arp-guard scan-threshold *pkt-cnt***

	<i>pkt-cnt</i>	[1,9999]

ARP ARP

	<i>pps</i>	[1,9999]
--	------------	----------

	MAC	10	300
--	-----	----	-----

NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard attack-threshold per-src-mac 15
Ruijie(config-nfpp)# dhcp-guard attack-threshold per-port 200
```

	<b>nfpp dhcp-guard policy</b>	
	<b>show nfpp dhcp-guard summary</b>	
	<b>show nfpp dhcp-guard hosts</b>	
	<b>clear nfpp dhcp-guard hosts</b>	

	-	-

### 70.4.2 dhcp-guard enable

DHCP

**dhcp-guard enable**

	-	-

DHCP

NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard enable
```

<b>nfpp dhcp-guard enable</b>	DHCP
<b>show nfpp dhcp-guard summary</b>	

-	-

### 70.4.3 dhcp-guard isolate-period

**dhcp-guard isolate-period** {seconds | permanent}

<i>seconds</i>	0 [30, 86400]
<b>permanent</b>	

0

NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard isolate timeout 180
```

<b>nfpp dhcp-guard isolate-period</b>	

<b>show nfpp dhcp-guard summary</b>	
-	-

### 70.4.4 dhcp-guard monitor-period

**dhcp-guard monitor- period seconds**

<i>seconds</i>	[180, 86400]
600	
NFPP	
0	
	0

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard monitor-period 180
```

--	--

**show nfpp dhcp-guard summary**

NFPP

**dhcp-guard rate-limit { per-src-mac | per-port} pps**

<b>per-src-mac</b>	MAC	
<b>per-port</b>		
<i>pps</i>		[1,9999]

MAC	5	150
-----	---	-----

NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard rate-limit per-src-mac 8
Ruijie(config-nfpp)# dhcp-guard rate-limit per-port 100
```

|  
|  
|

|  
|  
|

|  
|  
|

|  
|  
|

VLAN 1 g 0/1

Ruijie# **clear nfpp dhcp-guard hosts vlan 1 interface g0/1**

|



	<b>dhcp-guard enable</b>	DHCP
	<b>show nfpp dhcp-guard summary</b>	

└───┘

	10.4	

### 70.4.9 nfpp dhcp-guard isolate-period

**nfpp dhcp-guard isolate-period** {*seconds* | **permanent**}

--	--	--

## 70.4.10 nfpp dhcp-guard policy

**nfpp dhcp-guard policy** { **per-src-mac** | **per-port**} *rate-limit-pps* *attack-threshold-pps*

<b>per-src-mac</b>	MAC
<b>per-port</b>	
<i>rate-limit-pps</i>	1 9999
<i>attack-threshold-pps</i>	

## 70.5.1 dhcpv6-guard attack-threshold

**dhcpv6-guard attack-threshold { per-src-mac | per-port} pps**

<b>per-src-mac</b>	MAC
<b>per-port</b>	
<i>pps</i>	[1,9999]

MAC	10	300
-----	----	-----

NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcpv6-guard attack-threshold per-src-mac 15
Ruijie(config-nfpp)# dhcpv6-guard attack-threshold per-port 200
```

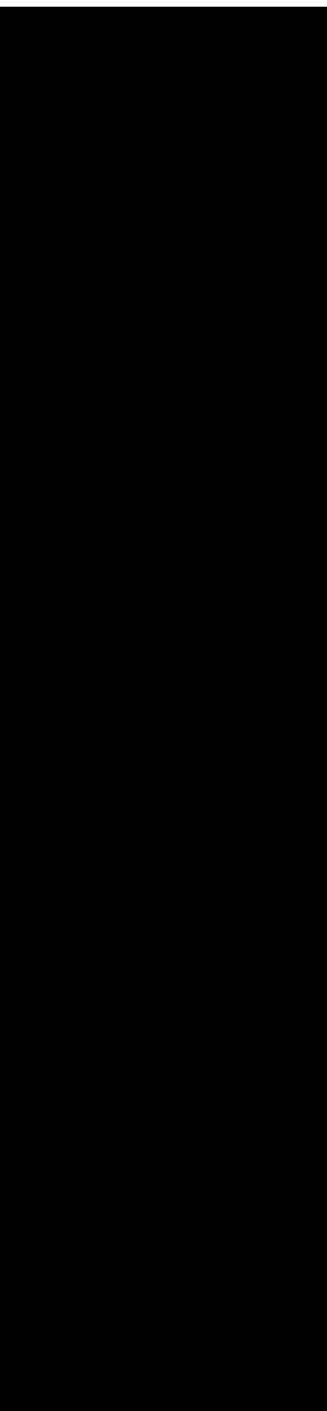
<b>nfpp dhcpv6-guard policy</b>	
<b>show nfpp dhcpv6-guard summary</b>	

	-	-

DHCPv6

NFPP

```
Ruijie(config)# nfpp  
Ruijie(config-nfpp)# dhcpv6-guard enable
```



```
Ruijie(config)# nfpp
```

```
Ruijie(config-nfpp)# dhcpv6-guard isolate timeout 180
```

<b>nfpp dhcpv6-guard isolate-period</b>	

<b>show nfpp dhcpv6-guard summary</b>	
<b>show nfpp dhcpv6-guard hosts</b>	
<b>clear nfpp dhcpv6-guard hosts</b>	

└───┘

10.4	

### 70.5.5 dhcpv6-guard monitored-host-limit

**dhcpv6-guard monitored-host-limit** *number*

<i>number</i>	1
	4294967295

└───┘

1000

└───┘

NFPP

└───┘

1000 %ERROR The value that you  
 1000 configured is smaller than current monitored hosts 1000  
 please clear a part of monitored hosts.

└───┘

% NFPP\_DHCP\_GUARD-4-SESSION\_LIMIT: Attempt  
 to exceed limit of 1000 monitored hosts.

└───┘

Ruijie(config)# **nfpp**  
 Ruijie(config-nfpp)# **dhcp-guard monitored-host-limit 200**

<b>show nfpp dhcpv6-guard summary</b>	



**clear nfpp dhcpv6-guard hosts** [*vlan vid*] [**interface** *interface-id*] [*mac-address*]



|

|

DHCPv6

DHCP

|

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp dhcpv6-guard enable
```

|

dhcpv6-guard enable	DHCPv6
show nfpp dhcpv6-guard summary	

|

|

10.4	

### 70.5.9 nfpp dhcpv6-guard isolate-period

**nfpp dhcpv6-guard isolate-period {seconds | permanent}**

|

--	--	--

seconds c<17EA35D9>1 Tf 0.0001 Tc 7.1412 T- 2 3198 -0.0 ( )Tj ET [30, 86400]0 1 Tf 0 Tc 0 Tw 25.

	<b>dhcpv6-guard isolate-period</b>	
	<b>show nfpp dhcpv6-guard summary</b>	

|

	10.4	



10.4	

## 70.6 ICMP



	<i>seconds</i>	0	[30, 86400]
	<b>permanent</b>	0	

0

NFPP

0

Ruijie(config)# **nfpp**

Ruijie(config-nfpp)# **icmp-guard monitor-period 180**

<b>show nfpp icmp-guard summary</b>	
<b>show nfpp icmp-guard hosts</b>	
<b>clear nfpp icmp-guard hosts</b>	

-	-

### 70.6.5 icmp-guard monitored-host-limit

**icmp-guard monitored-host-limit** *number*

<i>number</i>	1
	4294967295

1000

NFPP

1000

1000 %ERROR The value that you configured is smaller than current monitored hosts 1000 please clear a part of monitored hosts.

% NFPP\_ICMP\_GUARD-4-SESSION\_LIMIT: Attempt to

exceed limit of 1000 monitored hosts.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard monitored-host-limit 200
```

<b>show nfpp icmp-guard summary</b>	

-	-

### 70.6.6 icmp-guard rate-limit

**icmp-guard rate-limit { per-src-ip | per-port} pps**

<b>per-src-ip</b>	IP
<b>per-port</b>	
<i>pps</i>	[1,9999]

IP 900 1000


NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard rate-limit per-src-ip TjET66.84 431.66 0..8
```



## 70.6.8 clear nfpp icmp-guard hosts

```
clear nfpp icmp-guard hosts [vlan vid] [interface interface-id] [ip-address]
```



|

ICMP

|

|

ICMP

ICMP

|

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp icmp-guard enable
```

|

icmp-guard enable	ICMP
show nfpp icmp-guard summary	

|

|

10.4	

### 70.6.10 nfpp icmp-guard isolate-period

**nfpp icmp-guard isolate-period** {seconds | permanent}

|

seconds	0 [30, 86400]
permanent	

|

	Q ,	£EÄ
,ì G Q ,	<b>icmp-guard isolate-period</b>	G!5B < Lh/• ÊKÈ
	<b>show nfpp icmp-guard summary</b>	1,ßG!5B µ C

Q , Z Æ	( È	AÈ á
	10.4	

### 70.6.11 nfpp icmp-guard policy

ü0Ã · ÞG!5B F¼,XL\$Eó" 4" ` Ì" 4" Ä

**nfpp icmp-guard policy { per-src-ip | per-port} rate-limit-pps attack-threshold-pps**

	- D	£EÄ
- DAÈ á	<b>per-src-ip</b>	G!5B!£ Þ\$d IP
	<b>per-port</b>	G!5B!£ Þ0Ã ,XL\$Eó" 4" ` Ì" 4" Ä
	<b>rate-limit-pps</b>	L\$Eó" 4" È <sup>a</sup> 8x È 1 9999 Ä
	<b>attack-threshold-pps</b>	Ì" 4" È <sup>a</sup> 8x È 1 9999 Ä

```
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
```

,ì G Q ,	Q ,	£EÄ
	<b>icmp-guard attack-threshold</b>	
	<b>icmp-guard rate-limit</b>	
	<b>show nfpp icmp-guard summary</b>	1,ßG!5B µ C
	<b>show nfpp icmp-guard hosts</b>	1,ß «,¥ {



	<b>show nfpp ip-guard hosts</b>	
	<b>clear nfpp ip-guard hosts</b>	
	10.4	

### 70.7.2 ip-guard enable

IP

#### ip-guard enable

	-	-

IP

NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard enable
```

	<b>nfpp ip-guard enable</b>	IP
	<b>show nfpp ip-guard summary</b>	

	10.4	

### 70.7.3 ip-guard isolate-period

**ip-guard isolate-period** {seconds | permanent}

seconds	0 [30, 86400]
permanent	

0

NFPP

```
Ruijie(config)# nfpp  
Ruijie(config-nfpp)# ip-guard isolate-period 180
```

--	--	--

Td-6 (ip-guard isolate-period) /C2\_0 1 Tf0 Tc 0 Tw1DB91BCF0CFC30C309B05B585247213542>



exceed limit of 1000

% NFPP\_IP\_GUARD-4-SESSION\_LIMIT: Attempt to  
monitored hosts.



**ip-guard trusted-host** *ip mask*

**no ip-guard trusted-host** {**all** | *ip mask*}

<i>ip</i>	IP
<i>mask</i>	IP
<b>all</b>	no

|

|

|

|

```
VLAN 1      g 0/1
Ruijie# clear nfpp ip-guard hosts vlan 1 interface g0/1
```

<b>ip-guard attack-threshold</b>	
<b>nfpp ip-guard policy</b>	
<b>show nfpp ip-guard hosts</b>	

|

|

10.4	

### 70.7.10 nfpp ip-guard enable

IP

**nfpp ip-guard enable**

|

-	-

|

IP

|

|

IP

|

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp ip-guard enable
```

<b>ip-guard enable</b>	IP
<b>show nfpp ip-guard summary</b>	

┌

10.4	

### 70.7.11 nfpp ip-guard isolate-period

**nfpp ip-guard isolate-period** {*seconds* | **permanent**}

<i>seconds</i>	0	0	[30, 86400]
<b>permanent</b>			

NFPP

**nfpp ip-guard scan-threshold** *pkt-cnt*

<i>pkt-cnt</i>	[1,9999]

IP

ARP

```
Ruijie(config)# interface G 0/1
```

```
Ruijie(config-if)# nfpp ip-guard scan-threshold 20
```

