



RG-S3760

RGOS 10.3(5b1)



RGOS® RGNOS® 实达网络锐捷®

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1.

Courier New

2.

3.

r



1 CLI

1.1 alias

alias *mode command-alias original-command*
no alias *mode command-alias*

mode
command-alias
original-command

h	help
p	ping
s	show
u	undebug
un	undebug

no alias exec

alias ?

Ruijie(config)# **alias ?**

aaa-gs	AAA server group mode
acl	acl configure mode
bgp	Configure bgp Protocol
config	globe configure mode

**command-alias=original-command*

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

show version

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

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

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

ip address

show aliases

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

```

show aliases	

1.2 privilege

privilege **no**

privilege *mode* **all** **level** *level* / **reset** *command-string*
no privilege *mode* **all** **level** *level* *command-string*

mode

all

level *level*

reset

command-string

privilege

privilege ?

config	

exec	
interface	
ip-dhcp-pool	
keychain	
keychain-key	
time-range	

reload

```
Ruijie(config)# enable secret level 1 0 test
Ruijie(config)# privilege exec level 1 reload
```

reload

```
Ruijie> reload ?
<cr>
```

all

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

reload

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

enable secret	

1.3 show aliases

show aliases

show aliases mode

Ruijie# **show aliases exec**

exec mode alias:

h help

p ping

s show

u undebug

un undebug

alias	

2

2.1

- **disable**
- **enable**
- **enable password**
- **enable secret**
- **password**
- **login**
- **login local**
- **login authentication**
- **username**
- **lock**
- **lockable**
- **telnet**
- **ip telnet source-interface**
- **enable service**

2.1.1 disable

disable *privilege-level*

privilege-level



disable

Ruijie# **disable** 10



r

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

Secret

Level

0|5

encrypted-password

password
0|7
encrypted-password

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

login	

2.1.7 login

```
login            no  
  
login  
no login
```

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

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

password	

2.1.8 login local

login local **no**

login local

no login local

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

default

list-name

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

aaa new-model	
aaa authentication login	

2.1.10 username

username *name* **nopassword** **password** *password* **0|7**
encrypted-password

username *name* **privilege** *privilege-level*

no username *name*

name

password

0|7

encrypted-password

privilege-level

r

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

lockable

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

lockable	

2.1.12 lockable

lock

Again: <password>
Locked
Password: <password>
Ruijie#

lock	

2.1.13 telnet

telnet

telnet *host port keyword*

Host

Port

Keyword

/source-interface	
/vrf	

Ruijie# **telnet** 192.168.1.11 **/source-interface** vlan 1
/vrf vpn1

--	--

Show session	
exit	

clock set

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

hh:mm:ss

day

month

year

```
Ruijie# clock set 10:20:30 3 17 2003
Ruijie# show clock
clock: 2003-3-17 10:20:32
```

show clock	

2.2.2 clock update-calendar

update-calendar

clock update-calendar

clock

Ruijie# **clock update-calendar**

clock read-calendar	

2.2.3 exec-timeout

exec-timeout

no exec-timeout

exec-timeout *minutes seconds*

no exec-timeout

minutes

seconds

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

2.2.4 hostname

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

2.2.6 show clock

show clock

show clock detail

detail

show clock

```
Ruijie# show clock detail  
clock: 2003-3-17 10:27:21  
Clock read from calendar when system boot.
```

clock set	

2.2.7 show running-config

show

running-config

show running-config

2.2.8 show startup-config

show startup-config

show startup-config

2.2.9 reload

reload

reload *text* **in** *mmm hhh:mm text* **at** *hh:mm month day year*
text **cancel**

text

in *mmm hhh:mm*

at *hh:mm month day year*

month

day |

show reload

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

2.2.11 prompt

```
prompt
no prompt
prompt string
string
```

EXEC

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

2.2.12 banner motd

banner motd

no banner motd

banner motd *c message c*

c

message

Ruijie(config)

Ruijie(config)# **banner motd** \$ *hello,world* \$

2.2.13 banner login

banner login

no banner login

banner login *c message c*

c

message

Ruijie(config)

Ruijie(config)# **banner login** \$ *enter your password* \$

2.2.14 speed

speed *speed*

no speed

speed *speed*

Speed

```
Ruijie# show line console 0
CON      Type      speed  Overruns
*stop rxCON0 times 605.7(45927)TT5 1 Tf01.9780 0 10.97800 7409.823 Tm0
```

x

3 LINE

3.1 LINE

3.1.1 line

line console vty *first-line last-line*

console	
vty	
<i>First-line</i>	
<i>Last-line</i>	

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

3.1.2 line vty

no

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

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

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

3.1.3 transport input

transport input
default transport input

transport input all | ssh | telnet | none
default transport input

all	
ssh	
telnet	
none	

default transport input

show running

```
r
                                default transport input    no transport inp
ut                                transpo
rt input none
```

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

show running	

3.1.4 access-class

```
                                access-class acl-no
                                access-class
in | out
access-list-number in | out
no access-class access-list-number in | out
```

--	--

<i>access-list-number</i>	
in	
out	

access-class
show running

```
Ruijie# configure terminal  
Ruijie(config)# line vty 0 4  
Ruijie(config-line)# access-class 10 in
```

show running	

4

4.1

- **copy xmodem**
- **copy tftp**

4.1.1 copy xmodem

copy flash *filename* xmodem
copy xmodem flash *filename*

r

filename

```
Ruijie# copy xmodem flash: config.text
Ruijie# copy flash: config.text xmodem
```

5

5.1

```

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

```

```

Ruijie# ping 192.168.5.197 length 1500 ntimes 100
timeout 3 data ffff source 192.168.4.10
Sending 100, 1000-byte ICMP Echoes to 192.168.5.197,
timeout is 3 seconds:
  < press Ctrl+C to break >
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
Success rate is 100 percent (100/100), round-trip
min/avg/max = 2/2/3 ms

```

5.1.2 traceroute

```

traceroute vrf vrf-name ip ip-address ip-address probe number
source source-address timeout seconds tll minimum maximum

```

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

<i>number</i>	
<i>source-address</i>	
<i>seconds</i>	
<i>minimum maximum</i>	

Ruijie# **traceroute** 61.154.22.36

< press Ctrl+C to break >

Tracing the route to 61.154.22.36

```
1    192.168.12.1    0 msec  0 msec  0 msec
2    192.168.9.2     4 msec  4 msec  4 msec
3    192.168.9.1     8 msec  8 msec  4 msec
4    192.168.0.10    4 msec  28 msec 12 msec
5    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
```

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
Ruijie#
```

```
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
```

6

6.1

- **interface aggregateport**
- **interface fastEthernet**
- **interface giagbitEthernet**
- **interface vlan**
- **medium-type**
- **descriptioin**
- **shutdown**
- **speed**
- **duplex**
- **flowcontrol**
- **mtu**
- **carrier-delay**
- **clear counters**
- **clear interface**
- **switchport**
- **switchport mode**
- **switchport access**
- **switchport trunk**
- **snmp trap link-status**

6.1.1 interface aggregateport

interface aggregateport *port-number*

port-number

show interfaces **show**
interfaces aggregateport

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

show interfaces	

6.1.2 interface fastEthernet

interface fastEthernet *mod-num port-num*

mod-num/port-num

show interfaces
show interfaces fastEthernet

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

show interfaces	

6.1.3 interface giagbitEthernet

interface gigabitEthernet *mod-num/port-num*

mod-num/port-num

show interfaces	

6.1.5 medium-type

no

medium-type fiber | copper

no medium-type

fiber

copper

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

```
Ruijie(config-if)# medium-type copper
```

show interfaces	

description *string*
no description

string

show interfaces

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

show interfaces	

6.1.7 shutdown

no

shutdown
no shutdown

show interfaces

```
Ruijie(config)# interface aggregateport 1
```

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

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

Ruijie(config-if)# **no shutdown**

clear interface	

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# speed 100
```

show interfaces	

6.1.9 duplex

no

duplex auto full half

no duplex

auto

full

half

show interfaces

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

show interfaces	

6.1.10 flowcontrol

flowcontrol auto off on

no flowcontrol

auto

off

on

show interfaces

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

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

show interfaces	

6.1.11 mtu

Mtu num

num

6.1.13 clear counters

clear counters *interface-id*

interface-id

clear counters **show interfaces**

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

show interfaces	

6.1.14 clear interface

clear interface *interface-id*

interface-id

shutdown **no shutdown**

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

shutdown	

6.1.15 switchport

switchport
no switchport

switchport
no switchport

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

show interfaces	

6.1.16 switchport mode

no

switchport mode access | trunk
no switchport mode

access	
trunk	

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# switchport access vlan 2
```

switchport mode	
switchport trunk	

6.1.18 switchport trunk

```
switchport trunk allowed vlan all | add | remove | [Tc79Tw({)Tj]TT2 1 TfD
```

native vlan <i>vlan-id</i>	
--------------------------------------	--

Native VLAN

VLAN

show interfaces switchport

/0914NTAGn2.4/TT3 1 Tf3.9771

6.1.19 snmp trap link-status

no
snmp trap link-status
no snmp trap link-status

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

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

snmp trap link-status	
no snmp trap link-status	

6.2

6.2.1 show interfaces

**show interfaces *interface-id* counters | description | status |
switchport | trunk**

interface-id

counters

description

status

switchport

trunk

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



shutdown	
speed	
switchport priority	
switchport protected	

7 Aggregate Port

7.1

7.1.1 port-group

port-group *port-group-number*
no port-group

src-dst-ip	

src-dst-mac

load-balance	
summary	

```
Ruijie# show aggregateport 1 summary
AggregatePort  MaxPorts      SwitchPort Mode  Ports
-----
Ag1              8              Enabled  ACCESS
```

aggregateport load-balance	

8 LACP

8.1

8.1.1 lacp port-priority

lacp port-priority *port-priority*

no lacp port-priority

	<i>port-priority</i>	

8.1.2 port-group mode

port-group *key* mode active passive

no port-group

<i>Key</i>	
active	
passive	

|

|

|

|

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

```
Ruijie(config-if)# port-group 1 mode active
```

|

lacp port-priority	

|

|

8.1.3 lacp port-priority

lacp port-priority *port-priority*

no lacp port-priority

```
Ruijie(config)# lacp system-priority 4096
```

port-group	key	mode	active	passive
port-group	key	mode		
lacp	port-priority			

8.2

■

8.2.1 show lacp summary

show lacp summary

```
Ruijie# show LACP summary
```

Flags:S - Device is sending Slow LACPDUs F - Device is sending fast LACPDUs.