	30	/	30	/	30
	NFPP				
	<pre>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</pre>				
	<b>nfpp nd-guard policy</b>				
	<b>show nfpp nd-guard summary</b>				
	10.4				

### 70.8.2 nd-guard enable

	ND				
	<b>nd-guard enable</b>				
	-		-		
	ND				
	NFPP				
	<pre>Ruijie(config)# nfpp</pre>				

```
Ruijie(config-nfpp)# nd-guard enable
```

nffp nd-guard enable	ND
show nfpp nd-guard summary	

10.4	

### 70.8.3 nd-guard rate-limit

**nd-guard rate-limit per-port {ns-na | rs | ra-redirect} pps**

ns-na	

0000 (70.8.3 nd-guard )-21(r012 Td241 T 0 1/C832B050C3CF121467 01E 0.046747A1116E09E518

	<b>show nfpp nd-guard summary</b>	
	10.4	

### 70.8.4 nfpp nd-guard enable

ND

#### nfpp nd-guard enable

	-	-

ND

ND

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp nd-guard enable
```

	<b>nd-guard enable</b>	ND
	<b>show nfpp nd-guard summary</b>	

	10.4	

### 70.8.5 nfpp nd-guard policy

**nfpp nd-guard policy per-port {ns-na | rs | ra-redirect} rate-limit-pps attack-thresh  
old-pps**

<b>ns-na</b>			
<b>rs</b>			
<b>ra-redirect</b>			
<i>rate-limit-pps</i>		1	9999
<i>attack-threshold-pps</i>		1	9999

┌  
└  
└

ND snooping

**S\*Ø**

ND guard  
900  
ND guard

ND snooping

800

ND snooping

~



	<i>number</i>	[0,1024]
	256	
	NFPP	
	NFPP 50	
	Ruijie(config)# <b>nfpp</b>	
	Ruijie(config-nfpp)# <b>log-buffer entries 50</b>	
	<b>log-buffer logs</b> <i>number_of_message interval length_in_seconds</i>	NFPP
	<b>show nfpp log</b>	NFPP
	10.4	

### 70.9.3 log-buffer logs

NFPP

**log-buffer logs** *number\_of\_message interval length\_in\_seconds*

	<i>number_of_message</i>	0-1024 0
	<i>length_in_seconds</i>	0-86400 1 0 <i>number_of_message length_in_seconds</i> 0 <i>number_of_message /length_in_second</i>

*number\_of\_message*      1    *length\_in\_seconds*      30



```

NFPP
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
    
```

```

NFPP
Ruijie#show nfpp log buffer statistics
There are 6 logs in buffer.
    
```

```

NFPP
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
    
```

```

Protocol
  ARP      ARP
  IP      IP
  ICMP      ICMP
  DHCP      DHCP
  DHCPv6      DHCPv6
  NS-NA      ND
    
```

RS ND  
RA-REDIRECT ND

Reason 5

DoS  
ISOLATED

1

Ruijie# **show nfpp arp-guard hosts statistics**

```

success   fail   total
-----   ----   -----
100       20     120
          120           100           20
    
```

2

remain-time(seconds)

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

<b>clear nfpp arp-guard hosts</b>	

NFPP

<b>arp-guard scan-threshold</b>	
<b>nfpp arp-guard scan-threshold</b>	
<b>clear nfpp arp-guard scan</b>	ARP

└───┘

-	-

### 70.10.3 show nfpp arp-guard summary

#### show nfpp arp-guard summary

-	-

└───┘

└───┘

└───┘

```
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 Sc
an-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
```

```
1 . Interface Global
2 . Status
```

└───┘

3            Rate-limit                            IP                            /            MAC  
 /    Attack-threshold    -

<b>arp-guard attack-threshold</b>	
<b>arp-guard enable</b>	ARP
<b>arp-guard isolate-period</b>	
<b>arp-guard monitor-period</b>	
<b>arp-guard monitored-host-limit</b>	
<b>arp-guard rate-limit</b>	
<b>arp-guard scan-threshold</b>	
<b>nfpp arp-guard enable</b>	ARP
<b>nfpp arp-guard isolate-period</b>	
<b>nfpp arp-guard policy</b>	
<b>nfpp arp-guard scan-threshold</b>	

-	-

## 70.11 DHCP

### 70.11.1 show nfpp dhcp-guard hosts

**show nfpp dhcp-guard hosts** [statistics | [[vlan *vid*] [interface *interface-id*] [*mac-address*]]]

<b>statistics</b>	
<i>vid</i>	
<i>interface-id</i>	
<i>mac-address</i>	MAC



-	-

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

- 1 . Interface Global
- 2 . Status
- 3 . Rate-limit IP / MAC
- / Attack-threshold -

<b>dhcp-guard attack-threshold</b>	
<b>dhcp-guard enable</b>	DHCP
<b>dhcp-guard isolate-period</b>	
<b>dhcp-guard monitor-period</b>	
<b>dhcp-guard monitored-host-limit</b>	
<b>dhcp-guard rate-limit</b>	
<b>nfpp dhcp-guard enable</b>	DHCP
<b>nfpp dhcp-guard isolate-period</b>	
<b>nfpp dhcp-guard policy</b>	



```

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)
    
```

<b>clear nfpp dhcpv6-guard hosts</b>	

10.4	

### 70.12.2 show nfpp dhcpv6-guard summary

**show nfpp dhcpv6-guard summary**

-	-

```
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  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

```

1 .   Interface  Global
2 .   Status
3 .   Rate-limit      IP      /      MAC
      /              Attack-threshold      -
    
```

<b>dhcpv6-guard attack-threshold</b>	
<b>dhcpv6-guard enable</b>	DHCPv6
<b>dhcpv6-guard isolate-period</b>	
<b>dhcpv6-guard monitor-period</b>	
<b>dhcpv6-guard monitored-host-limit</b>	
<b>dhcpv6-guard rate-limit</b>	
<b>nfpp dhcpv6-guard enable</b>	DHCPv6



<i>interface-id</i>	
<i>ip-address</i>	IP

Ruijie#**show nfpp icmp-guard hosts statistics**

```

success   fail   total
-----   ---   -----
100         20     120
                120           100           20
    
```

Ruijie# **show nfpp icmp-guard hosts**

If column 1 shows '\*', it means "hardware failed to isolate host".

```

VLAN  interface IP address      remain-time(s)
----  -
1     Gi0/1     1.1.1.1      110
2     Gi0/2     1.1.2.1      61
Total 2 host(s)
    
```

<b>clear nfpp icmp-guard hosts</b>	

10.4	

	-	-
--	---	---

|

|

|

Ruijie# show nfpp icmp-guard summary

|

|

10.4	

### 70.13.3 show nfpp icmp-guard trusted-host

**show nfpp icmp-guard trusted-host**

|

-	-

|

|

|

```

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)
    
```

|

<b>icmp-guard trusted-host</b>	

|

|

10.4	

## **70.14 IP**

	<b>clear nfpp ip-guard hosts</b>	
	10.4	

### 70.14.2 show nfpp ip-guard summary

**show nfpp ip-guard summary**

	-	-

**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

- 1 . Interface Global
- 2 . Status
- 3 . Rate-li

<b>ip-guard attack-threshold</b>	
<b>ip-guard enable</b>	IP
<b>ip-guard isolate-period</b>	
<b>ip-guard monitor-period</b>	
<b>ip-guard monitored-host-limit</b>	
<b>ip-guard rate-limit</b>	
<b>nfpp ip-guard enable</b>	IP
<b>nfpp ip-guard isolate-period</b>	



2	Status		
3	Rate-limit	/	/
		/	Attack-threshold
	-		
	-/5/30	G 0/2	/
	5	/	30

<b>nd-guard attack-threshold</b>	
<b>nd-guard enable</b>	ND
<b>nd-guard rate-limit</b>	
<b>nfpp nd-guard enable</b>	ND
<b>nfpp nd-guard policy</b>	

10.4	

# 71      ACL

id	IP    ACL 1-99    1300-1999 IP    ACL 100-199    2000-2699 MAC    ACL 700-799 ACL 2700-2899
name	ACL
sn	ACL (                    )
start-sn	
inc-sn	
deny	
permit	
prot	IPv6                    ipv6 icmp tcp udp            0-255            IPv4            eigrp gre ipinip igmp nos ospf icmp udp

precedence precedence	0-7
range	
time-range tm-rng-name	tm-rng-name
tos tos	0-15
cos cos	cos (0-7)
cos inner cos	tag cos
icmp-type	ICMP 0-255
icmp-code	ICMP 0-255
icmp-message	ICMP
operator port[port]	Operator lt- eq- gt- neq- range- port

B	MAC	6	P		35
C		12	Q	IP	36
D	VLAN tag	14	R	ip	38
E	DSAP( )	18	S	ip	42
F	SSAP( )	19	T	TCP	46
G	Ctrl	20	U	TCP	48
H	Org Code	21	V		50
I		24	W		54
J	IP	26	XY	IP	58
K	TOS	27	Z	flags	59
L	IP	28	a	Windows size	60
M	ID	30	b		62
N	Flags	32			

SNAP tag 802.3

## 71.1

### 71.1.1 access-list

**no**

1) IP 1 - 99 1300 - 1999

**access-list** *id* {deny | permit} {source source-wildcard | host source | any}

## 4) Expert 2700 - 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] [fragments] [range lower upper] [time-range time-range-name]

Ethernet-type cos

**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]

Protocol

**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] [fragments] [range lower upper] [time-range time-range-name]

Expert

**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] [fragments] [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] [fragments] [range lower upper] [time-range time-range-name] [match-all tcp-flag]

**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] [fragments] [range lower upper] [time-range time-range-name]

## 5)

**access-list** *list-remark text*

<i>id</i>	1-99 100-199 1300-1999 2000-2699 2700 - 2899 700 - 799
<b>Deny</b>	
<b>Permit</b>	
<i>Source</i>	
<i>source-wildcard</i>	0.255.0.32
<i>protocol</i>	IP EIGRP GRE IPINIP IGMP NOS OSPF ICMP UDP TCP IP IP 0-255 ICMP/TCP/UDP
<i>Destination</i>	IP

*destination-wildcard* Å 640D040D1445EE>6<472130F4D7168()8 re f 10.467 -0.006 Td [<18791B5B

<b>match-all</b>	<i>tcp flag</i>
<i>tcp-flag</i>	tcp flag

ACL

**access-list**

dod-host-prohibited  
dod-net-prohibited  
echo  
echo-reply  
fragment-timcho

s(hi)solch

sprecede-pun-p

s6e-p

stpro

st-ho

sun-pn1( )856( )TJ/C2\_1 1 Tf0 Tc 0 Tw -0.742 -1.755 Td<0084>Tj/TT

-reply

-que-5

reply 6256( )TJ/C2\_1 1 T0 Tc 0 Tw -0.742 -1.761 Td<0084>Tj/TT0 1 T0.0205

6256( )TJ/C2\_1 1 Tf0 Tc 0 Tw -0.742 -1.761 Td<0084>Tj/TT0 1 Tf0.0

ha-p

o

stpro

o

sunrea-p

rech

hi

ttl-exceeded		
unreachable		
TCP		TCP
bgp		
chargen		
cmd		
daytime		
discard		
domain		
echo		
exec		
finger		
ftp		
ftp-data		
gopher		
hostname		
ident		
irc		
klogin		
kshell		
login		
nntp		
pim-auto-rp		
pop2		
pop3		
smtp		
sunrpc		
syslog		
tacacs		
talk		
telnet		
time		
uucp		
whois		
www		
UDP		UDP
biff		
bootpc		

bootps  
discard  
dnsix  
domain  
echo  
isakmp  
mobile-ip  
nameserver  
netbios-dgm  
netbios-ns  
netbios-ss  
ntp  
pim-auto-rp  
rip  
snmp  
snmptrap  
sunrpc  
syslog  
tacacs  
talk  
tftp  
time  
who  
xdmcp

Ethernet-type

aarp  
arp  
appletalk  
decnet-iv  
diagnostic  
etype-6000  
etype-8042  
lat  
lavc-sca  
mop-console  
mop-dump  
mumps  
netbios

```
vines-echo
xns-idp
```

```
1 IP
   IP                               192.168.1.64 - 192.168.1.127
```

```
Ruijie(config)# access-list 1 permit 192.168.1.64 0.0.0.63
```

```
2 IP
   IP          DNS      ICMP
```

```
Ruijie(config)# access-list 102 permit tcp any any eq domain
```

```
Ruijie(config)# access-list 102 permit udp any any eq domain
```

```
Ruijie(config)# access-list 102 permit icmp any any echo
```

```
Ruijie(config)# access-list 102 permit icmp any any echo-reply
```

```
3 MAC
   MAC      00d0f8000c0c          100
   1
```

```
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 Expert
   Expert Extended ACL      ACL      IP
```

```
192.168.12.3      MAC      00d0.f800.0044      TCP
```

```
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
```

<b>show access-lists</b>	



*destination-wildcard* | **host destination** | **any** {**host destination-mac-address** | **any**}  
**[time-range time-range-name]**

b) protocol

[*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**] [**fragments**]  
**[range lower upper]** [**time-range time-range-name**]

c) expert

#### 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**] [**fragments**] [**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**] [**fragments**] [**range lower upper**] [**time-range time-range-name**]  
**[match-all tcp-flag]**

#### 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**] [**fragments**] [**range lower upper**] [**time-range time-range-name**]

#### Address Resolution Protocol (ARP)

[*sn*] **deny arp** {*vid vlan-id*}[ *source-mac-address source-wildcard* |**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 IPV6

[*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]** [**fragments**] [**range lower upper**] [**time-range**]

---

[[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragments**]  
[**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*] [**fragments**] [**range** *lower upper*]  
[**time-range** *time-range-name*] [**match-all** *tcp-flag*]

#### 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*] [**fragments**] [**range** *lower*  
*upper*] [**time-range** *time-range-name*]

|

--	--

*Sn*



1

```
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
```

<b>show access-lists</b>	
<b>ipv6 traffic-filter</b>	IPV6
<b>ip access-group</b>	IP ACL
<b>mac access-group</b>	MAC ACL
<b>ip access-list</b>	IP ACL
<b>mac access-list</b>	MAC ACL
<b>expert access-list</b>	ACL
<b>ipv6 access-list</b>	IPV6 ACL
<b>permit</b>	

V10.0	V10.0 arp V10.2(3)
-------	-----------------------

### 71.1.3 expert access-group

EXPERT ACL

no

**expert access-group** {*id* | *name*} {in | out}

**no expert access-group** {*id* | *name*} {in | out}

<i>id</i>	Expert	2700-2899
<i>name</i>	Expert	

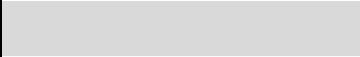
---

---


port ACL

**show**

```
access-list accept_00d0f8xxxxxx_only Gigabit 1  
)# interface GigaEthernet 0/1  
-if)# expert access-group accept_00d0f8xxxxxx_only in
```



**show expert access-lists**

```

1          ACL
Ruijie(config)# expert access-list extended exp-acl
Ruijie(config-exp-nacl)# show expert access-lists
expert access-list extended exp-acl
Ruijie(config-exp-nacl)#

2          ACL
Ruijie(config)# expert access-list extended 2704
Ruijie(config-exp-nacl)# show expert access-lists
expert access-list extended 2704
Ruijie(config-exp-nacl)#
    
```

<b>show expert access-lists</b>	

V10.0	V10.0

### 71.1.5 ip access-group

**ip access-group**                      no

**ip access-group** {*id* | *name*} {**in** | **out**}

**no ip access-group** { *id* | *name*} {**in** | **out**}

<i>id</i>	IP                      1-199    1300-2699
<i>name</i>	IP
<b>in</b>	
<b>out</b>	

ACL

**ip access-group**

fastEthernet0/0 120

Ruijie(config)# **interface fastEthernet 0/0**

Ruijie(config-if)#**ip access-group 120 in**

<b>access-list</b>	
<b>show access-lists</b>	
<b>show ip access-list</b>	IP 1-199 1300 - 2699 3000 3199

**1 ACL**

```
Ruijie(config)# ip access-list standard std-acl
```

```
Ruijie(config-std-nacl)# show ip access-lists
```

```
ip access-list standard std-acl
```

```
Ruijie(config-std-nacl)#
```


**2 ACL**

```
Ruijie(config)# ip access-list extended 123
```

```
Ruijie(config-ext-nacl)# show ip access-lists
```

```
ip access-list extended 123
```

---



**show access-lists**

ACL

Ruijie# **show access-lists**

```
ip access-list standard 1
10 permit host 192.168.4.12
20 deny any any
```

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
```

<b>show access-lists</b>	

V10.0	V10.0

### 71.1.8 ipv6 traffic-filter

IPV6 ACL

no

**ipv6 traffic-filter** *name* {in | out}

**no ipv6 traffic-filter** *name* {in | out}

<i>name</i>	IPV6
<b>in</b>	
<b>out</b>	

IPV6 ACL

|

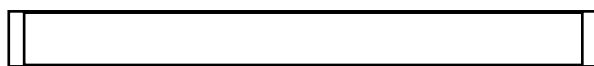
|

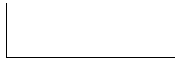
|

ACL  
traffic-filter

show ipv6

```
access-list v6-acl Gigabit 1  
Ruijie(config)# interface GigaEthernet 0/1  
Ruijie(config-if)# ipv6 traffic-filter v6-acl in
```





V10.0	V10.0

### 71.1.11 MAC access-group

MAC ACL

**no**

**mac access-group** {*id* | *name*}{**in** | **out**}

**no mac access-group** {*id* | *name*} {**in** | **out**}

<i>id</i>	MAC 700-799
<i>name</i>	MAC
<b>in</b>	
<b>out</b>	



ACL

701012 0 Td ( )Tj Tf 1.6724 Tc009B7472 3DE02D6>/TT1 1 Tf -0.0001 TcE949B7

MAC ACL

**no**

ACL

**mac access-list extended** {*id* | *name*}

**no mac access-list extended** {*id* | *name*}





## 1) IP

[sn] **permit** {*source source-wildcard* | **host** *source* | **any**}

## 2) IP

[sn] **permit protocol** *source source-wildcard destination destination-wildcard* [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*]

IP

**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*] [**fragments**] [**time-range** *time-range-name*]

**Transmission Control Protocol (TCP)**

[sn] **permit tcp** {*source source-wildcard* | **host** *source* | **any**} [**port** *port*] [**port** *port*] [**time-range** *time-range-name*]

[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] [fragments] [range lower upper] [time-range time-range-name]

Expert

#### 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] [fragments] [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] [fragments] [range lower upper] [time-range time-range-name] [match-all tcp-flag]

#### 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] [fragments] [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) IPV6

[sn] **permit protocol** {source-ipv6-prefix / prefix-length | **any** | **host** source-ipv6-address} {destination-ipv6-prefix / prefix-length | **any** | **host** destination-ipv6-address} [dscp dscp] [flow-label flow-label] [fragments] [range lower upper] [time-range time-range-name]

IPV6

#### 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] [fragments] [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*] [**fragments**] [**range** *lower*  
*upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag*]

**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*] [**fragments**] [**range** *lower*  
*upper*] [**time-range** *time-range-name*]



```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ip access-group 102 in
Ruijie(config-if)#
    3      MAC      ACL              MAC  0013.0049.8272
      100              1
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
10 permit host 0013.0049.8272 any aarp702
Ruijie(config-mac-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mac access-group 702 in
    4      ip      ACL              IP  192.168.4.12
      1
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
    5      IPV6     ACL              IP  192.168.4.12
      1
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/TT2 1 Tf9.581 0 Td(interface gigabitethernet 1/1)
```

<b>ip access-group</b>	IP ACL
<b>mac access-group</b>	MAC ACL
<b>ip access-list</b>	IP ACL
<b>mac access-list</b>	MAC ACL
<b>expert access-list</b>	ACL
<b>ipv6 access-list</b>	IPV6 ACL
<b>deny</b>	ACL

V10.0	V10.0 arp V10.2(3)
-------	-----------------------

## 71.2

### 71.2.1 show access-group

ACL

**show access-group** [interface <interface>]

<interface>	
-------------	--

ACL

ACL

```
Ruijie# show access-group
ip access-list standard ipstd3
Applied On interface GigabitEthernet 0/1.
ip access-list standard ipstd4
Applied On interface GigabitEthernet 0/2.
ip access-list extended 101
```

```
Applied On interface GigabitEthernet 0/3.
ip access-list extended 102
Applied On interface GigabitEthernet 0/8.
```

<b>ip access-group</b>	ip
<b>mac access-group</b>	MAC
<b>expert access-group</b>	Expert
<b>ipv6 traffic-filter</b>	IPV6

V10.0	V10.0

### 71.2.2 show access-lists

ACL                      ACL

**show access-lists** [*id* | *name*]

<i>id</i>	
<i>name</i>	

acl                      *id*   *name*                      ACL

```
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
```

ACL



<interface>	

└──

└──

└──

IPv6 ACL

IPv6 ACL

```
Ruijie# show ipv6 traffic-filter interface gigabitethernet 0/4
ipv6 traffic-filter v6 in
Applied On interface GigabitEthernet 0/4.
```

<b>ipv6 access-list</b>	IPV6    ACL

└──

--	--

```
mac access-group mm in
Applied On interface GigabitEthernet 0/3.
```

<b>mac access-list</b>	MAC ACL

V10.0	V10.0

## 71.3

### 71.3.1 security access-group

**security access-group** {*id*|*name*}

**no security access-group**

<i>id</i>	ACL id
<i>name</i>	ACL

```
Ruijie(config-if)#security access-group 1
```

<b>show secu-acl</b>	

	V10.2	V10.2

### 71.3.2 security global access-group

**security global access-group** {*id*|*name*}

**no security global access-group**

<i>id</i>		ACL id
<i>name</i>		ACL

---

	-	-
--	---	---

---

|

|

|

| Ruijie(config-if)#**security uplink enable**

--	--	--

**show secu-acl**



Fa0/6      uplink      --

<b>security global access-group</b>	
<b>security access-group</b>	
<b>security uplink enable</b>	

V10.2	V10.2

# 72 VACL

## 72.1

```

Vlan access map                               map_name                map_sn
map                                             map                        map

1      vlan access map                        map                        map_sn
      map                                     map      map      map_sn      10

2      map_sn                                vlan access map          map_name
Map_name                                     map

3      map_sn                                vlan access map          map
map      map      map      map      map

4      map      6553      map

```

### VACL

action forward/drop/redirect

Match ip/mac address

vlan access map

vlan filter

### 72.1.1 action forward/drop/redirect

```

map actions      vACL      no      map
actions          forward

```

**action forward**

**no action forward**