A - Device is in active mode. P - Device is in passive mode.

Aggregate port 3:

9 VLAN

9.1

9.1.1 vlan

vlan *vlan-id*
no vlan *vlan-id*

<i>vlan-id</i>	

end **Ctrl+C**
exit

```
Ruijie(config)# vlan 1  
Ruijie(config-vlan)#
```

show vlan	

9.1.2 name

no

name *vlan-name*

no name

<i>vlan-name</i>	

show vlan

Ruijie(config)# **vlan** 10

Ruijie(config-vlan)# **name** *vlan10*

show vlan	

9.1.3 switchport mode

switchport mode access trunk

no switchport mode

access	
trunk	

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# switchport access vlan 2
```

switchport mode	
switchport trunk	

9.1.5 switchport trunk

no

**switchport trunk allowed vlan all add remove except
vlan-list native vlan vlan-id**
no switchport trunk allowed vlan native vlan

--	--

allowed vlan vlan-list

Native VLAN

VLAN

show interfaces switchport

```
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
```



9.2.1 show vlan

show vlan id *vlan-id*

<i>vlan-id</i>	

end

Ctrl+C

exit

```
Ruijie# show vlan id 1  
VLAN[1] "VLAN0001"  
GigabitEthernet 3/1  
GigabitEthernet 3/2  
GigabitEthernet 3/3  
GigabitEthernet 3/4  
GigabitEthernet 3/5  
GigabitEthernet 3/6  
GigabitEthernet 3/7  
GigabitEthernet 3/8  
GigabitEthernet 3/9  
GigabitEthernet 3/10  
GigabitEthernet 3/11  
GigabitEthernet 3/12
```

name	
switchport access	

10 Super-vlan

10.1

10.1.1 supervlan

supervlan

<i>Vlan-id-list</i>	

no subvlan

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

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

show supervlan	

10.1.4 proxy-arp

```
proxy-arp
no proxy-arp
```

```
end            Ctrl+C
exit
```

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

show supervlan	

10.2

10.2.1 show supervlan

show supervlan

show supervlan id *vlan-id*

<i>vlan-id</i>	

Ruijie# **show supervlan**

```
supervlan id  supervlan arp-proxy  subvlan id  subvlan  
arp-proxy  subvlan ip range
```

```
-----  
3                ON                4                ON  
                    5                ON
```

11 Protocol VLAN

11.1

- **protocol-vlan profile** *num* **frame-type** *type* **ether-type** *type*
- **protocol-vlan profile** *num* **vlan id**

11.1.1 protocol-vlan profile num frame-type type ether-type

type

num

type

```
Ruijie(config)# protocol-vlan profile 1 frame-type  
ETHERII ether-type aarp
```

show protocol-vlan profile

show protocol-vlan profile *num*

no protocol-vlan profile

no protocol-vlan profile *num*

11.1.2 protocol-vlan profile num vlan id

num

id

Ruijie(config-if)# **protocol-vlan profile 1 vlan 101**

show protocol-vlan profile

show protocol-vlan profile *num*

no protocol-vlan profile

no protocol-vlan profile *num*

11.2

- **show protocol-vlan**

11.2.1 show protocol-vlan

show vlan protocol-vlan

Ruijie# **show protocol-vlan**

12 PrivateVLAN

12.1

- **private-vlan type**
- **private-vlan association**
- **private-vlan mapping**
- **switchport mode private-vlan**
- **switchport private-vlan host-association**
- **switchport private-vlan mapping**

12.1.1 private-vlan type

```
private-vlan community isolated primary  
no private-vlan community isolated primary
```

```
community  
isolated  
primary  
no
```

```
Ruijie(config)# vlan 22  
Ruijie(config-vlan)# private-vlan primary
```

```
show vlan private-vlan
```

12.1.2 private-vlan association

private-vlan association *svlist* **add** *svlist* **remove** *svlist*
no private-vlan association

svlist
no

```
Ruijie(config)# vlan 22  
Ruijie(config-vlan)# private-vlan association add  
24-26
```

show vlan private-vlan

12.1.3 private-vlan mapping

private-vlan mapping *svlist* **add** *svlist* **remove** *svlist*
no private-vlan mapping

svlist
no

```
Ruijie(config)# interface vlan 22
```

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

```
show vlan private-vlan
```

12.1.4 switchport mode private-vlan

```
switchport mode private-vlan host promiscuous  
no switchport mode
```

```
host  
promiscuous  
no
```

```
Ruijie(config)# interface gigabitEthernet0/2  
Ruijie(config-if)# switchport mode private-vlan host
```

```
show vlan private-vlan
```

12.1.5 switchport private-vlan host-association

```
switchport private-vlan host-association p_vid s_vid  
no switchport private-vlan host-association
```

p_vid

s_vid

show vlan private-vlan

12.1.7 switchport private-vlan mapping

switchport private-vlan mapping *p_vid* *svlist* **add** *svist* **remove**
svlist

no switchport private-vlan mapping

p_vid

svlist

no

```
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
```

show vlan private-vlan

show vlan private-vlan community primary isolated

primary
community
isolated

Ruijie# **show vlan private-vlan**

12.3 Hybrid

- **switchport mode hybrid**
- **switchport hybrid native vlan**
- **switchport hybrid allowed vlan**

12.3.1 switchport mode hybrid

switchport mode hybrid
no switchport mode

no

```
Ruijie(config-if)# switchport mode hybrid
```

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

13 MAC

13.1

- **mac-address-table aging-time**
- **clear mac-address-table dynamic**
- **clear mac-address-table filtering**
- **clear mac-address-table static**
- **mac-address-table static**
- **mac-address-table filtering**
- **mac-address-table notification**
- **snmp trap mac-notification**
- **address-bind**
- **address-bind uplink**
- **address-bind install**
- **address-bind ipv6-mode**

13.1.1 mac-address-table aging-time

mac-address-table aging-time *seconds*

no mac-address-table aging-time

seconds

show mac-address-table aging-time

show mac-address-table dynami

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

show mac-address-table aging-time	
show mac-address-table dynamic	

13.1.2 clear mac-address-table dynamic

```
clear mac-address-table dynamic address mac-addr interface  
interface-id vlan vlan-id
```

dynamic	
address <i>mac-addr</i>	
interface <i>interface-id</i>	
vlan <i>vlan-id</i>	

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

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

show mac-address-table dynamic	

13.1.3 clear mac-address-table filtering

address <i>mac-addr</i>	
interface <i>interface-id</i>	
vlan <i>vlan-id</i>	

show mac-address-table static

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

mac-address-table static	
show mac-address-table static	

13.1.5 mac-address-table static

no

mac-address-table static *mac-addr* **vlan** *vlan-id* **interface** *interface-id*

no mac-address-table static *mac-addr* **vlan** *vlan-id* **interface**
interface-id

<i>mac-addr</i>	
<i>vlan-id</i>	
<i>interface-id</i>	

**ss-table static
ble static**

**show mac-adre
clear mac-address-ta**

```
Ruijie(config)# mac-address-table static  
00d0.f800.073c vlan 4 interface gigabitethernet 1/1
```

show mac-address-table static	
clear mac-address-table static	

13.1.6 mac-address-table filtering

no

mac-address-table filtering *mac-address* **vlan** *vlan-id*

no mac-address-table filtering *mac-address* **vlan** *vlan-id*

<i>mac-address</i>	
vlan <i>vlan-id</i>	

show mac-address-table filtering

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

clear mac-address-table filtering	
show mac-address-table filtering	

13.1.7 mac-address-table notification

no

mac-address-table notification interval *value*

```
Ruijie(config)# mac-address-table notification
Ruijie(config)# mac-address-table notification
interval 40
Ruijie(config)# mac-address-table notification
history-size 100
```

snmp-server enable traps	
show mac-address-table notification	
snmp trap mac-notification	

13.1.8 snmp trap mac-notification

no

```
snmp trap mac-notification added removed
no snmp trap mac-notification added removed
```

added	
removed	

show mac-address-table notification *interface*

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

--	--

mac-address-table notification	
show mac-address-table notification	

13.1.9 address-bind

address-bind *ip-address mac-address*

no address-bind *ip-address*

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

<i>intf-id</i>	

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

show address-bind uplink	

13.1.12 address-bind ipv6-mode

address-bind ipv6-mode compatible

address-bind ipv6-mode loose

address-bind ipv6-mode strict

	Ipv 4	IPV 6
--	-----------------	-----------------

--	--	--

```
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
```

13.2

- **show mac-address-table address**
-

- **show mac-address-table aging-time**
- **show mac-address-table count**
- **show mac-address-table dynamic**
- **show mac-address-table filtering**
- **show mac-address-table interface**
- **show mac-address-table notification**
- **show mac-address-table static**
- **show mac-address-table vlan**
- **show address-bind**

13.2.1 show mac-address-table address

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

address <i>mac-addr</i>	
interface <i>interface-id</i>	
vlan <i>vlan-id</i>	

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

show mac-address-table static	
show mac-address-table filtering	
show mac-address-table dynamic	

show mac-address-table interface	
show mac-address-table vlan	
show mac-address-table count	
show mac-address-table static	
show mac-address-table filtering	

13.2.2 show mac-address-table aging-time

show mac-address-table aging-time

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

mac-address-table aging-time	

13.2.3 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
```

show mac-address-table static	
show mac-address-table filtering	
show mac-address-table dynamic	
show mac-address-table address	

show mac-address-table interface

```

1      0007.95c7.dff9      DYNAMIC  gigabitethernet 1/1
1      0007.95cf.eee0      DYNAMIC  gigabitethernet 1/1
1      0007.95cf.f41f      DYNAMIC  gigabitethernet 1/1
1      0009.b715.d400      DYNAMIC  gigabitethernet 1/1
1      0050.bade.63c4      DYNAMIC  gigabitethernet 1/1

```

clear mac-address-table dynamic	

13.2.5 show mac-address-table filtering

```

show mac-address-table static addr mac-addr vlan vlan-id