```

map actions      vACL      no      map
actions          forward

```

**action drop**

**no action drop**

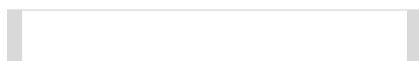
```

map actions      vACL      no      map
actions          forward

```

**action redirect { GigabitEthernet | Aggregateport | FastEthernet } { port\_id }**

**no action redirect**{GigabitEthernet | Aggregateport | FastEthernet } {*port\_id*}



<i>acl_id</i>	numbered acl;
---------------	---------------

Config-access-map          vacl

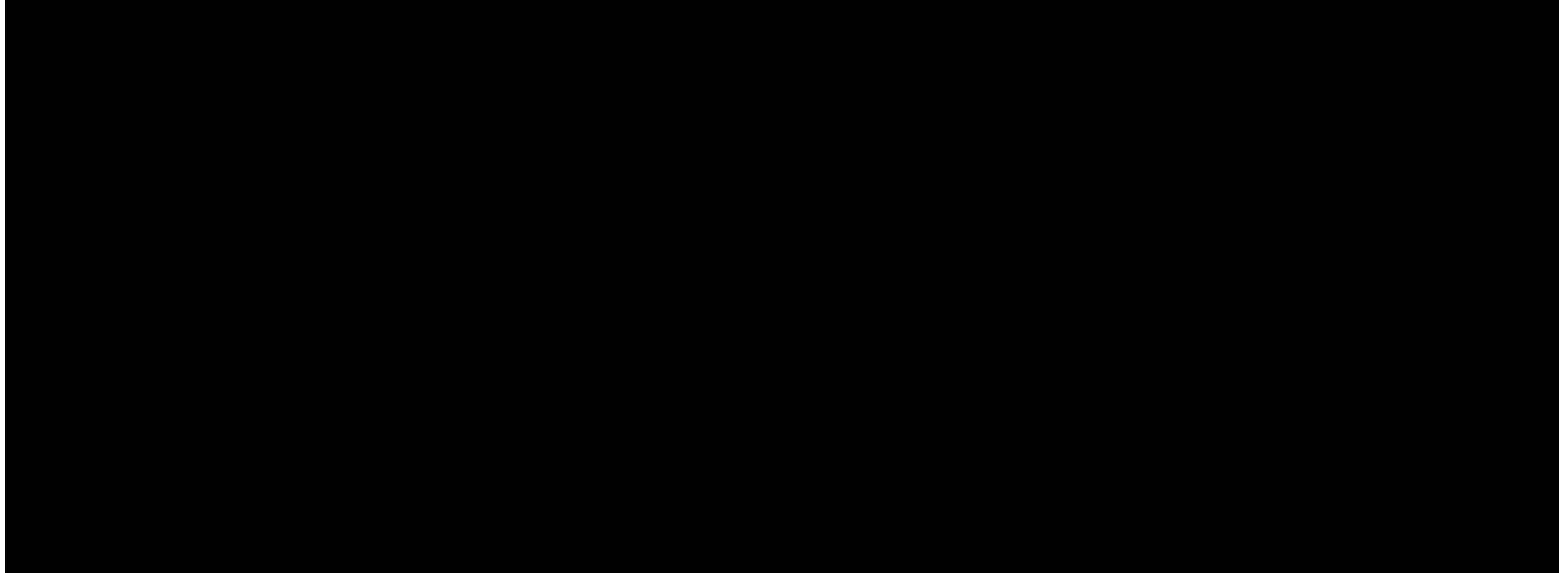
<b>r</b>	+	acl,	8	acl
----------	---	------	---	-----

	map	ip acl	map acl
	map	8	acl
	map	acl	
	map	ace	acl          acl
	map	ip acl (mac acl)	
	ip acl (mac acl)	ip acl (mac acl)	
	ip acl (mac acl)		
	map	ip acl (mac acl)	
	mac acl (ip acl)		ip acl (mac
	acl)	mac acl (ip acl)	

```

map match
Ruijie(config)# vlan access-map dd
Ruijie(config-access-map)# match ip address 10 20 sp1 30 sp2
Ruijie(config-access-map)# exit
Ruijie(config)# vlan access-map dd 20
Ruijie(config-access-map)# match mac address 710 720 m1 760
Ruijie(config-access-map)# exit
Ruijie(config)#

```



<i>map_name</i>	map
<i>vlan_id</i>	vlan id

┌

┌

```

vlan access map          vlan          vlan          vlan
filter aa vlan-list 1-33  map          1-33         vlan
    
```

```

map ff vlan access map  vlan 5
Ruijie(config)# vlan filter ff vlan-list 5
    
```

-	-

┌

-	-

## 72.2

### 72.2.1 show vlan access map

```

map
show vlan access map
map
show vlan access map map_name
    
```

<i>map_name</i>	map

┌

┌



|

|

|

|

**Show vlan filter access-map aa**

```
Ruijie(config)# show vlan filter
VLAN Map aa
Configured on VLANs: 1, 5, 6,
Ruijie(config)#
```

|

<b>show vlan filter access-map map_name</b>	map vlan
<b>show vlan filter vlan vlan_id</b>	map vlan

|

|

-	-

# 73 QOS

## 73.1

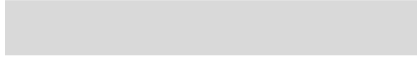
```

QoS
1 policy-map
  policy-map
  class-map
    1 ACL ACL ACE
      ACE "ACL"
  
```

```

QoS
QoS QOS
  Policy Map
    QoS
      Policy Map
        Off
  
```

CoS	0
	8
	WRR A



## 73.2

### 73.2.1 class maps

ACL

**ip access-list** {**extended** | **standard**} { *acl-id* | *acl-name* }

**mac access-list extended** {*acl-id* | *acl-name*}

**expert access-list extended** {*acl-id* | *acl-name*}

**ipv6 access-list extended** *acl-name*

```
4      class-map,   cm
Ruijie(config)# class-map cm
5      ACL
Ruijie(config-cmap)# match access-group me
6      class-map
Ruijie(config-cmap)# exit
```

---

<b>show mac access-lists</b>	-
------------------------------	---



QoS

---

	-	-
--	---	---

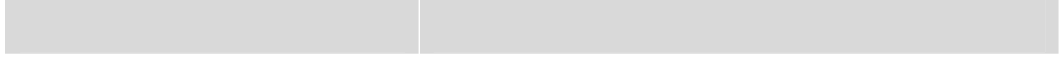
---

### 73.2.4 mls qos cos

CoS

**mls qos cos** *default-cos*

**no mls qos cos**



	<b>dscp</b>	
	<b>no</b>	

|

|

|

| Ruijie(config)# **mls qos map cos-dscp 8 10 16 18 24 26 32 34**

Ruijie(config)# ~~mls qos~~ ~~mls qos~~

## 73.2.8 mls qos scheduler

**mls qos scheduler [sp | rr | wrr | drr]**

**no mls qos scheduler**



<b>cos</b>	Qos	CoS
<b>dscp</b>	Qos	DSCP
<i>ip-precedence</i>	Qos	IP-PRE
<b>no</b>		

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mls qos trust cos
```

<b>show mls qos interface</b> <i>interface-id</i>	-
---	---

S8600 **cos dscp ip-precedence**

-	-
---	---

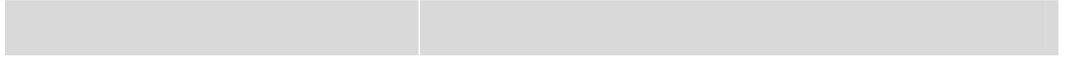
### 73.2.10 policy maps

```

policy map          policymap
[no] policy-map policy-map-name
      policy map          class-map          ,
[no] class class-map-name
              IP          ipdscp          IP
set ip dscp new-dscp
no set ip dscp

police rate-bps burst-byte[exceed-action {drop | dscp dscp-value}]
no police

```



### 73.2.11 priority-queue

[no]

|

---

|

---

|

---

| Ruijie(config)# **priority-queue cos-map 1 0 1**

<b>show mls qos queueing</b>	-

|

---

-	-

### 73.2.13 service-policy

policy map

**service-policy** {input | output} *policy-map-name*

**no service-policy** {input | output}

<b>show mls qos interface</b>		-
S8600	input	output
-		-

### 73.2.14 wfq-queue bandwidth

wfq

**wfq-queue queue-id bandwidth min max**

**no wfq-queue queue-id bandwidth**

<i>queue-id</i>	
<i>min</i>	
<i>max</i>	

min            kbps  
 max            kbps

wfq

```

wfq
Ruijie(config)# mls qos scheduler wfq
Ruijie(config)# show mls qos scheduler

Ruijie(config-if)# wfq-queue 2 bandwidth 10 10240
Ruijie(config-if)# wfq-queue 4 bandwidth 7 10240
Ruijie(config-if)# show running
    
```

<b>show mls qos scheduler</b>	QOS

RGOS10.1	
-	-

### 73.2.15 wfq-queue sp

wfq (sp)

**wfq-queue queue-id sp**

**no wfq-queue queue-id sp**

<i>queue-id</i>	
<i>sp</i>	

sp

wfq sp+wfq

```

wfq
Ruijie(config)# mls qos scheduler wfq
Ruijie(config)# show mls qos scheduler
      1  3
Ruijie(config)# wfq-queue 1 sp
Ruijie(config)# wfq-queue 3 sp
Ruijie(config)# show running
    
```

## 73.2.16 wrr-queue bandwidth

WRR

**wrr-queue bandwidth** *weight1 ... weightn*

**no wrr-queue bandwidth**

<i>weight1...weightn</i>	n	n
<b>no</b>		

weight1: ...: weightn = 1:::1

Ruijie(config)# **wrr-queue bandwidth 1 2 3 4 5 6 7 8**

<b>show mls qos queueing</b>	-

-	-

## 73.3

### 73.3.1 show class-map

class map

**show class-map** [*class-name*]

<i>class-name</i>	class map



QOS

┌

┌

-	-

### 73.3.3 show mls qos interface

QoS

**show mls qos interface *interface-id* [policers]**

EEA

┌

<i>interface-id</i>	
<b>policers</b>	police

┌

QOS

<b>dscp-cos</b>	dscp-cos maps
<b>ip-prec-dscp</b>	ip-prec-dscp maps

dscp-cos maps    dscp-cos maps    ip-prec-dscp maps

┌

┌

Ruijie# **show mls qos maps**

-	-

┌

-	-

### 73.3.5 show mls qos queueing

QoS      (cos-to-queue map,wrr weight,drp weight)

**show mls qos queueing**

-	-

┌

┌

┌

Ruijie# **show mls qos queueing**

--	--

	-	-
S8600	cos-to-queue map,wrr weight,drr weight	
	-	-

### 73.3.6 show mls qos rate-limit

**show mls qos rate-limit [interface *interface-id*]**

interface	interface-id	rate-limit
-----------	--------------	------------

└───

└───

└───

Ruijie# **show mls qos rate-limit**

	-	-
--	---	---

└───

	-	-
--	---	---

### 73.3.7 show mls qos scheduler

**show mls qos scheduler**

--	--

QOS

---

-	-
---	---

---

|

|

|

Ruijie# **show mls qos scheduler**

-	-

---

S8600

-	-

# 74 WRED

## 74.1 WRED

		CoS	0	1	2	3	4	5	6	7	
Queue1	Threshold1	CoS									
		WRED-drop	100%low		100%high						
		random-detectprobability	60%								
	Threshold2	CoS	NONE								
		WRED-drop	80% low		100%high						
		random-detectprobability	80%								
	Threshold3	CoS	S86		96						
		WRED-drop	S86		96						
		random-detectprobability	S86		96						
Queue2	Threshold1	CoS	S86		96						
		WRED-drop	S86		96						
		random-detectprobability	S86		96						
	Threshold2	CoS	S86		96						
		WRED-drop	S86		96						
		random-detectprobability	S86		96						
	Threshold3	CoS	S86		96						
		WRED-drop	S86		96						
		random-detect probability	S86		96						
		queue1									
		100% WRED									

## 74.2

### 74.2.1 wrr-queue random-detect max-threshold



<i>queue_id</i>	
<i>thr1</i>	
<i>thr2</i>	
<i>thr3</i>	

┌

┌

	WRED		WRED		WRED
	WRED				
	S86 96				
	S86 96	2			

┌

1

Ruijie(config-if)# **wrr-queue random-detect min-threshold 1 68 69 70**

-	-

┌

-	-

### 74.2.3 wrr-queue random-detect probability

no

**wrr-queue random-detect min-threshold** *queue\_id* *prob1* [*prob2* *prob3*]

**no wrr-queue random-detect min-threshold** *queue\_id*

<i>queue_id</i>	

<i>prob1</i>	
<i>prob2</i>	
<i>prob3</i>	S86

└──

└──

```

                WRED                                WRED
WRED
S86 96
S86 96                2
    
```

```

                1
Ruijie(config-if)#wrr-queue random-detect probability 1 61 62 63
    
```

-	-

└──

-	-

### 74.2.4 wrr-queue cos-map

```

        threshold  cos          no
        threshold  cos
    
```

**wrr-queue cos-map** *threshold\_id* *cos1* [*cos2* [*cos3* [*cos4* [*cos5* [*cos6* [*cos7* [*cos8*]]]]]]]

<i>queue_id</i>	
<i>cos_value</i>	cos      1      8      0~7

└──      cos

┌

┌

┌

┌

┌

┌

```

DSCP-CoS  CoS-threshold  DSCP  threshold
CoS        threshold      WRED
RED

```

```

cos      1 6
cos      priority-queue cos-map
Ruijie(config-if)#wrr-queue cos-map 2 1 6