```

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

```

Ruijie# show mac-address-table filtering

```

```

Vlan      MAC Address      Type      Interface
-----  -
1         0000.2222.2222   FILTER   Not available

```

clear mac-address-table filtering	
mac-address-table filtering	

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

Ruijie# **show mac-address-table interface**
gigabitethernet 1/1

```

Vlan          MAC Address          Type      Interface
-----
1      00d0.f800.1001  STATIC   gigabitethernet 1/1
1      00d0.f800.1002  STATIC   gigabitethernet 1/1
1      00d0.f800.1003  STATIC   gigabitethernet 1/1
1      00d0.f800.1004  STATIC   gigabitethernet 1/1

```

show mac-address-table static	
show mac-address-table filtering	
show mac-address-table dynamic	
show mac-address-table address	
show mac-address-table vlan	

show mac-address-table count

interface <i>interface-id</i>	

mac-addr

```

1    00d0.f800.1002    STATIC    gigabitethernet 1/1
1    00d0.f800.1003    STATIC    gigabitethernet 1/1

```

show mac-address-table static	
show mac-address-table filtering	
show mac-address-table dynamic	
show mac-address-table address	
show mac-address-table interface	
show mac-address-table count	

13.2.10 show address-bind

show address-bind

```

Ruijie# show address-bind
IP Address      Binding MAC Addr
-----
3.3.3.3         00d0.f811.1112
3.3.3.4         00d0.f811.1117

```

address-bind	

14 DHCP Snooping

14.1 DHCP snooping

- ip dhcp snooping
- ip dhcp snooping vlan
- ip dhcp snooping bootp-bind
- ip dhcp snooping ver7ty mac-address
- ip dhcp snooping information option
- ip dhcp snooping database write-delay
- ip dhcp snooping database write-to-flash

14.1.1 ip dhcp snooping

```
no ip dhcp snooping
```

```
show ip dhcp snooping
```

```
r
```

```
Ruijie# configure terminal
```

Ruijie(config)# **end**

ip dhcp snooping	

14.1.3 ip dhcp snooping bootp-bind

no ip dhcp snooping bootp-bind

ü

show ip dhcp snooping	

14.1.4 ip dhcp snooping verify mac-address

no ip dhcp snooping verify mac-address

```

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

```

show ip dhcp snooping	

14.1.5 ip dhcp snooping information option

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

14.2 DHCP snooping

- **ip dhcp snooping suppression**
- **ip dhcp snooping trust**
- **ip dhcp snooping limit rate**

14.2.1 ip dhcp snooping suppression

```
no ip dhcp snooping suppression
```

fastethernet 0/2

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

14.2.2 ip dhcp snooping trust

no ip dhcp snooping trust

fastethernet 0/1

```
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
```

show ip dhcp snooping	

```

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          NO        100

```

show ip dhcp snooping	

14.3 DHCP snooping

- **show ip dhcp snooping**
- **show ip dhcp snooping binding**

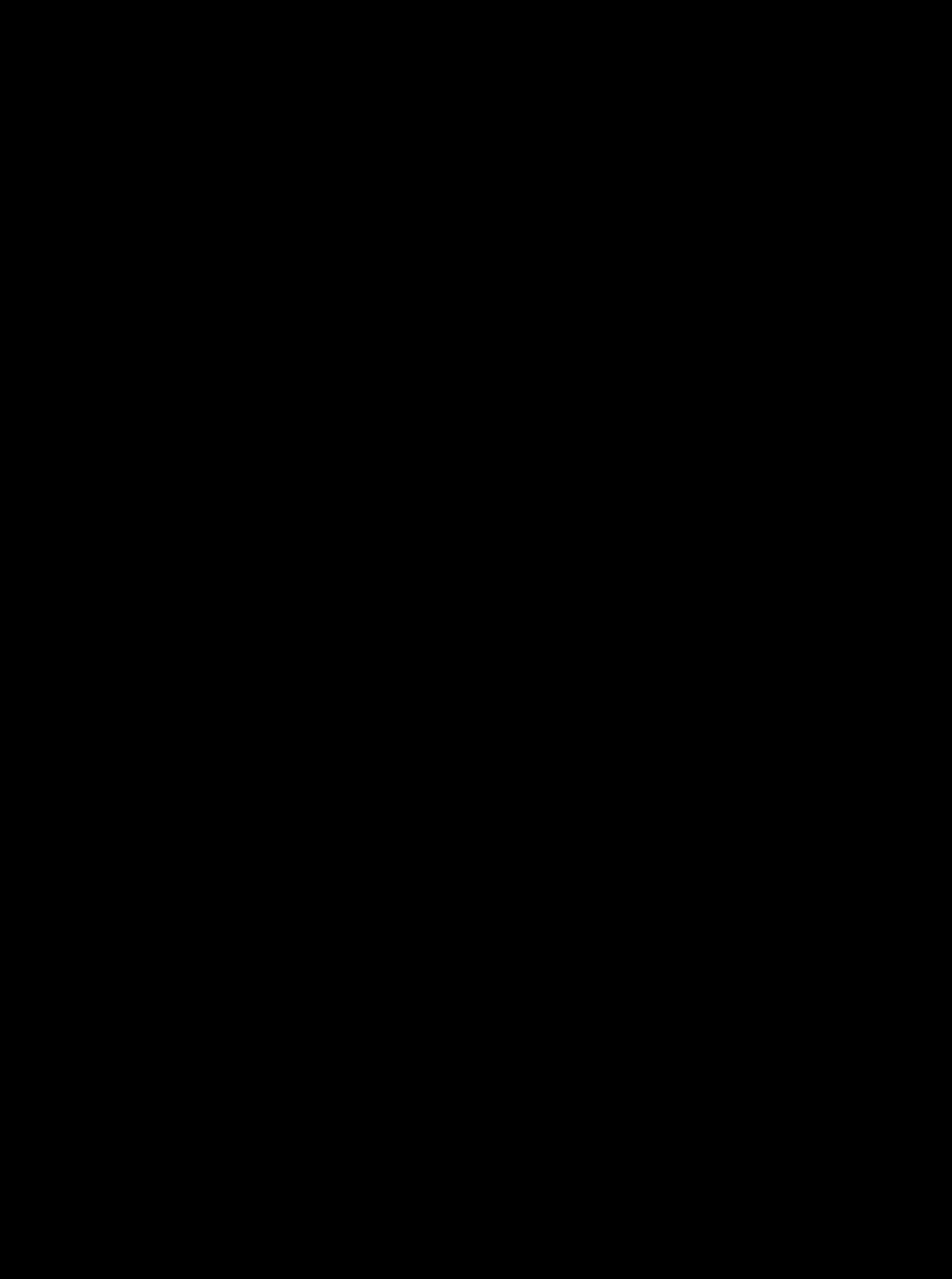
14.3.1 show ip dhcp snooping

show ip dhcp snooping

```

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)

```



ip dhcp snooping binding	
clear ip dhcp snooping binding	

14.4 DHCP snooping

- clear ip dhcp snooping binding
- debug ip dhcp snooping

14.4.1 clear ip dhcp snooping binding

clear ip dhcp snooping binding

```
Ruijie# clear ip dhcp snooping binding
Ruijie# show ip dhcp snooping binding
Total number of bindings: 0
MacAddress IpAddress Lease(sec) Type VLAN Interface
-----
```

show ip dhcp snooping binding	

14.4.2 debug ip dhcp snooping

debug ip dhcp snooping event packet

```
Ruijie# debug ip dhcp snooping event  
Ruijie# debug ip dhcp snooping packet
```

15 IGMP Snooping

15.1

- range
- deny
- permit

- ip igmp profile
- ip igmp snooping ivgl
- ip igmp snooping svgl
- ip igmp snooping svgl profile
- ip igmp snooping ivgl-svgl
- ip igmp snooping dyn-mr-aging-time
- ip igmp snooping query-max-response-time
-

<i>profile-number</i>	

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

range	

15.1.2 range

```
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>	

```
Ruijie(config)# ip igmp profile 1
Ruijie(config-profile)# range 233.3.3.3 234.4.4.4
```

ip igmp profile	
deny	
permit	

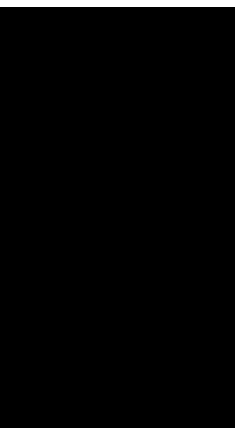
15.1.3 deny

deny

```
Ruijie(config)# ip igmp profile 1
Ruijie(config-profile)# range 233.3.3.3
Ruijie(config-profile)# deny
```

ip igmp profile	
range	

15.1.4 permit



ip

igmp snooping ivgl
ip igmp snooping ivgl
no ip igmp snooping

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

ip igmp snooping svgl	
ip igmp snooping ivgl-svgl	

15.1.6 ip igmp snooping svgl

ip

igmp snooping svgl
ip igmp snooping svgl
no ip igmp snooping

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

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

<i>num</i>	

Ruijie(config)# **ip igmp snooping dyn-mr-aging-time** 500

15.1.10 ip igmp snooping query-max-response-time

ip igmp snooping query-max-response-time
!

```
Ruijie(config)# ip igmp snooping
query-max-response-time 15
```

15.1.11 ip igmp snooping vlan mrouter learn pim-dvmrp

```
ip igmp
snooping vlan mrouter learn pim-dvmrp

ip igmp snooping vlan vid mrouter learn pim-dvmrp
no ip igmp snooping vlan vid mrouter learn pim-dvmrp
```

<i>vid</i>	

```
Ruijie(config)# ip igmp snooping vlan 1 mrouter learn  
pim-dvmrp
```

ip igmp snooping vlan mrouter interface	

15.1.12 ip igmp snooping vlan mrouter interface

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

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

ip igmp snooping vlan mrouter interface	

15.1.14 ip igmp snooping fast-leave enable

ip igmp

snooping fast-leave enable

ip igmp snooping fast-leave enable

no ip igmp snooping fast-leave enable

no ip igmp snooping suppression enable

è

```
Ruijie(config)# ip igmp snooping limit-ipmc vlan 1  
address 233.3.3.3 server 1.1.1.2
```

ip igmp snooping source-check default-server	

15.1.17 ip igmp snooping filter

0 . 1 1 0 < c T 9 1 5 . 0 1 0 0

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip igmp snooping filter 1
```

ip igmp profile	

15.1.18 ip igmp snooping max-groups

ip

igmp snooping max-groups

ip igmp snooping max-groups *number*

no ip igmp snooping max-groups

Number:

bèL\$ Ä

y ´r T õaN0 @

15.2

15.2.1 show ip igmp snooping

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

gda-table	
interfaces	
mrouter	
statistics	

```
Ruijie(config-if)# ip igmp snooping gda-table
```

```
Abbr:M - mrouter
```

```
    D - dynamic
```

```
    S - static
```

```
VLAN    Address                Member ports
```

```
-----
```

```
1       233.3.3.3             Gi0/2(S)
```

```
2       234.4.4.4             Gi0/11(S)
```

```
1       233.4.4.4             Ag2(S)
```

15.2.2 show ip igmp profile

show ip igmp profile

show ip igmp profile *profile-number*

<i>profile-number</i>	

```
Ruijie(config-if)#show ip igmp profile
```

```
Profile    1
```

```
    Permit
```

```
    range 224.0.1.0, 239.255.255.255
```

Ruijie# **clear ip igmp snooping gda-table**

15.2.4 debug igmp-snp

debug igmp-snp
debug igmp-snp event
debug igmp-snp packet
debug igmp-snp msf
debug igmp-snp warning
undebug igmp-snp
undebug igmp-snp event
undebug igmp-snp packet
undebug igmp-snp msf
undebug igmp-snp warning

event	
packet	
msf	

warning	
----------------	--

16 MSTP

16.1

16.1.1 spanning-tree

show spanning-tree
spanning-tree mst cost
spanning-tree tx-hold-count STP

16.1.2 spanning-tree bpdufilter

spanning-tree bpdufilter enabled disabled

enabled

Disabled

```
Ruijie(config)# interface gigabitethernet 1/1  
Ruijie(config-if)# spanning-tree bpdufilter enable
```

show spanning-tree interface

16.1.3 spanning-tree bpduguard

spanning-tree bpduguard enabled disabled

enabled

disabled

```
Ruijie(config)# interface gigabitethernet 1/1  
Ruijie(config-if)# spanning-tree bpduguard enable
```

```
show spanning-tree interface
```

16.1.4 spanning-tree link-type

```
spanning-tree link-type point-to-point shared
```

```
no spanning-tree link-type
```

```
point-to-point
```

```
Shared
```

spanning-tree max-hops *hop-count*

no spanning-tree max-hops

hop-count

hop-count

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

show spanning-tree

revision *version*

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

no spanning-tree mst *instance-id* cost

instance-id

cost

Ruijie(config)# **interface gigabitethernet 1/1**
Ruijie(config-if)# **spanning-tree mst 3 cost 400**

show spanning-tree mst interface interface-id

show spanning-tree mst

spanning-tree mst port-priority

spanning-tree mst *instance-id* port-priority *priority*

no spanning-tree mst *instance-id* port-priority

Instance-id

priority

instance-id

16.1.12 spanning-tree tx-hold-count

spanning-tree tx-hold-count *tx-hold-count*

no spanning-tree tx-hold-count

show spanning-tree interface

16.1.14 spanning-tree portfast

spanning-tree portfast disabled

disabled

```
Ruijie(config)# interface gigabitethernet 1/1  
Ruijie(config-if)# spanning-tree portfast
```

show spanning-tree interface

16.1.15 spanning-tree portfast bpduguard default

spanning-tree portfast bpduguard default

no spanning-tree portfast bpduguard default

show spanning-tree

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

show spanning-tree interface

16.1.16 spanning-tree portfast bpdufilter default

```
spanning-tree portfast bpdufilter default  
no spanning-tree portfast bpdufilter default
```

show

spanning-tree

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

show spanning-tree interface

16.1.17 spanning-tree portfast default

```
spanning-tree portfast default
```

no spanning-tree portfast default

Ruijie(config)# **spanning-tree portfast default**

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

16.1.20 spanning-tree tc-guard

spanning-tree tc-guard

no spanning-tree tc-guard

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

16.1.21 spanning-tree guard root

spanning-tree guard root

no spanning-tree guard root

```
Ruijie(config-if)# spanning-tree guard loop
```

16.1.24 spanning-tree guard none

```
spanning-tree guard none
```

```
no spanning-tree guard none
```

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

16.1.25 spanning-tree autoedge

```
spanning-tree autoedge disabled
```

```
disabled
```

```
Ruijie(config)# interface gigabitethernet 1/1  
Ruijie(config-if)# spanning-tree autoedge disabled
```

```
show spanning-tree interface
```

16.1.26 bpdusrc-mac-check

```
Ruijie(config-if)#logging event status
```

16.2

16.2.1 show spanning-tree

```
show spanning-tree summary forward-time hello-time max-age  
inconsistentports| tx-hold-count pathcost method max_hops
```

```
summary  
Inconsistentports  
forward-time  
hello-time  
max-age  
max-hops  
tx-hold-count  
pathcost method
```

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

```
spanningtree pathcost method  
spanning-tree forward-time  
spanning-tree hello-time  
spanning-tree max-age  
spanning-tree max-hops  
spanning-tree tx-hold-count
```

16.2.2 show spanning-tree interface

```
show spanning-tree interface interface-id bpdupfilter portfast
```

Ruijie# **show spanning-tree mst configuration**

spanning-tree mst configuration

spanning-tree mst cost

spanning-tree mst max-hops

spanning-tree mst priority

spanning-tree mst port-priority

show monitor

```
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
```

r

show monitor	

17.2 show monitor

show monitor session *session_number*

session *session_number*

show monitor

```
Ruijie# show monitor session 1
sess-num: 1
src-intf:
GigabitEthernet 3/1 frame-type Both
dest-intf:
GigabitEthernet 3/8
```

monitor session	

18 RSPAN

18.1

18.1.1 monitor session

monitor session *session_num* **remote-destination** **remote-source**

monitor session *session-num* **destination remote vlan** *vlan-id*
reflector-port interface *interface-name*

show monitor	

18.1.2 remote-span

RSPAN VLAN

no remote-span

end

exit

```
Ruijie(config)# vlan 5  
Ruijie(config)# remote-span
```

--	--

19 IP

19.1

- ip address
- ip unnumbered

19.1.1 ip address

ip address *ip-address network-mask secondary*

no ip address *ip-address network-mask secondary*



-

-

-

```
ip address 10.10.10.1 255.255.255.0
```

show interface	

19.1.2 ip unnumbered

```
ip unnumbered interface-type interface-number
```

```
no ip unnumbered interface-type interface-number
```

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

-
-
-
-

ip unnumbered fastEthernet 0/1

show interface	

19.2

-
- arp
 - arp retry interval
 - arp retry times
 - arp trusted NUM
 - arp trusted aging
 - arp unresolve
 - arp gratuitous-send interval
 - arp timeout
 - ip proxy-arp
 - service trustedarp

19.2.1 arp

arp *ip-address MAC-address type alias*

no arp *ip-address MAC-address type alias*

<i>ip-address</i>	
<i>MAC-address</i>	
<i>type</i>	

alias

clear arp-cache

```
arp 1.1.1.1 4e54.3800.0002 arpa
```

clear arp-cache	

19.2.2 arp retry interval

arp retry interval *seconds*

no arp retry interval

<i>seconds</i>	---

```
arp retry interval 30
```

arp trusted *number*

no arp trusted

<i>number</i>	

arp trusted 1000

service trustedarp	

19.2.5 arp trusted aging

arp trusted aging

no arp trusted aging

arp timeout



19.2.7 arp gratuitous-send interval

arp gratuitous-send interval *seconds*

no arp gratuitous-send

<i>seconds</i>	

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

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

19.2.8 arp timeout

```
config
service trustedarp
```

19.3

- **ip broadcast-addresss**
- **ip directed-broadcast**

19.3.1 ip broadcast-addresss

ip broadcast-addresss

ip broadcast-addresss *ip-address*


no ip broadcast-addresss *ip-address*

<i>ip-address</i>	

```
ip broadcast-address 0.0.0.0
```

19.3.2 ip directed-broadcast

ip

<i>access-list-number</i>	



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

19.4 IP

- clear arp-cache
- show arp
- show arp counter
- show arp timeout
- clear ip route
- show ip arp
- show ip interface
- show ip redirects

19.4.1 clear arp-cache

```
clear arp-cache A.B.C.D interface interface-name
```

r

```
clear arp-cache
```

```
clear arp-cache 1.1.1.1
```

```
clear arp-cache interface Vlan 1
```

```

Internet 192.168.195.68 0 0013.20a5.7a5f
arpa VLAN 1
Internet 192.168.195.67 0 001a.a0b5.378d
arpa VLAN 1
Internet 192.168.195.65 0 0018.8b7b.713e
arpa VLAN 1
Internet 192.168.195.64 0 0018.8b7b.9106
arpa VLAN 1
Internet 192.168.195.63 0 001a.a0b5.3990
arpa VLAN 1
Internet 192.168.195.62 0 001a.a0b5.0b25
arpa VLAN 1
Internet 192.168.195.5 -- 00d0.f822.33b1
arpa VLAN 1

```



```

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

```

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
```

show arp 001a.a0b5.378d

```
Ruijie# show arp 001a.a0b5.378d
Protocol Address Age(min) Hardware Type
Interface
Internet 192.168.195.67 4 001a.a0b5.378d arpa
VLAN 1
```

19.4.3 show arp counter

show arp counter

show arp counter

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

19.4.4 show arp detail

show arp detail

show arp detail interface-type interface-number

**show arp detail vrf vrfname ip mask mac-address static
complete incomplete**

show arp detail trusted ip mask

<i>interface-type interface-number</i>	
vrf vrfname	
<i>ip</i>	
<i>ip mask</i>	
<i>mac-address</i>	
static	
complete	
incomplete	
trusted	

show arp detail

Ruijie# **show arp detail**

VLAN 1

3600

19.4.8 show ip interface

show ip interface *interface-type interface-number*

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

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.

show ip redirects

20.1.2 ip mask-reply

ip mask-reply

ip mask-reply

no ip mask-reply