```

-	-

-	-

## 74.3

### 74.3.1 show queueing wred interface

```
qid max_1 min_1 prob_1 max_2 min_2 prob_2 max_3 min_3 prob_3
```

```
-----
1  0  0  90  0  0  91  0  0  92
2  88 66  90  87 55  91  86 66  92
3  0  0  0  0  0  0  0  0  0
4  0  0  0  0  0  0  0  0  0
5  88 66  0  89 67  0  90 68  0
6  0  0  0  0  0  0  0  0  0
7  0  0  0  0  0  0  0  0  0
8  0  0  0  0  0  0  0  0  0
```

```
cos qid threshold_id
```

```
---  ---  -----
0  1  1
1  2  1
2  3  1
3  4  2
4  5  1
5  6  3
6  7  2
7  8  1
```

-	-

-	-

---

# 75

## 75.1

### 75.1.1 rgos-security compatible

compatible	RGOS	rgos-security
rgos-security compatible	RGOS	no
no rgos-security compatible		
	RGOS	
	r	
	1	RGOS
	Ruijie(config)#no gos-security compatible	
	10.4	

# 76 VRRP

## 76.1

### 76.1.1 vrrp authentication

VRRP no

vrrp group authentication *string*

no vrrp group authentication

<i>group</i>	VRRP
<i>string</i>	VRRP ( 8 )

	VRRP	VRRP
--	------	------

--	--

	VRRP / VRRP
<b>r</b>	IPv6 VRRP IPv6

VRRP 1  
vrrp 1 authentication x30dn78k

Ruijie(config-if)# vrrp group ip ipaddress [ secondary ]	VRRP IP

--	--

--	--

	-	-
--	---	---

### 76.1.2 vrrp description

VRRP no

*vrrp group description text*

**no vrrp group description**

<i>group</i>		VRRP
<i>text</i>		VRRP

	VRRP	VRRP
--	------	------

	VRRP	VRRP
--	------	------

```

E0 VRRP 1 Building A – Marketing and
Administration
interface FastEthernet 0/0
ip address 10.0.1.1 255.255.255.0
vrrp 1 ip 10.0.1.20
vrrp 1 description "Building A - Marketing and Administration"
    
```

Ruijie(config-if)# <b>vrrp group ip ipaddress</b> <b>[ secondary ]</b>	VRRP	IP

	-	-

### 76.1.3 vrrp ip

VRRP IP no VRRP IP

**vrrp group ip ipaddress [secondary]**

**no vrrp group ip ipaddress [secondary]**

<i>group</i>	VRRP
<i>ipaddress</i>	IP
<b>secondary</b>	IP

VRRP

secondary IP IP no IP VRRP IP  
VRRP

```

0 VRRP VRRP 1
IP 10.0.1.20 IP 10.0.2.20
interface FastEthernet 0/0
no switchport
ip address 10.0.1.1 255.255.255.0
ip address 10.0.2.1 255.255.255.0 secondary
vrrp 1 ip 10.0.1.20
vrrp 1 ip 10.0.2.20 secondary
    
```

Ruijie# <b>show vrrp [ brief   group ]</b>	VRRP

-	-

### 76.1.4 vrrp ipv6

VRRP IPv6 VRRP IPv6 no

**vrrp group ipv6 ipv6-address**

**no vrrp group ipv6 ipv6-address**

<i>group</i>	VRRP
<i>ipv6-address</i>	IPv6

IPv6 VRRP

IPv6 VRRP IPv4 VRRP 1 255 VRRP IPv4 IPv6  
 IPv4 IPv4 IPv6

```

FastEthernet 0/0 IPv6 VRRP
VRRP 1 IPv6 FE80::1 2001::1
interface FastEthernet 0/0
no switchport
ipv6 enable
ip6 address 2001::2/64
vrrp 1 ipv6 FE80::1
vrrp 1 ipv6 2001::1
    
```

Ruijie# <b>show vrrp [ brief   group ]</b>	VRRP

RGOS10.4	RGOS10.4

### 76.1.5 vrrp preempt

VRRP

no

VRRP

**vrrp group preempt [delay seconds]**

**no vrrp group preempt [delay]**

<i>group</i>	VRRP
<b>delay seconds</b>	Master 0

VRRP

VRRP

VRRP

**vrrp group priority level**

**no vrrp group priority**

<i>group</i>			VRRP
<i>level</i>	<del>4</del>	<i>level</i>	

VRRP VRRP  
VRR1/C2\_0 1 Tf0 T006 Tc 7.14 60 Td[<0<2FA64>54</TT0 1 Tf0 Tc 2.01.988Td

```

VRRP
VRRP
VRRP
Master
Master
VRRP

```

```

VRRP 1
vrrp 1 timers learn

```

Ruijie(config-if)# <b>vrrp group ip</b> <i>ipaddress</i> <b>[secondary]</b>	VRRP IP
Ruijie(config-if)# <b>vrrp group timers advertise</b> <b>[msec]</b> <i>interval</i>	VRRP

-	-

### 76.1.9 vrrp track

```

VRRP
vrrp group track interface-type number

```

IP address

<i>ipv4-address</i>	IPv4	bfd
<i>ipv6-global-address</i>	IPv6	
<i>ipv6-linklocal-address</i>	IPv6	
<i>interval-value</i>	3	
<i>timeout-value</i>		1
<i>priority</i>		VRRP 10

IPv4                      VRRP                      VRRP  
                                 IPv6

( Routed Port    SVI    Loopback    Tunnel    )  
                         IPv4                                      IPv4                      IPv6  
                         IPv6

```

1                      VRRP    1    Routed Port Fa1/1                      Fa1/1
VRRP                      30    Fa1/1                      VRRP    1
vrrp 1 track FastEthernet 1/1 30
2                      1000::1
vrrp 1 track 1000::1
3                      VLAN 1                      FE80::1

vrrp 1 track FE80::1 vlan 1
#           VRRP           BFD                      192.168.1.3
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#interface FastEthernet 0/1
Ruijie(config-if)#no switchport
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
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 1f8 0 Td(vrA 3)Tj/TT1 1 T
```

```

Ruijie# debug vrrp
Ruijie#
VRRP: Grp 1 Advertisement priority 120, ipaddr 192.168.201.213
VRRP: Grp 1 Event - Advert higher or equal priority
%VRRP-6-STATECHANGE: FastEthernet 0/0 Grp 1 state Master -> Backup
VRRP: Grp 1 Advertisement from 192.168.201.213 has invalid virtual
address 192.168.1.1
%VRRP-6-STATECHANGE: FastEthernet 0/0 Grp 1 state Backup -> Master
Ruijie#
    
```

Ruijie# debug vrrp errors	VRRP
Ruijie# debug vrrp events	VRRP
Ruijie# debug vrrp state	VRRP

-	-

### 76.2.2 debug vrrp errors

VRRP no

**debug vrrp errors**

**no debug vrrp errors**

-	-

VRRP

VRRP

Ruijie# debug vrrp errors

```
Ruijie#  
VRRP: Grp 1 Advertisement from 192.168.201.213 has invalid virtual  
address 192.168.1.1  
VRRP: Grp 1 Advertisement from 192.168.201.213 has invalid virtual  
address 192.168.1.1  
VRRP: Grp 1 Advertisement from 192.168.201.213 has invalid virtual  
address 192.168.1.1
```

-	-

-	-

### 76.2.3 debug vrrp events

VRRP no

debug vrrp events vrrp > jgShQ tAf6EUEBA-RT8Nd.G6d24BA-64CQ1@

-	-

-	-

### 76.2.4 debug vrrp packets

-	-

VRRP

```

1                                VRRP                                VRRP  1

Ruijie# debug vrrp packets
Ruijie#
VRRP: Grp 2 sending Advertisement checksum DD4D
VRRP: Grp 2 sending Advertisement checksum DD4D
VRRP: Grp 2 sending Advertisement checksum DD4D
2                                ,                                VRRP                                VRRP  1
IP                                VRRP  1

Ruijie# debug vrrp packets
Ruijie#
VRRP: Grp 1 Advertisement priority 120, ipaddr 192.168.201.213
VRRP: Grp 1 Advertisement priority 120, ipaddr 192.168.201.213
    
```

VRRP: Grp 1 Advertisement priority 120, ipaddr 192.168.201.213

	-	-

	-	-

### 76.2.5 debug vrrp state

VRRP no

**debug vrrp state**

**no debug vrrp state**

	-	-

```
Ruijie#
```

-	-

-	-

## 76.3

### 76.3.1 show vrrp

```
VRRP
show vrrp [ brief | group ]
```

<b>brief</b>	VRRP
<i>group</i>	VRRP

```
VRRP
1 VRRP
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 Router 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 Router is 192.168.201.217 (local), priority is 120
Master Advertisement interval is 3 sec
Master Down interval is 9 sec

```

## 2 VRRP

Ruijie# **show vrrp brief**

```

Interface  Grp Pri Time  Own Pre State  Master addr  Group addr
FastEthernet 0/0  1  100  -   -   P  Backup  192.168.201.213
192.168.201.1
FastEthernet 0/0  2  120  -   -   P  Master  192.168.201.217
192.168.201.2

```

Ruijie(config-if)# <b>vrrp group ip ipaddress</b> [ <b>secondary</b> ]	VRRP IP

	<i>type</i>	
	<i>number</i>	
	<b>brief</b>	

|

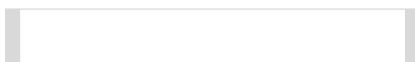
|

|

E1/0

	Ruijie(config-if)# <b>vrrp group ip ip address</b> <b>[ secondary ]</b>	VRRP IP
--	--	---------

|



# 77 BFD

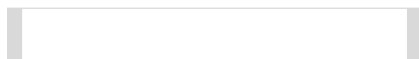
## 77.1

### 77.1.1 bfd

**bfd** BFD **no** BFD

**bfd interval** *milliseconds* **min\_rx** *milliseconds* **multiplier** *multiplier-value*

**no bfd interval** *milliseconds* **min\_rx** *milliseconds* **multiplier** *multiplier-value*





<b>bfd</b>	BFD
<b>ip ospf bfd</b>	OSPF BFD
<b>ip rip bfd</b>	RIP BFD



<b>10.3(4b3)</b>	

### 77.1.3 bfd cpp

	<b>bfd cpp</b>	BFD	<b>no</b>	BFD
<b>bfd cpp</b>				
<b>no bfd cpp</b>				



BFD



BFD

BFD  
BFD

BFD

BFD

BFD

BFD

```
# slow-timer 14000
Ruijie(config)# bfd slow-timer 14000
```

<b>bfd echo</b>	BFD Echo

<b>10.3(4b3)</b>	

### 77.1.6 ip ospf bfd

```
ip ospf bfd OSPF BFD disable
no
```

**ip ospf bfd [disable]**

**no ip ospf bfd**

<b>disable</b>	fl t CGD 6 8

```
X]gUV Y OSPF 6 8
```

```
OSPF BFD
OSPF BFD
[no] bfd all-interfaces
```

**ip ospf bfd [disable]**

OSPF      BFD

```
# Routed Port      FastEthernet 0/2      OSPF      BFD
Ruijie(config)# interface FastEthernet 0/2
Ruijie(config-if)# no switchport
Ruijie(config-if)# ip ospf bfd disable
```

<b>bfd</b>	BFD
<b>bfd all-interfaces</b>	BFD

<b>10.3(4b3)</b>	

**77.1.7 ip rip bfd**

**ip rip bfd**      RIP      BFD      **disable**  
**no**

**ip rip bfd [disable]**

**no ip rip bfd**

<b>disable</b>	fl t      F=D      6 8

GmAbG!0Tg ,0t-9 [

```

RIP          BFD
              [no] bfd all-interfaces
            BFD
              ip rip bfd [disable]
RIP          BFD
    
```

```

# Routed Port   FastEthernet 0/2          RIP      BFD
Ruijie(config)# interface FastEthernet 0/2
Ruijie(config-if)# no switchport
Ruijie(config-if)# ip rip bfd disable
    
```

<b>bfd</b>	BFD
<b>bfd all-interfaces</b>	BFD

<b>10.3(4b3)</b>	

### 77.1.8 ip route static bfd

```

ip route static bfd          BFD          no
    
```

```

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]
    
```

<b>vrf vrf-name</b>	( ) VRF

<i>interface-type interface-number</i>	
<i>gateway</i>	IP BFD IP BFD
<i>gci fW ]d! UXXfYgg</i>	( ) BFD IP , IP

6 8

<b>r</b>	6 8
----------	-----

```
# BFD BFD 172.16.0.2
Ruijie(config)# interface FastEthernet 0/1
Ruijie(config-if)# no switchport
Ruijie(config-if)# ip address 172.16.0.1 255.255.255.0
Ruijie(config-if)# bfd interval 50 min_rx 50 multiplier 3
Ruijie(config-if)# ip route static bfd FastEthernet 0/1 172.16.0.2
Ruijie(config-if)# ip route 10.0.0.0 255.0.0.0 FastEthernet 0/1
172.16.0.2
```

<b>bfd</b>	BFD
------------	-----

<b>10.3(4b3)</b>	
------------------	--

### 77.1.9 ipv6 route static bfd

**ipv6 route static bfd**

BFD

**no**

**ipv6 route static bfd** [*vrf vrf-name*] *interface-type interface-number gateway* [**source** *ipv6-address*]

**no ipv6 route static bfd** [*vrf vrf-name*] *interface-type interface-number gateway* [**source** *ipv6-address*]

<b>vrf</b> <i>vrf-name</i>	( )	VRF
----------------------------	-----	-----



RGOS10.4E	

### 77.1.10 neighbor fall-over bfd

```
router address-family , neighbor fall-over BGP BFD
      BGP , no
```

**neighbor ip-address fall-over bfd**

**no neighbor ip-address fall-over bfd**

<i>ip-address</i>	BGP



6 D 6 8



<b>r</b>	=D 6 8



```
# BGP BFD BFD 172.16.0.2
Ruijie(config)# router bgp 44000
Ruijie(config-router)# bgp log-neighbors-changes
Ruijie(config-router)# neighbor 172.16.0.2 remote-as 45000
Ruijie(config-router)# neighbor 172.16.0.2 fall-over bfd
Ruijie(config-router)# end
```







```
show bfd neighbors [vrf vrf-name] [ipv4 ip-address [details]] ipv6 ip-address
[details] | client {bgp|ospf|rip|vrrp|static-route} [ipv4 ip-address [details] | ipv6
ip-address [details]] details]]
```

Received MinRxInt: 50000, Received Multiplier: 3  
 Holdown (hits): 600(22), Hello (hits): 200(84453)  
 Rx Count: 49824, Rx Interval (ms) min/max/avg: 208/440/332  
 Tx Count: 84488, Tx Interval (ms) min/max/avg: 152/248/196

**Registered protocols: BGP**

Uptime: 02:18:49

**Last packet: Version: 1** - Diagnostic: 0  
 I Hear You bit: 1 - Demand bit: 0  
 Poll bit: 0 - Final bit: 0  
 Multiplier: 3 - Length: 24  
 My Discr.: 2 - Your Discr.: 1  
 Min tx interval: 50000 - Min rx interval: 50000  
 Min Echo interval: 0

OurAddr	=D .
NeighAddr	=D .
LD/RD	.

RH

Rx Count	6 8
Rx Interval (ms) min/max/avg	
Tx Count	6 8
Tx Interval (ms) min/max/avg	
Registered protocols	
Uptime	ID
Last packet	6 8


<b>10.3(4b3)</b>	

# 78 RERP

## 78.1

### 78.1.1 rerp enable

RERP

rerp enable

no rerp enable



**rerp fail- interval *num***

**no rerp fail- interval**



	2s
	Ruijie(config)# <b>rerp hello-interval 2</b>
	<b>rerp fail- interval</b>
	-
	-

### 78.1.4 rerp region

	RERP	RERP
	<b>rerp region num</b>	
	<b>no rerp region num</b>	
	<i>num</i>	, 1-64
	Ruijie# <b>rerp region 1</b>	
	<b>rerp enable</b>	RERP



## 78.1.6 edge-ring

RERP ring

**edge-ring** *num* **role** [primary-edge|secondary-edge] **ctrl-vlan** *vid* **shared-port** **interface** *interface-id* **sub-port** **interface** *interface-id*

**no ring** *num*

**major-ring num edge-ring-vlan vid**

<i>num</i>	id
<i>vid</i>	vlan

RERP

major-ring

```

Ruijie# rerp region 1
Ruijie(erp)# major-ring 1 edge-ring-vlan 100
    
```

RERP G c , b < " A @ > e

-	-

EXEC

```

:
Ruijie# sh rerp statistics region 1 ring 1
The statistics for region 1 ring 1 GigabitEthernet 0/4
TX hello packets      23, RX hello packets      0
TX edge-hello packets 0, RX edge-hello packets 0
TX flush packets      0, RX flush packets      0
TX down packets       0, RX down packets       0
TX up packets         0, RX up packets         0
TX major fail packets 0, RX major fail packets 0
TX major resume packets 0, RX major resume packets 0
TX sub complete packets 0, RX sub complete packets 0
The statistics for region 1 ring 1 GigabitEthernet 0/5
TX hello packets      23, RX hello packets      0
TX edge-hello packets 0, RX edge-hello packets 0
TX flush packets      0, RX flush packets      0
TX down packets       0, RX down packets       0
TX up packets         0, RX up packets         0
TX major fail packets 0, RX major fail packets 0
TX major resume packets 0, RX major resume packets 0
TX sub complete packets 0, RX sub complete packets 0
```





EXEC

┌

---

┌

---

┌

---

┌

---

-	-

---

┌

---

┌

---

-	-

---

# 79 REUP

## 79.1

### 79.1.1 mac-address-table move update receive

REUP      MAC

**mac-address-table move update receive**

**no mac-address-table move update receive**

	-	-

|

**disable**

|

|

MAC

MAC

MAC

|

MAC

Ruijie(config)# **mac-address-table move update receive**

|

<b>mac-address-table move update transit</b>	MAC

|

|

--	--

---

	-	-
--	---	---

---

**79.1.2 mac-address-table move update transit**



|  
|

|  
|

fa 0/1                      fa 0/2

Ruijie(config)# **interface fa 0/1**

Ruijie(config-if)# **switchport backup interface fa 0/2**

|



```
Ruijie(config)# interface fa 0/1
Ruijie(config-if)# switchport backup interface fa 0/2 preemption
mode bandwitdh
Ruijie(config-if)# switchport backup interface fa 0/2
preemption delay 40
```

---

```
show interface switchport backup
```



L

L

-	-

# 80 RLDP

## 80.1

### 80.1.1 rldp detect-interval

RLDP

**rldp detect-interval** *interval*

**no rldp detect-interval**

	<i>interval</i>	2-15

3

**rldp detect-max** *num*

**no rldp detect-max**

<i>num</i>	,	2-10

2

5  
Ruijie(config)# **rldp detect-max 5**

<b>rldp detect-interval</b>	

-	-

### 80.1.3 rldp enable

RLDP

**rldp enable**

**no rldp enable**


	RLDP	RLDP
	Ruijie(config)# <b>rldp enable</b>	
	<b>rldp port</b>	RLDP
	-	-

### 80.1.4 rldp port

rldp

**rldp port { unidirection-detect | bidirection-detect | loop-detect } { warning | shutdown-svi | shutdown-port | block }**

**no rldp port { unidirection-detect | bidirection-detect | loop-detect }**

<b>unidirection-detect</b>	
<b>bidirection-detect</b>	
<b>loop-detect</b>	
<b>warning</b>	
<b>shutdown-svi</b>	shutdown      svi
<b>shutdown-port</b>	shutdown
<b>block</b>	

```
Ruijie(config)# interface fas 0/1  
Ruijie(config-if)# rldp port loop-detect block
```

<b>rldp enable</b>	rldp

## 80.2

### 80.2.1 show rldp

rldp

**show rldp [interface *interface-id*]**

	<i>Interface-id</i>	

--	--

	EXEC
--	------

--	--

--	--

	-	-

--	--

	-	-

### 80.2.2 debug rldp

rldp

no

**debug rldp [packet | event | error]**

**undebug rldp [packet | event | error]**

	packet	rldp
	event	
	error	

└──

└── EXEC

└──

└──

└──

-	-

└──

└──

-	-

# 81 TPP

## 81.1

TPP

|

|

tpp

|

Ruijie# **show tpp**

|

<b>topology guard</b>	

|

|

-	-

# 82 VSU

## 82.1

### 82.1.1 dual-active detection bfd

VSU                      dual-active detection bfd      BFD  
 no                      BFD

**dual-active detection bfd**

**no dual-active detection bfd**


BFD

config-vs-domain

```
# BFD
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# dual-active detection bfd

# BFD
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# no dual-active detection bfd
```

<b>dual-active pair interface</b>		BFD
<b>dual-active exclude interface</b>		
<b>show switch virtual dual-active</b>		



┌

┌

10.4	

### 82.1.3 dual-active exclude interface

VSU

dual-active exclude interface no  
 dual-active exclude interface

**dual-active exclude interface** *interface-name*

**no dual-active exclude interface** *interface-name*

┌

<i>interface-name</i>	

┌

┌

config-vs-domain

┌

VSL

┌

```
#          Gi 1/1/3
Ruijie(config)# interface GigabitEthernet 1/1/3
Ruijie(config-if)# no switchport
Ruijie(config-if)# ip address 3.1.1.1 255.255.255.0
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# dual-active exclude interface
GigabitEthernet 1/1/3
```

┌

<b>dual-active detection bfd</b>	BFD
<b>dual-active pair interface</b>	IP BFD



```
interface GigabitEthernet 2/1/1 bfd
```

<b>dual-active detection bfd</b>	BFD
<b>dual-active exclude interface</b>	
<b>show switch virtual dual-active</b>	

10.4	

### 82.1.5 switch

```
switch num VSU no
```

```
switch num
```

```
no switch
```

num	VSU 1 2

```
1
```

```
config-vs-domain
```

```
slot/port switch/slot/port VSU switch
VSU
```

```
# 1 VSU 2
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# switch 2
```

<b>switch virtual domain</b>	VSU
<b>switch</b> <i>number</i> <b>priority</b> <i>priority_num</i>	VSU
<b>show switch virtual</b>	

<b>“e.text”</b>	<b>Tf 0 Tc 0</b>
10.4	

### 82.1.6 switch convert mode

switch convert mode {virtual | standalone}



```

#          Gi 1/1/1  Gi 2/1/1  DADP
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# dual-active detection dadp trust
interface GigabitEthernet 1/1/1
Ruijie(config-vs-domain)# dual-active detection dadp trust
interface GigabitEthernet 2/1/1

#          1          1          200

Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# switch 1
Ruijie(config-vs-domain)# switch 1 priority 200
Ruijie(config-vs-domain)# end
Ruijie# switch convert mode virtual
    
```

<b>switch num</b>	VSU
<b>switch virtual domain</b>	VSU
<b>switch number priority</b> <i>priority_num</i>	VSU
<b>show switch virtual</b>	

<b>10.4</b>	

### 82.1.7 switch num priority

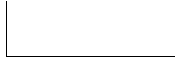
switch num priority VSU no

**switch num priority** *priority\_num*

**no switch num priority**

<i>num</i>	VSU

*priority\_num*



```
Ruijie#show switch id
```

```
Switch ID is 1
```

<b>show switch virtual</b>	

<b>10.4</b>	

### 82.2.2 show switch virtual

**show switch virtual**


```
# VSU
```

```
Ruijie# show switch virtual
```

```
Switch mode : Virtual Switch
```

```
Virtual switch domain number : 1
```

```
Local switch number : 1
```

```
Local switch operational role : Active
```

```
Peer switch number : 2
```

```
Peer switch operational role : Standby
```

--	--



```

# DADP
Ruijie# show switch virtual dual-active dadp
DADP version: 1.0
Trusted interfaces configured:
Gi 1/1/1
Gi 1/2/1
Gi 2/1/1
Gi 2/2/1

# IP BFD
Ruijie# show switch virtual dual-active bfd
BFD dual-active detection enabled: Yes
BFD dual-active interface pairs configured:
Gi 1/1/2
Gi 2/1/2

```

<b>dual-active detection dadp</b> <b>trust interface</b> <i>interface-name</i>	858D
<b>dual-active detection bfd</b>	6 8
<b>dual-active pair interface</b>	6 8
<b>dual-active exclude interface</b>	