```
interface fastEthernet 0/1
ip mask-reply
```

20.1.3 ip mtu

ip mtu

ip mtu *bytes*

no ip mtu



```
interface fastEthernet 0/1
no ip redirects
```

20.1.5 ip source-route

```
source-route
ip source-route
no ip source-route
```

ip

```
no ip source-route
```

20.1.6 ip unreachable

unreachables

ip

21 DHCP

21.1 DHCP

21.1.1 bootfile

bootfile **no**

bootfile *file-name*

no bootfile

<i>file-name</i>	

next-server

bootfile router.conf

ip dhcp pool	

next-server	
-------------	--

21.1.2 client-identifier

client-identifier **no**

client-identifier *unique-identifier*

no client-identifier

--	--

hardware-address	
host	
ip dhcp pool	

21.1.3 client-name

client-name

client-name *client-name*

no client-name

<i>client-name</i>	

`client-name river`

host	

ip dhcp pool	
--------------	--

21.1.4 default-router

default-router **no**

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

no default-router

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

default-router 192.168.12.1

dns-server *ip-address ip-address2...ip-address8*
use-dhcp-client *interface-type interface-number*
no dns-server

<i>ip-address</i>	
<i>ip-address2...ip-address8</i>	
use-dhcp-client <i>interface-type</i> <i>interface-number</i>	

dns-server 192.168.12.3

domain-name	
ip address dhcp	
ip dhcp pool	

21.1.6 domain-name

domain-name

no

domain-name *domain-name*

no domain-name

<i>domain-name</i>	

domain-name i-net.com.cn

dns-server	
ip dhcp pool	

21.1.7 hardware-address

hardware-address **no**

hardware-address *hardware-ad9(TjET1cdd09e0>5.7<1e0b09e2>5.7<34d40db309e1>5.7*

<i>type</i>	◇ ◇ ◇ ◇
-------------	------------------

hardware-address 00d0.f838.bf3d

client-identifier	
host	

ip dhcp pool

<i>ip-address</i>	
<i>netmask</i>	

host 192.168.12.91 255.255.255.240

client-identifier	
hardware-address	
ip dhcp pool	

21.1.9 ip address dhcp

ip address dhcp no

ip address dhcp
no ip address dhcp

```
interface fastEthernet 0
ip address dhcp
```

dns-server	

ip dhcp pool

ê

`ip dhcp excluded-address 192.168.12.100 192.168.12.150`

ip dhcp pool	
network	

21.1.11 ip dhcp force-send-nak

ip dhcp force-send-nak
no ip dhcp force-send-nak

ip dhcp force-send-nak

ip dhcp pool	
service dhcp	

21.1.12 ip dhcp ping packet

ip dhcp ping packet no

ip dhcp ping packet *number*

no ip dhcp ping packet

<i>number</i>	

ip dhcp ping packets 3

clear ip dhcp conflict	
ip dhcp ping timeout	
show ip dhcp conflict	

21.1.13 ip dhcp ping timeout

ip dhcp ping timeout no

ip dhcp ping timeout *milli-seconds*

no ip dhcp ping timeout

<i>milli-seconds</i>	

ip dhcp pool mypool0

host	
ip dhcp excluded-address	
network	

21.1.15 lease

lease no

lease *days hours minutes* **infinite**

no lease

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

lease 0 1

lease 0 0 1

ip dhcp pool	

21.1.16 netbios-name-server

netbios-name-server

netbios-name-server ip-address *ip-res2...(padv)4.3d(es8s)T/JT2 1 Tf121.44 0 TD0.002*

ip address dhcp	
ip dhcp pool	

21.1.17 netbios-node-type

netbios-node-type **no**

netbios-node-type *type*

no netbios-node-type

<i>type</i>	◇ ◇ ◇ ◇ ◇ ◇ ◇ ◇

show ip dhcp binding
show ip dhcp conflict

network 192.168.12.0 255.255.255.240

--	--

ip dhcp excluded-address 3

next-server 192.168.12.4

bootfile	
ip dhcp pool	
ip help-address	
option	

21.1.20 option

option

no

option *code* **ascii** *string* **hex** *string* **ip** *ip-address*

no option



option 19 hex 1

option 33 ip 172.16.12.0 192.168.12.12 172.16.16.0
192.168.12.16

ip dhcp pool	

21.1.21 service dhcp

dhcp no

service dhcp

no service dhcp

service

service dhcp

show ip dhcp server statistics	

21.2

- clear ip dhcp binding
- clear ip dhcp conflict
- clear ip dhcp server statistics
- debug ip dhcp client
- debug ip dhcp server
- show dhcp lease
- show ip dhcp binding
- show ip dhcp conflict
- show ip dhcp server statistics

21.2.1 clear ip dhcp binding

clear ip dhcp binding

clear ip dhcp binding * *ip-address*

*	
<i>ip-address</i>	

dhcp pool

no ip

```
clear ip dhcp binding 192.168.12.100
```

show ip dhcp binding	

21.2.2 clear ip dhcp conflict

clear ip dhcp conflict

```
clear ip dhcp conflict * ip-address
```

*	
<i>ip-address</i>	

clear ip dhcp conflict

```
clear ip dhcp conflict *
```

ip dhcp ping packets	
show ip dhcp conflict	

21.2.3 clear ip dhcp server statistics

clear ip dhcp

server statistics

clear ip dhcp server statistics

clear

ip dhcp server statistics

`clear ip dhcp server statistics`

show ip dhcp server statistics	

21.2.4 debug ip dhcp client

debug ip dhcp client

debug ip dhcp client

no debug ip dhcp client

debug ip dhcp client

21.2.5 debug ip dhcp server

debug ip dhcp server

debug ip dhcp server
no debug ip dhcp server

debug ip dhcp server

21.2.6 show dhcp lease

show dhcp lease

show dhcp lease

show dhcp lease

Ruijie# **show dhcp lease**

Temp IP addr: 192.168.5.71 for peer on Interface:
FastEthernet0/0

Temp sub net mask: 255.255.255.0

show ip dhcp binding

Ruijie# **show ip dhcp binding**

IP address	Client-Id/ Hardware address	Lease expiration	Type
192.168.1.2	00d0.f866.4777	IDLE	Manual

clear ip dhcp binding	

21.2.8 show ip dhcp conflict

show ip dhcp conflict

show ip dhcp conflict

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
```


clear ip dhcp conflict	

21.2.9 show ip dhcp server statistics

show ip dhcp

22 DHCP Relay

22.1 DHCP Relay

- service dhcp
- ip helper-address

22.1.1 service dhcp

ervice dhcp

service dhcp

no service dhcp

service dhcp

ip helper-address vrf <i>A.B.C.D</i>	

22.1.2 ip helper-address

```
ip helper-address 61.154.26.49
ip helper-address vrf local 192.168.197.1
```

service dhcp	

22.1.3 ip dhcp relay information option dot1x

```
dhcp option dot1x
dhcp option dot1x
```

Ip dhcp relay check server-id

Service dhcp	

service dhcp	
---------------------	--

23 DNS

23.1

23.1.1 ip domain-lookup

ip domain-lookup

no ip domain-lookup

no ip name-server *ip-address*

<i>ip-address</i>	

Ruijie(config)# **ip name-server** 192.168.5.134

show hosts	

23.1.3 ip host

ip host *host-name ip-address*

no ip host *host-name ip-address*

<i>host-name</i>	

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

no ip host host-name ip-address

Ruijie(config)# **ip host switch 192.168.5.243**

show hosts	

23.1.4 clear host

clear host *host-name*

<i>host-name</i>	

clear host *

show hosts	

23.1.5 show hosts

show hosts

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

ip host	
ip name-server	

24 SNTP

24.1

- sntp enable
- sntp server
- sntp interval

24.1.1 sntp enable

no

no sntp enable

show sntp

Ruijie(config)# sntp enable

show sntp	
clock update-calendar	
clock set	

24.1.2 sntp server

sntp server *A.B.C.D*
no sntp server

A.B.C.D

show sntp

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

show sntp	
sntp enable	

24.1.3 sntp interval

sntp interval *seconds*
no sntp interval

seconds

show sntp

Ruijie(config)# **sntp interval 3600**

sntp enable	
show sntp	
clock update-calendar	

r

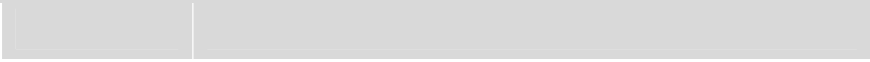
24.2

- **show sntp**

24.2.1 show sntp

show sntp

```
Ruijie# show sntp
SNTP state          : Enable
SNTP server         : 192.168.4.12
SNTP sync interval  : 60
Time zone           : +8
```



25 NTP

25.1 NTP

- no ntp
- ntp access-group
- ntp authenticate
- ntp authentication-key
- ntp disable
- ntp master
- ntp server
- ntp trusted-key
- ntp update-calendar

25.1.1 no ntp

no ntp

no ntp

ntp server	

25.1.2 ntp access-group

ntp access-group peer serve serve-only query-only
access-list-number| access-list-name

no ntp access-group peer serve serve-only query-only
access-list-number| access-list-name

peer	
serve	
serve-only	
query-only	
<i>access-list-number</i>	
<i>access-list-name</i>	

r

```
Ruijie(config)# ntp access-group peer 1  
Ruijie(config)# ntp access-group serve-only 2
```

ip access-list	

25.1.3 ntp authenticate

ntp authenticate

no ntp authenticate

ntp trusted-key

```
ntp authentication-key 6 md5 woooooop
```

ntp authenticate	
ntp trusted-key	
ntp server	

25.1.5 ntp disable

ntp disable

r

no ntp

25.1.6 ntp master

ntp master [*stratum*]
no ntp master

<i>stratum</i>	

r

```
Ruijie(config)# ntp master 12
```

25.1.7 ntp server

```
ntp server
```

Ruijie(config)# ntp server 192.168.210.222

no ntp	

25.1.8 ntp trusted-key

ntp trusted-key *key-id*

no ntp trusted-key *key-id*

<i>key-id</i>	

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

--	--

ntp authenticate	
ntp authentication-key	
ntp server	

25.1.9 ntp update-calendar

```
show ntp status
```

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

<i>address</i>	I DD &\$

no ip helper-address

Ruijie(config-if)# **ip helper-address** 192.168.100.1

ip forward-protocol	

26.1.3 ip forward-protocol

no

**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**

udp-helper enable	
ip forward-protocol	

27 SNMP

27.1

- **no snmp-server**
- **snmp-server chassis-id**
- **snmp-server community**
- **snmp-server contact**
- **snmp-server enable traps**
- **snmp-server host**
- **snmp-server location**
- **snmp-server packetsize**
- **snmp-server queue-length**
- **snmp-server system-shutdown**
- **snmp-server trap-source**
- **snmp-server trap-timeout**
- **snmp-server user**
- **snmp-server group**
- **snmp-server view**
- **snmp-server if-index persist**

27.1.1 no snmp-server

no snmp-server

no snmp-server

```
Ruijie(config)# no snmp-server
```

27.1.2 snmp-server chassis-id

snmp-server

chassis-id

snmp-server chassis-id *text*

no snmp-server chassis-id

text

show snmp

Ruijie(config)# **snmp-server chassis-id 123456**

show snmp	

27.1.3 snmp-server community

snmp-server

community

snmp-server community *string* **view** *view-name* **ro** **rw** **host**
ipaddr *number*

no snmp-server community *string*

string

view-name

```
Ruijie(config)# snmp-server contact i-net800@i-net.com.cn
```

show snmp-server	
no snmp-server	

27.1.5 snmp-server enable traps

snmp-server enable trap

```
snmp-server enable traps snmp
```

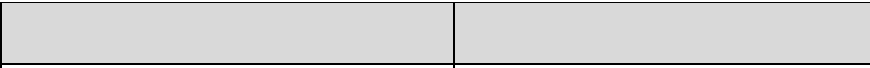
```
no snmp-server enable traps
```

```
snmp
```

snmp-server

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

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



snmp-server host



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

snmp-server enable traps	

27.1.7 snmp-server location

```
snmp-server  
location  
snmp-server location text  
no snmp-server location  
  
text
```

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

snmp-sever contact	

27.1.8 snmp-server packetsize

```
snmp-sever  
packetsize  
snmp-server packetsize byte-count  
no snmp-server packetsize
```

byte-count

snmp-server packetsize	

27.1.10 snmp-server system-shutdown

snmp-server

system-shutdown

snmp-server system-shutdown

no snmp-server system-shutdown

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

snmp-server enable traps	
snmp-server enable host	

27.1.12 snmp-server trap-timeout

snmp-server
trap-timeout
snmp-server trap-timeout *seconds*
no snmp-server trap-timeout

seconds

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

snmp-server queue-length	
snmp-server enable host	

27.1.13 snmp-server user

snmp-server user

snmp-server user *username groupname v1 v2 v3 encrypted*
auth md5 sha *auth-password priv des56 priv-password*
access *num name*

no snmp-server user *username groupname v1 v2c v3*

username

groupname

v1 v2 v3

encrypted

auth

md5

sha

auth-password

priv

des56

priv-password

Ruijie(config)# **snmp-server user** *user-2 mib2user v3 auth*
md5 *authpassstr* **priv** **des56** *despassstr*

show snmp user	

27.1.14 snmp-server group

snmp-server group

snmp-server group *groupname* **v1 v2c v3** **auth noauth priv**
read *readview* **write** *writeview* **access** *num* *name*

no snmp-server group *groupname* **v1 v2c v3**

v1 v2c v3

auth

noauth

priv

readview

writeview

Ruijie(config)# **snmp-server group** *mib2user* **v3 priv read**
mib2



show run	

27.2

27.2.1 show snmp

show snmp

show snmp mib user view group

0 Trap PDUs
SNMP global trap: disabled
SNMP logging: disabled
SNMP agent: enabled

snmp-server <i>chassis-id</i>	

28 RMON

28.1

- **rmon collection stats** *index owner owner-string*
- **rmon collection history** *index owner owner-string buckets bucket-number interval seconds*
- **rmon alarm** *number variable interval absolute delta rising-threshold value event-number falling-threshold value event-number owner ownername*
- **rmon event** *number log trap community description-string*
- **show rmon statistics**
- **show rmon history**
- **show rmon events**
- **show rmon alarms**

28.1.1 rmon collection stats

rmon collection stats *index owner owner-string*

no rmon collection stats *index*

```
Ruijie(config)# interface fast-Ethernet 0/1
Ruijie(config-if)# rmon collection stats 1 zhansan
```

rmon collection history <i>index owner owner-name</i> buckets <i>bucket-number</i> interval <i>seconds</i>	

28.1.2 rmon collection history

no

rmon collection history *index owner ownername* **buckets**
bucket-number interval seconds
no rmon collection history *index*

```
Ruijie(config)# interface fast-Ethernet 0/1
Ruijie(config-if)# rmon collection history 1 zhansan
buckets 10 interval 10
```

--	--

rmon alarm *number variable interval* **absolute delta**
rising-threshold *value event-number* **falling-threshold** *value*
event-number **owner** *ownername*
no rmon alarm *number*

Ruijie(config)# **rmon alarm** 10 1.3.6.1.2.1.2.2.1.12.6 30
delta rising-threshold 20 1 **falling-threshold** 10 1 **owner**
zhangsan

rmon event <i>number log trap community</i> <i>description-string</i>	

28.1.4 rmon event

no

rmon event *number log trap community* *description-string*
no rmon alarm *number*

```
Ruijie(config)# rmon event 1 log trap rmon description
"ifInNUcastPkts is too much " owner zhangsan
```

rmon alarm <i>number variable interval</i> absolute delta rising-threshold <i>value</i> <i>event-number falling-threshold</i> <i>value</i> <i>event-number</i> owner <i>ownername</i>	

28.2

28.2.1 show rmon statistics

```
show rmon statistics
```

```
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
```

rmon collection stats <i>index</i>	
owner <i>owner-string</i>	

28.2.2 show rmon history

show rmon history

```
Ruijie# show rmon history
Entry : 1
Data source : Gil/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



Log : 2
Log time : 0d:0h:38m:56s
Log description : ipttl



rmon event <i>number</i> log trap <i>community</i> <i>description-string</i>	
---	--

29 VRF

29.1 VRF

- show ip route vrf
- clear ip route vrf
- ip vrf
- ip vrf forwarding
- show ip vrf

29.1.1 show ip route vrf

show ip route vrf *vrf-name network mask*

<i>vrf-name</i>	
<i>network</i>	
<i>mask</i>	

Ruijie# **show ip route vrf redvrf**

clear ip route vrf	

29.1.2 clear ip route vrf

clear ip route vrf *vrf-name* *network mask*

<i>vrf-name</i>	
*	
<i>network</i>	
<i>mask</i>	

Ruijie# **clear ip route vrf redvrf ***

show ip route vrf

29.1.3 ip vrf

ip vrf *vrf-name*

no ip vrf *vrf-name*

vrf-name

Ruijie(config)# **ip vrf redvrf**

29.1.4 rd

rd rd_value

Ruijie(config)# **ip vrf vrf1**
Ruijie (config-vrf)# **rd 100:1**

import

export

both

●

●

```
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
```

ip vrf	

29.1.6 ip vrf forwarding

ip vrf forwarding *vrf-name*

no ip vrf forwarding *vrf-name*

vrf-name

Ruijie(config-if)# **ip vrf forwarding redvrf**

29.1.7 show ip vrf

show ip vrf brief detail interfaces *vrf-name*

brief

detail

interfaces

vrf-name

-
-

Ruijie# **show ip vrf redvrf**

30 RIP

30.1

30.1.1 address-family RIP

```
address-family
no
address-family ipv4 vrf vrf-name
no address-family ipv4 vrf vrf-name
```

<code>vrf <i>vrf-name</i></code>	

address-family

exit-address-family exit

```
Ruijie(config)# ip vrf vpn1
Ruijie(config-vrf)# exit
Ruijie(config)# interface FastEthernet 1/0
Ruijie(config-if)# ip vrf forwarding vpn1
Ruijie(config-if)# ip address 192.168.1.1
255.255.255.0
```

```
Ruijie(config)# router rip
Ruijie(config-router)# address-family ipv4 vrf vpn1
Ruijie(config-router-af)# network 192.168.1.0
Ruijie(config-router)# exit-address-family
```

exit-address-family	
ip vrf	

30.1.2 auto-summary (RIP)

```
no auto-summary
auto-summary
no auto-summary
```

-
-
-

```
Ruijie(config)# router rip  
Ruijie(config-router)# version 2  
Ruijie(config-router)# no auto-summary
```

```
Ruijie(config-router)# default-metric 3
Ruijie(config-router)# redistribute ospf 100
```

redistribute	

30.1.4 default-information originate(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
```

always	
metric <i>metric-value</i>	<i>metric-value</i>
route-map <i>map-name</i>	

```
default-information originate
```

```
always
```

```
show ip rip database
```

```

                                route-map
                                set metric
                                metric
route-map set metric          metric

```

r

```

                                ip default-network
default-information originate

```

```

Ruijie(config-router)# default-information originate
always

```

ip rip default-information	
redistribute	

30.1.5 distance

```

                                distance
                                no
distance distance ip-address wildcard
no distance distance ip-address wildcard

```

<i>distance</i>	
<i>ip-address</i>	
<i>wildcard</i>	

```
Ruijie(config)# router rip
Ruijie(config-router)# distance 160
Ruijie(config-router)# distance 123 192.168.12.1
0.0.0.0
```

30.1.6 distribute-list in RIP

distribute-list in no

distribute-list *access-list-number name prefix prefix-list-name*
gateway *prefix-list-name in interface-type interface-number*

no distribute-list *access-list-number name prefix prefix-list-name*
gateway *prefix-list-name in interface-type interface-number*

<i>access-list-number</i>	
prefix <i>prefix-list-name</i>	
gateway <i>prefix-list-name</i>	
<i>interface-type interface-number</i>	

```

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

```

access-list	
prefix-list	

30.1.7 distribute-list out RIP

distribute-list out no

distribute-list *access-list-number name prefix prefix-list-name*
out *interface protocol process-id process-name*

no distribute-list *access-list-number name prefix prefix-list-name*
out *interface protocol process-id process-name*