10.4	

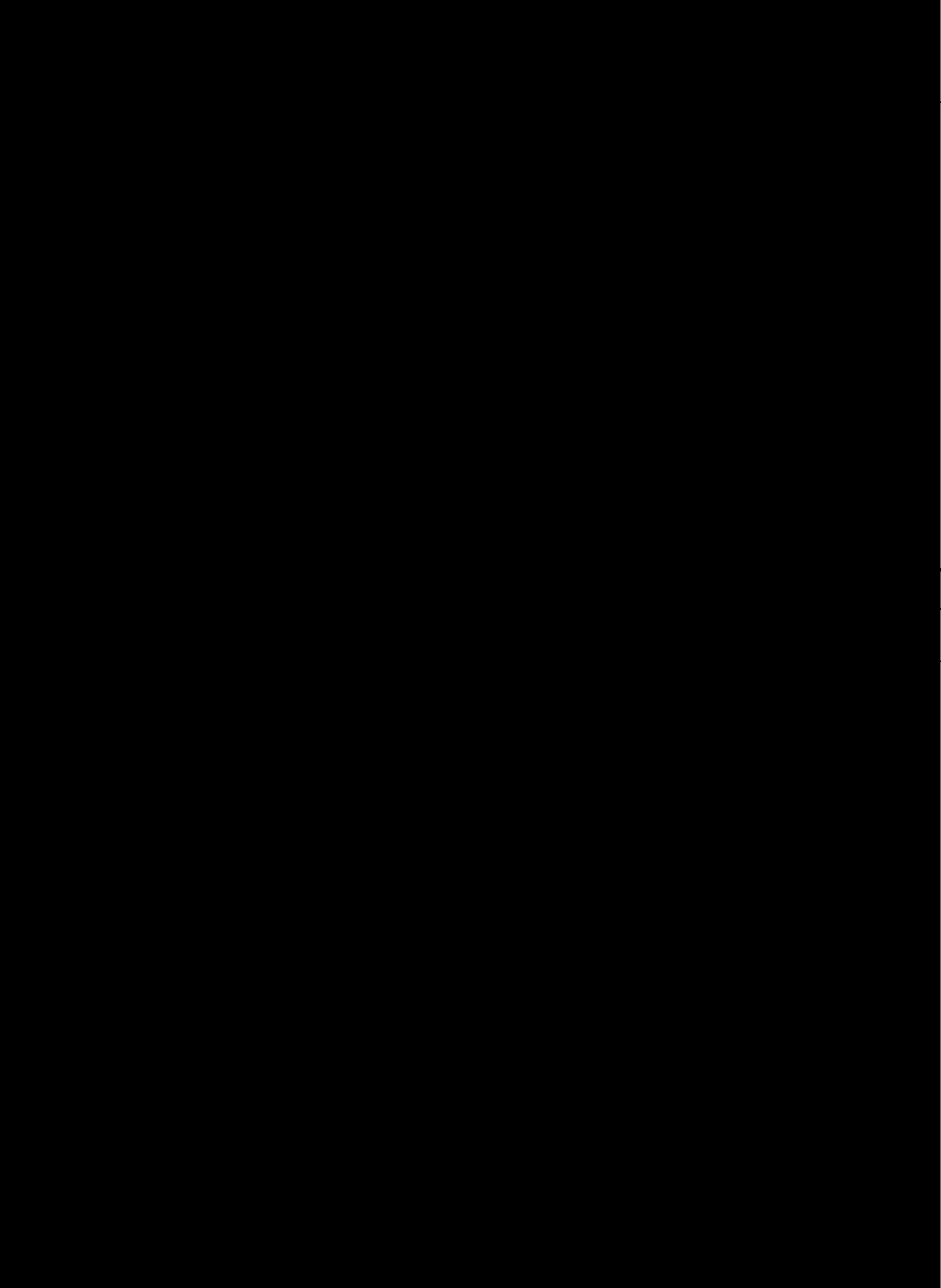
## 82.2.4 show switch virtual link

VSL

**show switch virtual link [port]**

	TBNötAkÁ!f5QyÆ
--	----------------





\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_







---

redundancy reload peer

Ruijie# **redundancy reload peer**  
Reload peer? [confirm] y  
Preparing to reload peer

	EA
reload	

-

-	-

### 83.1.5 redundancy forceswitch

privileged EXEC

Slave

switchover

**redundancy forceswitch**



	reload	

-

	-	-

### 83.1.6 switchover timeout

redundancy

switchover timeout

no

switchover

**switchover timeout** *timeout-period*

**no switchover timeout**

	<i>timeout-period</i>	160 25,000

6000

---

|

-

|

--	--

-	-
---	---

## 83.2

### 83.2.1 show redundancy auto-sync

```
user EXEC privileged EXEC show redundancy auto-sync
redundancy ( auto-sync
)
```

**show redundancy auto-sync**

--	--

---

## 83.2.2 show redundancy state

user EXEC    privileged EXEC                    show redundancy  
redundancy

### show redundancy state

<b>states</b>	Master    Slave

|

|

|

```
Ruijie> enable
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie# show redundancy states
Redundancy stats:
    my state = 19 -Active
    peer state = 37 -Standby Hot
...
```

|

---

	-	-

|

|

|

```
Ruijie> enable
Ruijie# show redundancy switchover
redundancy switch timeout is : 4000 ms.
...
```

	-	-

|

---

# 84

## 84.1

### 84.1.1 cd

`cd [filesystem:][directory]`

	<i>filesystem</i>	
	<i>directory</i>	

flash

cd / pwd

1 usb0  
Ruijie# **cd** usb0:/

	pwd	


## 84.1.2 copy

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

<i>source-url</i>	URL
<i>destination-url</i>	URL

copy

URL

<b>flash:</b>	flash URL flash flash
<b>tftp:</b>	TFTP
<b>xmodem:</b>	xmodem
<b>slave:</b>	flash
<b>usb0:</b>	usb
<b>usb1:</b>	usb

r

URL

1 tftp

Ruijie#**copy** tftp://192.168.201.54/rgos.bin flash:/

2 tftp

Ruijie#**copy** flash:/rgos.bin tftp://192.168.201.54/rgos.bin

```

3      xmodem
Ruijie# copy xmodem: flash:/config.text
4      U
Ruijie#copy flash:/config.text usb0:/config.text
5
Ruijie#copy flash:/config.text slave:/config.text

```

<b>del</b>	
<b>rename</b>	
<b>dir</b>	


### 84.1.3 delete

#### **delete url**

<i>url</i>	url

```

url                                URL    flash:/
usb0:/  usb1:/ slave:/            url
_____
r                                .
_____

```

```

1      tmpfile

```

```
Ruijie# delete tmpfile
2          rgos.bin.bak
Ruijie# delete slave:/rgos.bin.bak
```

<b>copy</b>	
<b>dir</b>	


#### 84.1.4 dir

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

<i>filesystem</i>	"/."
<i>directory</i>	

```
r .
```

```
1
Ruijie# dir slave0:/
Directory of slave:/
```

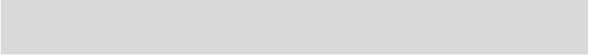
---

```
Mode Link      Size      MTime Name
-----
1 10838016 2008-01-01 00:01:53 rgos.bin
1      399 2008-01-01 00:01:37 config.text
1      399 2008-01-01 00:17:58 cfg.txt
-----

3 Files (Total size 11210782 Bytes), 0 Directories.
Total 33030144 bytes (31MB) in this device, 20463616 bytes (19MB)
available.
```

```
2
Ruijie# dir
Directory of temp:/
Mode Link      Size      MTime Name
-----
1      399 2008-01-01 00:17:58 a.dat
-----

1 Files (Total size 399 Bytes), 0 Directories.
Total 33030144 bytes (31MB) in this device, 20463616 bytes (19MB)
available.
```



---

--	--

---

---

---

( )

---

```
r      flash:/backup/temp      flash:/backup
      flash:/bakcup
      flash:/backup/temp
```

---

```
1      test
Ruijie# mkdir
```

```
Ruijie# 1
```

---

L

---





---

--	--	--

---

# 85

## 85.1 CPU

### 85.1.1 cpu-log

CPU , **cpu-log**  
**cpu-log** *log-limit low\_num high\_num*

	-	-
	-	-

### 85.1.2 show cpu

	CPU	show cpu
show cpu		
	-	-

	CPU	5	1	5
	CPU	5	1	5
	CPU			

```

show cpu
Ruijie# show cpu
=====
      CPU Using Rate Information
CPU utilization in five seconds: 25%
CPU utilization in one minute  : 20%
CPU utilization in five minutes: 10%
NO   5Sec  1Min  5Min  Process
0    0%   0%   0%   LISR INT
1    7%   2%   1%   HISR INT
2    0%   0%   0%   ktimer
3    0%   0%   0%   atimer
4    0%   0%   0%   printk_task

```

---

5	0%	0%	0%	waitqueue_process
6	0%	0%	0%	tasklet_task
7	0%	0%	0%	kevents
8	0%	0%	0%	snmpd
9	0%	0%	0%	snmp_trapd
10	0%	0%	0%	mtdblock
11	0%	0%	0%	gc_task
12	0%	0%	0%	Context
13	0%	0%	0%	kswapd
14	0%	0%	0%	bdflush
15	0%	0%	0%	kupdate
16	0%	3%	1%	ll_mt
17	0%	0%	0%	ll main process
18	0%	0%	0%	bridge_relay
19	0%	0%	0%	dlx_task
20	0%	0%	0%	secu_policy_task
21	0%	0%	0%	dhcpa_task
22	0%	0%	0%	dhcpsnp_task
23	0%	0%	0%	igmp_snp
24	0%	0%	0%	mstp_event
25	0%	0%	0%	GVRP_EVENT
26	0%	0%	0%	rldp_task
27	0%	2%	1%	rerp_task
28	0%	0%	0%	reup_event_handler
29	0%	0%	0%	tpp_task
30	0%	0%	0%	ip6timer
31	0%	0%	0%	rtadvd
32	0%	0%	0%	tnet6
33	2%	0%	0%	tnet
34	0%	0%	0%	Tarptime
35	0%	0%	0%	gra_arp
36	0%	0%	0%	Ttcptimer
37	8%	1%	0%	ef_res
38	0%	0%	0%	ef_rcv_msg
39	0%	0%	0%	ef_inconsistent_daemon
4t_daemon				
4t_daemon				
4t_dvmp_snp	17	0%	39	0%

---

44	0%	0%	0%	ef6_inconsistent_daemon
45	0%	0%	0%	imid
46	0%	0%	0%	nsmd
47	0%	0%	0%	ripd
48	0%	0%	0%	ripngd
49	0%	0%	0%	ospfd
50	0%	0%	0%	ospf6d
51	0%	0%	0%	bgpd
52	0%	0%	0%	pimd
53	0%	0%	0%	pim6d
54	0%	0%	0%	pdmd
55	0%	0%	0%	dvmrpd
56	0%	0%	0%	vty_connect
57	0%	0%	0%	aaa_task
58	0%	0%	0%	Tlogtrap
59	0%	0%	0%	dhcp6c
60	0%	0%	0%	sntp_recv_task
61	0%	0%	0%	ntp_task
62	0%	0%	0%	sla_daemon
63	0%	3%	1%	track_daemon
64	0%	0%	0%	pbr_guard
65	0%	0%	0%	vrrpd
66	0%	0%	0%	psnpd
67	0%	0%	0%	igsnpd
68	0%	0%	0%	coa_recv
69	0%	0%	0%	co_oper
70	0%	0%	0%	co_mac
71	0%	0%	0%	radius_task
72	0%	0%	0%	tac+_acct_task
73	0%	0%	0%	tac+_task
74	0%	0%	0%	dhcpd_task
75	0%	0%	0%	dhcps_task
76	0%	0%	0%	dhcpping_task
77	0%	0%	0%	dhcpc_task
78	0%	0%	0%	uart_debug_file_task
79	0%	0%	0%	ssp_init_task
80	0%	0%	0%	rl_listen
81	0%	0%	0%	ikl_msg_operate_thread
82	0%	0%	0%	bcmDPC