<i>access-list-number</i>	
prefix <i>prefix-list-name</i>	
<i>interface</i>	

<i>protocol</i>	
<i>process-id</i>	<i>protocol</i>
<i>process-name</i>	<i>protocol</i>

```
Ruijie(config)# router rip
Ruijie(config-router)# network 200.4.4.0
Ruijie(config-router)# network 192.168.12.0
Ruijie(config-router)# distribute-list 10 out
Ruijie(config-router)# version 2
Ruijie(config)# access-list 10 permit 192.168.12.0
0.0.0.255
```

access-list	
prefix-list	
redistribute	

30.1.8 exit-address-family

exit-address-family

exit-address-family

no

exit

Ruijie(config-router)# **address-family ipv4 vrf vpn1**

```
Ruijie(config)# interface serial 0/0
Ruijie(config-if)# ip rip authentication key-chain
ripchain
```

ip rip authentication mode	
ip rip authentication text-password	
key chain	

30.1.10 ip rip authentication mode

```
mode no ip rip authentication
ip rip authentication mode text md5
no ip rip authentication mode
```

text	
md5	

```
Ruijie(config)# interface serial 0/0
Ruijie(config-if)# ip rip authentication mode md5
```

ip rip authentication key-chain	
ip rip authentication text-password	

30.1.11 ip rip authentication text-password

```
ip rip authentication
text-password no
ip rip authentication text-password password-string
no ip rip authentication text-password
```

<i>password-string</i>	

```
Ruijie(config)# interface serial 0/0
Ruijie(config-if)# ip rip authentication text-password
ruijie
```

ip rip authentication mode	
ip rip authentication key-chain	

30.1.12 ip rip default-information

ip rip

default-information no

ip rip default-information only originate metric *metric-value*

no ip rip default-information

only	
originate	
metric <i>metric-value</i>	



```
Ruijie(config)# interface ethernet 0/0
Ruijie(config-if)# ip rip default-information only
```

default-information originate	

30.1.13 ip rip receive enable

```
receive enable          no          ip rip
```

```
ip rip receive enable
no ip rip receive enable
```

```
no
default
```

```
Ruijie(config)# interface fastethernet 0/0
Ruijie(config-if)# no ip rip receive enable
```

ip rip send enable	
passive-interface	

30.1.14 ip rip receive version

ip rip receive version no
ip rip receive version 1 2
no ip rip receive version

1	
2	

version

vesion

```
Ruijie(config)# interface fastethernet 0/0  
Ruijie(config-if)# ip rip receive version 1 2
```

version	

30.1.15 ip rip send enable

send enable no

ip rip

ip rip send enable

no ip rip send enable

**no
default**

Ruijie(config)# **interface fastethernet 0/0**
Ruijie(config-if)# **no ip rip send enable**

ip rip receive enable	
passive-interface	

30.1.16 ip rip send version

ip rip receive version no
ip rip send version 1 2
no ip rip send version

1	
2	

version

vesion

3

```
Ruijie(config)# interface fastethernet 0/0
Ruijie(config-if)# ip rip v2-broadcast
```

version	

30.1.18 ip split-horizon (RIP)

ip split-horizon p) " €

auto-summary	

30.1.20 network (RIP)

network **no**
network *network-number wildcard*
no network *network-number wildcard*

<i>network-number</i>	
<i>wildcard</i>	

network-number wildcard

wildcard

```
Ruijie(config)# router rip
Ruijie(config-router)# network 192.168.12.0
Ruijie(config-router)# network 172.16.0.0 0.0.0.255
```

30.1.21 neighbor (RIP)

neighbor

no

neighbor *ip-address*

no neighbor

--	--

ip-address

S • î,ý-ÓKÂ5% p! <F¼-Ñ€'!,&, Ä< y Ê ,ýôr μ

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

```
Ruijie(config-router)# offset-list 7 out 7
```

```
Ruijie(config-router)# offset-list 7 in 7
```

```
Ruijie(config-router)# offset-list 8 in 7 fastEthernet  
1/0
```

30.1.23 output-delay

```
output-delay no
```

```
output-delay delay
```

```
no output-delay
```

--	--

```
delay
```

output-delay

```
Ruijie(config)# router rip  
Ruijie(config-router)# output-delay 30
```

30.1.24 passive-interface

passive-interface **no**

passive-interface default *interface-type interface-num*

no passive-interface default *interface-type interface-num*

default	
<i>interface-type interface-num</i>	

passive-interface default

no passive-interface *intface-type interface-num*

ip rip send enable

ip rip receive enable

enable

ip rip send enable

ip rip receive

```
Ruijie(config-router)# passive-interface default
Ruijie(config-router)# no passive-interface ethernet
0/0
```

ip rip receive enable	
ip rip send enable	

30.1.25 redistribute RIP

redistribute

no

```
redistribute bgp isis process-name ospf <1-65535> connec  
ted static metric value route-map route-map-name match i  
nternal external type nssa-external type
```

```
no redistribute bgp isis process-name ospf <1-65535>  
connected static metric value route-map route-map-name  
match internal external type nssa-external type
```

bgp isis ospf connected static	
metric	
route-map	
match	
<i>process-name</i>	
<1-65535>	

isis

ospf

Ruijie(config-router)# **redistribute static**



async default routing

Ruijie(config)# **router rip**

network (RIP)	

30.1.27 timers basic

timers basic

timers basic *update invalid flush*

no timers basic

<i>update</i>	<i>update</i> <i>invalid Flush</i>
<i>invalid</i>	<i>invalid</i> <i>invalid invalid</i> <i>Invalid</i>

<i>flush</i>	<i>flush</i> <i>Flush</i>	<i>invalid</i>
--------------	------------------------------	----------------

show ip rip

```
Ruijie(config)# router rip  
Ruijie(config-router)# timers basic 10 30 90
```

r

30.1.28 validate-update-source

validate-update-source no

validate-update-source

no validate-update-source

ip rip send version

ip rip receive version

```
Ruijie(config)# router rip  
Ruijie(config-router)# version 2
```

ip rip receive version	
ip rip send version	

```
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)
```

```
Ruijie(config-router)# sh ip rip vrf 1
VRF 1 VRF-id:1
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 4 seconds
Invalid after 180 seconds, flushed after 120 seconds
Outgoing update filter list for all interface is: not
set
Incoming update filter list for all interface is: not
set
Default redistribution metric is 1
Redistributing:
Default version control: send version 1, receive any
version
Routing for Networks:
Distance: (default is 120)
```

30.2.2 show ip rip database

show ip rip database

show ip rip database *vrf vrf-name network-number network-mask*

vrf <i>vrf-name</i>	
<i>network-number</i>	
<i>network-mask</i>	

```
Ruijie# show ip rip database
192.168.1.0/24    auto-summary
192.168.1.0/30    directly connected, Loopback 3
192.168.1.8/30    directly connected, FastEthernet 0/0
192.168.121.0/24  auto-summary
192.168.121.0/24  redistributed
[1] via 192.168.2.22, FastEthernet 0/1
```

```
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
```

--	--

show ip rip	
-------------	--

30.2.3 show ip rip external

show ip rip external

show ip rip external **bgp** **connected** **isis** *process-name* **ospf**
1-65535 **static** **vrf** *vrf-name*

bgp connected isis ospf static	

vrf *vrf-name*

show ip rip	

30.2.4 show ip rip interface

show ip rip interface

show ip rip interface vrf *vrf-name*

vrf <i>vrf-name</i>	

```
Ruijie# show ip rip interface
FastEthernet 1/1 is down, line protocol is down
  RIP is not enabled on this 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 register: 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 , :
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

```

show ip rip	

30.2.5 show ip rip peer

show ip rip peer

show ip rip peer *ip-address* **vrf** *vrf-name*

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

Ruijie# **show ip rip peer**

Peer 192.168.3.2:

Local address: 192.168.3.1

Input interface: GigabitEthernet 0/2

Peer version: RIPv1

Received bad packets: 3

Received bad routes: 0

BFD session state up

show ip rip	

31 OSPF

31.1

31.1.1 area

no

area

no area

no

area authentication area default-cost area filter-list

area nssa

network area

```
Ruijie(config)# router ospf 2
```

```
Ruijie(config)# no area 2
```

network area	

31.1.2 area authentication

no

area authentication

area *area-id* authentication message-digest

no area

```
Ruijie(config)# interface FastEthernet 0/0
Ruijie(config-if)# ip address 192.168.12.1
255.255.255.0
Ruijie(config-if)# ip ospf message-digest-key 1 md5
backbone
```

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 192.168.12.0
0.0.0.255 area 0
Ruijie(config-router)# area 0 authentication
message-digest
```

ip ospf authentication-key	
ip ospf message-digest-key	
area virtual-link	

31.1.3 area default-cost

area default-cost no

area *area-id* default-cost *cost*

no area *area-id* default-cost

<i>area-id</i>	
<i>cost</i>	

```

stub area nssa area default-cost
area stub
nssa area default-cost
area
area

```

```

Ruijie(config)# router ospf 1
Ruijie(config-router)# network 172.16.0.0 0.0.255.255
area 0
Ruijie(config-router)# network 192.168.12.0 0.0.0.255
area 1
Ruijie(config-router)# area 1 stub
Ruijie(config-router)# area 1 default-cost 50

```

area stub	
area nssa	

31.1.4 area filter-list

```

area area-id filter-list access acl-name prefix prefix-name in out
no area area-id filter-list access acl-name prefix prefix-name in
out

```

area-id	
no-redistribution	
default-information-originate	
no-summary	

default-information-originate

no-redistribution

μ

area default-cost

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 nssa

```

area default-cost	

31.1.6 area range

```

range no no area
cost cost
area area-id range ip-address net-mask advertise not-advertise
cost cost
no area area-id range ip-address net-mask cost

```

<i>area-id</i>	
<i>ip-address</i>	
advertise not-advertise	
cost <i>cost</i>	

```
Ruijie(config)# router ospf 1  
Ruijie(config-router)# network
```

area stub

area stub

default-cost	area stub	area
area default-cost		area stub
		area default-cost

```
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
```

(1)Tj-2.182998.00077 T0.02.62 re17501 T182998.mh277.62 309.00 -97 Tc.0054b9 re18Tj-3

mit-interval *seconds* **transmit-delay** *seconds* **authentication-key** *key* **message-digest-key** *key-id md5 key*
no area *area-id* **virtual-link** *router-id*