83	0%	0%	0%	bcmL2X.0
84	3%	3%	3%	bcmL2X.0
85	0%	0%	0%	bcmCNTR.0
86	0%	0%	0%	bcmTX
87	0%	0%	0%	bcmXGS3AsyncTX
88	0%	2%	1%	bcmLINK.0
89	0%	0%	0%	bcmRX
90	0%	0%	0%	mngpkt_rcv_thread
91	0%	0%	0%	mngpkt_recycle_thread
92	0%	0%	0%	stack_task
93	0%	0%	0%	stack_disc_task
94	0%	0%	0%	redun_sync_task
95	0%	0%	0%	conf_dispatch_task
96	0%	0%	0%	devprob_task
97	0%	0%	0%	rdp_snd_thread
98	0%	0%	0%	rdp_rcv_thread
99	0%	0%	0%	rdp_slot_change_thread
100	4%	2%	1%	datapkt_rcv_thread
101	0%	0%	0%	keepalive_link_notify
102	0%	0%	0%	rerp_msg_rcv_thread
103	0%	0%	0%	ip_scan_guard_task
104	0%	0%	0%	ssp_ipmc_hit_task
105	0%	0%	0%	ssp_ipmc_trap_task
106	0%	0%	0%	hw_err_snd_task
107	0%	0%	0%	rerp_packet_send_task
108	0%	0%	0%	idle_vlan_proc_thread
109	0%	0%	0%	cmic_pause_detect
110	1%	1%	1%	stat_get_and_send
111	0%	1%	0%	rl_con
112	75%	80%	90%	idle

	CPU	LISR	HISR	CPU
		3	5	1 5
<b>5Sec</b>				<b>5 CPU</b>
<b>1Min</b>				<b>1 CPU</b>
<b>5Min</b>				<b>5 CPU</b>



---

bgp

---

1 BGP  
Ruijie(config)# **memory-lack exit-policy bgp**

<b>show memory</b>	

-

10.3(4b3)	

## 85.2.2 show memory

**show memory**

**show memory**

-	-

┌

---

┌

---

---



---

# 86

## 86.1

### 86.1.1 clear logging

clear logging

	-	-

|

|

|

|

Ruijie# clear logging

ADP16AD...79B...4SP)E 18@

---

**more flash:filename**

<i>Filename</i>	

└──

└──

!‡96X‡C€d€)q‡9..."— yX ð@ ""EèErìÁBtq , =æ

FLASH

"//f2/" "//f3/

ß»-/ ó\$P ²³ mÂ ñ €w- ü = µ³\$Ê È á,€ ™v

<i>levell</i>	0 7
---------------	-----

4k Bytes  
7

**show logging**

clear logging  
FLASH

Syslog Server

8

Emergencies	0	
Alerts	1	
Critical	2	
Errors	3	
warnings	4	
Notifications	5	
informational	6	
Debugging	7	

0

6 6 10000

Ruijie(config)# **logging buffered 10000 6**

<b>logging on</b>	
<b>show logging</b>	
<b>clear logging</b>	

	-	-

### 86.1.4 logging console

no

**logging console level**

**no logging console**

		0 7
<i>level</i>		1

Debugging (7)

**show logging**

6  
Ruijie(config)# **logging console informational**

	<b>logging on</b>	
	<b>show logging</b>	

--	--	--

---

## 86.1.5 logging count

no

**logging count**

**no logging count**

	-	-

|

|

|

**no logging count**

|

Ruijie(config)# **logging count**

	<b>show logging count</b>	
	<b>show logging</b>	

|

	-	-

<i>facility-type</i>	Syslog
----------------------	--------

Local7(23)

2 Syslog

Numerical Code	Facility
0	kernel messages
1	user-level messages
2	mail system
3	system daemons
4	security/authorization messages
5	messages generated internally by syslogd
6	line printer subsystem
7	network news subsystem
8	UUCP subsystem
9	clock daemon
10	security/authorization messages
11	FTP daemon
12	NTP subsystem
13	log audit
14	log alert
15	clock daemon
16	local use 0 (local0)
17	local use 1 (local1)
18	local use 2 (local2)
19	local use 3 (local3)
20	local use 4 (local4)
21	local use 5 (local5)
22	local use 6 (local6)
23	local use 7 (local7)

(local7) 23

Syslog kernel

Ruijie(config)# logging facility kern

logging console	

-	-

### 86.1.7 logging file flash

FLASH

FLASH

no

logging file flash:filename [max-file-size] [level]

no logging file

Filename	txt
max-file-size	128K 6M bytes
level	FLASH 6
	1

FLASH

Syslog Server

FLASH

txt

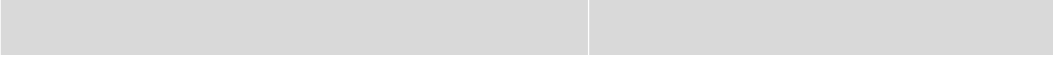


---

VTY

6

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



<b>logging</b>	Syslog Server
<b>logging file flash:</b>	FLASH
<b>logging console</b>	
<b>logging monitor</b>	VTY ( telnet )
<b>logging trap</b>	Syslog Server

-	-

### 86.1.10 logging rate-limit

no

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

**no logging rate-limit**

<i>number</i>	1—10000
<i>all</i>	0—7
<i>console</i>	
<i>except</i>	error(3) error
<i>severity</i>	0—7

---

debug 10 warning

Ruijie(config)#**logging rate-limit all 10 except warnings**

<b>show logging count</b>	
<b>show logging</b>	



```

2          IPV6      AAAA:BBBB::FFFF
Ruijie(config)# logging server ipv6 AAAA:BBBB::FFFF

```

<b>logging on</b>	
<b>show logging</b>	
<b>logging trap</b>	syslog server

-	-

### 86.1.12 logging source ip| ipv6

no

**logging source** {ip *ip-address* | **ipv6** *ipv6-address*}

**no logging source** {ip | ipv6}

<i>ip-address</i>	IPV4



	-	-
--	---	---

### 86.1.14 logging synchronous

no

**logging synchronous**

**no logging synchronous**

	-	-

┌  
└  
┌  
└  
┌

```
Ruijie(config)#line console 0
Ruijie(config-line)#logging synchronous
                        UP-DOWN
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      //
```

	<b>show running-config</b>	

┌

	-	-

### 86.1.15 logging trap

Syslog Server

no

Syslog Server

**logging trap level**

**no logging trap**

<i>level</i>	1

Informational(6)

Server Syslog Server logging Syslog  
 logging trap  
**show logging**

6 202.101.11.22 Syslog Server  
 Ruijie(config)# **logging 202.101.11.22**  
 Ruijie(config)# **logging trap informational**

<b>logging on</b>	
<b>logging</b>	Syslog Server
<b>show logging</b>	

-	-

### 86.1.16 service sequence-numbers

no

---

**service sequence-numbers**

**no service sequence-numbers**

	-	-

|

|

|

1

|

Ruijie(config)# **service sequence-numbers**

	<b>logging on</b>	
	<b>service timestamps</b>	

|

	-	-

### 86.1.17 service sysname

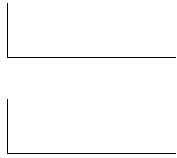
no

**service sysname**

**no service sysname**

	-	-

|



```
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)#
```

<i>msec</i>	Jul 27 16:53:07.299
<i>year</i>	2007 Jul 27 16:53:07

RTC

Uptime  
Datetime

Log            Debug            Datetime

```
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
```

<b>logging on</b>	
<b>service sequence-numbers</b>	

-	-

### 86.1.19 terminal monitor

```

VTY
no
terminal monitor
terminal no monitor

```



---

### show logging

```
Ruijie# show logging
Syslog logging: enabled
Console logging: level debugging, 4 messages logged
Monitor logging: level informational, 0 messages logged
Buffer logging: level debugging, 6 messages logged
Timestamp debug messages: datetime
Timestamp log messages: disabled
Sequence log messages: enable
Trap logging: level debugging, 2 message lines logged,0 reserved,0
fail
logging to 202.101.11.22
logging to 192.168.200.112
Log Buffer (Total 4096 Bytes) : have written 680
00001 2004-11-17 10:20:59 Ruijie: %7:%LINK CHANGED: Interface
FastEthernet 0/0, changed state to up
00002 2004-11-17 10:20:59 Ruijie: %7:%LINE PROTOCOL CHANGE:
Interface FastEthernet 0/0, changed state to UP
00003 2004-11-17 10:57:18 Ruijie: %7:%LINK CHANGED: Interface
FastEthernet 0/1, changed state to administratively down
00004 2004-11-17 10:57:21 Ruijie: %7:%LINK CHANGED: Interface
FastEthernet 0/1, changed state to down
00005 2004-11-17 10:57:41 Ruijie: %7:%LINK CHANGED: Interface
FastEthernet 0/1, changed state to administratively down
00006 2004-11-17 10:57:43 Ruijie: %7:%LINK CHANGED: Interface
FastEthernet 0/1, changed state to down
```

Syslog logging	<b>enabled, disabled</b>
Console logging	
Monitor logging	VTY
Buffer logging	
Timestamp debug messages	Debug
Timestamp log messages	Log
Sequence log messages	

Trap logging	Syslog Server
Log Buffer	

logging on	
clear logging	

┌

-	-

### 86.2.2 show logging count

show logging count

-	-

┌



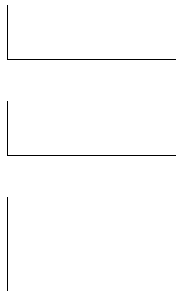
---

# 87

## 87.1

### 87.1.1 install slot-num moduletype

<i>slot-num</i>	
<i>moduletype</i>	



```
                2      24SFP/12GT
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# install 2 24SFP/12GT
2006-04-22 09:26:00 @5-CONFIG:Configured from outband
Ruijie(config)# end
Ruijie# show version module detail 2
Device   : 1
Slot     : 2
User Status : installed
Software Status: none
Online Module :
Type     :
Ports    : 0
Version  :
Configured Module :
Type     : M8606-24SFP/12GT
Ports    : 24
```



```
Type      :
Ports    : 0
Version  :
Configured Module :
```

```
Type      :
Ports    :
Version  :
```

<b>install slot-num moduletype</b>	
<b>show version slots</b>	

-	-

### 87.1.3 remove configure module slot-num

<i>slot-num</i>	

```
Ruijie(config)# remove configure module 4
```

-	-

	-	-

### 87.1.4 reset module slot-num

	<i>slot-num</i>	

|

|

|

Ruijie# **reset module 4**

	-	-

|

	-	-

## 87.2

### 87.2.1 show version module detail [module-num]

	<i>module-nusTc 1.198f0 Tc 0 Tr 6.019 0 Td326</i>	

```

Ruijie# show version module detail 2
Device : 1
Slot : 2
User Status : none
Software Status: none
Online Module :
Type :
Ports : 0
Version :
Configured Module :
Type :
Ports :
Version :

```

<b>show version slots</b>	

-	-

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

<i>num</i>	

```

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          none
```

<b>show version moduel detail</b>	

-	-

---

# 88

## 88.1

### 88.1.1 lcd trap-number num

lcd trap-number *num*

	<i>num</i>	1-1000

num 100

100

200  
lcd trap-num 200

	-	-

	-	-

### 88.1.2 memory-rate rising-threshold num

memory-rate rising-threshold *num*

--	--	--



# 89 USB

## 89.1

### 89.1.1 show usb

USB

show usb

	-	-

USB

show usb

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

USB Mass Storage Device

URL	U	U
Size	U	
Available size	U	



USB

---

	-	-
--	---	---

---

# 90 POE

## 90.1

### 90.1.1 Poe disconnect-mode mode/no poe disconnect-mode

mode	[ac/dc]

|

|

|

POE dc  
Ruijie# **configure**

|  
|  
|

|  
|  
|

|  
|  
|

|  
|  
|  
|

Ruijie(config-if)#  
Ruijie(config-if)# **poe enable**  
Ruijie(config-if)# **no poe enable**  
Ruijie(config-if)#

/



-

-

	-	-
	-	-

### 90.1.4 Poe-power upper lower/no poe-power upper

	<i>upper</i>	[55000-57000]
--	--------------	---------------

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

```

      POE                56000
Ruijie# configure
Ruijie(config)# poe-power upper 56000
Ruijie(config)# end
  
```





POE

```
Ruijie# show poe powersupply
PSE Total Power : 379971 mW
PSE Total Power Consumption : 0 mW
PSE Available Power : 379971 mW
PSE Peak Value : 0 mW
PSE Min Allow Voltage : 45000 mV
PSE Max Allow Voltage : 57000 mV
PSE Disconnect Sense Mode : ac
```

-	-

-	-