<i>area-id</i>	
<i>router-id</i>	
dead-interval <i>seconds</i>	
hello-interval <i>seconds</i>	
retransmit-interval <i>seconds</i>	
transmit-delay <i>seconds</i>	
authentication-key <i>key</i>	
message-digest-key <i>key-id md5 key</i>	
authentication	

retransmit-interval

transmit-delay

area authentication	
show ip ospf	

31.1.9 auto-cost

no

auto-cost reference-bandwidth *ref-bw*

no auto-cost reference-bandwidth

--	--

ref-bw

```
Ruijie(config-router)# auto-cost reference-bandwidth  
10
```

show ip ospf	

31.1.10 clear ip ospf process

```
clear ip ospf process-id process
```

<i>process-id</i>	

```
Ruijie# clear ip ospf 1 process
```

31.1.11 compatible rfc1583

commpatible rfc1583
no commpatible rfc1583

Ruijie(config)# **router ospf 1**
Ruijie(config-router)# **no commpatible rfc1583**

show ip ospf	

always	
metric <i>metric</i>	
metric-type <i>type</i>	
route-map <i>map-name</i>	

redistribute default-information

default-information originate

show ip ospf database

show ip route

**default-information originate
default-metric**

show ip route

Ruijie(config)# **router ospf 1**

```
Ruijie(config-router)# network 172.16.24.0 0.0.0.255
area 0
Ruijie(config-router)# default-information originate
always metric 50 metric-type 1
```

show ip ospf database	
show ip route	

31.1.13 default-metric

```
default-metric no
```

```
default-metric metric
```

```
no default-metric
```

metric	

```
default-metric redistribute
```

```
default-metric default-information originate
```

```
Ruijie(config)# router rip
```

```

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

```

redistribute	
show ip ospf	

31.1.14 distance ospf

```

distance ospf intra-area 1-255 inter-area 1-255 external
1-255
no distance ospf

```

intra-area 1-255	
inter-area 1-255	
external 1-255	

```
Ruijie(config)# router ospf 1  
Ruijie(config-router)# distance ospf external 160
```

31.1.15 distribute-list in

```
distribute-list listname gateway plist-name prefix plist-name  
in interface-type num  
no distribute-list listname gateway plist-name prefix plist-name  
in interface-type num
```

<i>listname</i>	
gateway <i>plist-name</i>	
prefix <i>plist-name</i>	
interface-type <i>num</i>	

```
Ruijie(config)# access-list 3 permit 172.16.0.0  
0.0.127.255  
Ruijie(config)# router ospf 25  
Ruijie(config-router)# redistribute rip metric 100
```

```
Ruijie(config-router)# distribute-list 3 in ethernet
1/0
Ruijie(config-router)# distribute-list 3 in ethernet
1/1
```

31.1.16 distribute-list out

redistribute

```
distribute-list istname gateway plist-name prefix plist-name out
bgp connected isis area-tag ospf process-id rip static
no distribute-list istname gateway plist-name prefix plist-name
out bgp connected isis area-tag | ospf process-id rip static
```

<i>listname</i>	
gateway <i>plist-name</i>	
prefix <i>plist-name</i>	
bgp connected isis <i>area-tag</i> ospf <i>process-id</i> rip static	

distribute-list out **redistribute route-map**

redistribute

```
Ruijie(config)# router ospf 1
Ruijie(config)# redistribute static subnets
Ruijie(config-router)# distribute-list 22 out static
Ruijie(config-router)# distribute-list prefix jjj
outstatic
% There already has filter configured. Please
re-configure.
```

31.1.17 enable mib-binding

show ip ospf	

enable traps

ifauthfailure
ifconfigerror

error

Isa

**Isdbapproach
overflow**

Isdboverflow

**maxagelsa
originatelsa**

retransmit	iftxretransmit virtiftxretrans mit
-------------------	---

<p>state-change</p>	<p>ifstatechange nbrstatechange virtifstatechange virtnbrstatechange</p>
----------------------------	--

snmp-server
enable traps ospf

snmp-server

Ruijie(config)# **router ospf 100**

Ruijie(config)# **enable traps**

show ip ospf	
enable mib-binding	

ī,ī •A¼

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# graceful-restart helper disable
Ruijie(config-router)# no graceful-restart helper
disable
Ruijie(config-router)# graceful-restart helper
strict-lsa-checking
```

graceful-restart	

31.1.20 ip ospf authentication

no

```
ip ospf authentication message-digest null
no ip ospf authentication
```

--	--

message-digest	
null	

no

null

```
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
```

area authentication	
ip ospf authentication-key	
ip ospf message-digest-key	

31.1.21 ip ospf authentication-key

authentication-key **no** **ip ospf**

ip ospf authentication-key *key*

no ip ospf authentication-key

31.1.23 ip ospf database-filter all out

```
no
ip ospf database-filter all out
no ip ospf database-filter
```


```
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 database-filter all out
```

31.1.24 ip ospf dead-interval

```
ospf dead-interval no ip
ip ospf dead-interval seconds
```

no ip ospf dead-interval

<i>seconds</i>	

ip ospf hello-interval

-
-

```
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	

31.1.25 ip ospf disable all

ip ospf disable all
no ip ospf disable all

network area

```
Ruijie(config)# interface serial 1/0  
Ruijie(config-if)# ip address 172.16.10.1  
255.255.255.0  
Ruijie(config-if)# ip ospf disable all
```

31.1.26 ip ospf hello-interval

hello-interval no

ip ospf hello-interval seconds

no ip ospf hello-interval

ip ospf

<i>seconds</i>	

- -
-

-
- -

```
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
```

ip ospf dead-interval	

31.1.27 ip ospf message-digest-key

ip ospf hello-interval 15

ip ospf message-digest-key

authentication

area

ip ospf authentication

```
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
```



area authentication	
----------------------------	--

ip ospf authentication	
-------------------------------	--

ip ospf network

no

ip ospf network broadcast non-broadcast point-to-multipoint non-broadcast point-to-point

no ip ospf network broadcast non-broadcast point-to-multipoint non-broadcast point-to-point

broadcast	
non-broadcast	
point-to-multipoint non-broadcast	
point-to-point	

●

●

●

●

●

●

●

●

●

X.25 map

frame-relay map

●

●

```
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)# 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
```

```
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
```

dialer map ip	
frame-relay map	
neighbor	
X25 map	

31.1.30 ip ospf priority

ip ospf priority

no

ip ospf priority *priority*

no ip ospf priority

<i>Priority</i>	

broadcast non-broadcast

r :

```
Ruijie(config)# interface fastethernet
```

```
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip ospf retransmit-interval 10
```

area virtual-link	

31.1.32 ip ospf transmit delay

```
transmit delay          no
ip ospf transmit delay seconds
no ip ospf transmit delay
```

ip ospf

Seconds	

ip ospf transmit delay

area

virtual-link **retransmit-interval**

```
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip ospf transmit delay 10
```

area virtual-link	

31.1.33 log-adj-changes

no default

log-adj-changes detail
no log-adj-changes detail



show ip ospf	

31.1.34 max-concurrent-dd

max-concurrent-dd 1-65535

1-65535	

```
Ruijie(config)# router ospf 10  
Ruijie(config-router)# max-concurrent-dd 4
```

31.1.35 neighbor

neighbor **no**

neighbor *ip-address* **poll-interval** *seconds* **priority** *priority* **cost**

cost

no neighbor *ip-address*

<i>ip-address</i>	
poll-interval <i>seconds</i>	
priority <i>priority</i>	
Cost <i>cost</i>	

```
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
```

ip ospf priority	
ip ospf network	

31.1.36 network area

network area no

network *ip-address wildcard* **area** *area-id*

no network *ip-address wildcard* **area** *area-id*

<i>ip-address</i>	

wildcard

ar01c35 Tc (IP)Tj /TT2 1 Tf

```

Ruijie(config)# router ospf 20
Ruijie(config-router)# network 172.16.16.0
0.0.15.255 area 172.16.16.0
Ruijie(config-router)# network 192.168.12.0
0.0.0.255 area 1
Ruijie(config-router)# network 0.0.0.0 255.255.255.255
area 0

```

router ospf	

31.1.37 overflow database

```

overflow database 0-4294967294 hard soft
no overflow database

```

<i>1-4294967294</i>	
hard soft	

soft

hard

```
Ruijie# config terminal
Ruijie(config)# router ospf 10
Ruijie(config-router)# overflow database 10 hard
```

31.1.38 overflow database external

overflow database external *max-dbsize wait-time*
no overflow database external

<i>max-dbsize</i>	
<i>wait-time</i>	

max-dbsize

wait-time

```
Ruijie# config terminal
Ruijie(config)# router ospf 10
Ruijie(config-router)# overflow database external 10 3
```

31.1.39 overflow memory-lack

overflow memory-lack

no overflow memory-lack

Ruijie# **config terminal**

Ruijie(config)# **router ospf 10**

Ruijie(config-router)# **no overflow memory-lack**

--	--

clear ip ospf process	
show ip protocols ospf	

31.1.40 passive-interface

no

passive-interface default *type number*

no passive-interface default *type number*

<i>type number</i>	
default	

```
Ruijie(config)# router ospf 30
```

```
Ruijie(config-router)# passive-interface serial1/0
```

show ip ospf interface	

isis

ospf

```
Ruijie(config-router)# redistribute static subnets
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
```

```
router ospf 1
redistribute ospf 2 match external 1 internal subnets
redistribute isis isis-001 level-1-2
```

31.1.42 router ospf

```
no
router ospf process-id vrf vrf-name
no router ospf process-id
```

router ospf

<i>process-id</i>	
<i>vrf-name</i>	

vrf *vpn_1*

Ruijie(config)# **router ospf 10 vrf** *vpn_1*

show ip protocols	
show ip ospf	

31.1.43 router-id

no

router-id *router-id*

no router-id

<i>router-id</i>	

```
router-id 0.0.0.36
Ruijie(config)# router ospf 20
Ruijie(config-router)# router-id 0.0.0.36
```

show ip protocols	

31.1.44 summary-address

```
summary-address no
summary-address ip-address net-mask not-advertise | tag
<0-4294967295> |
```

<i>ip-address</i>	
<i>net-mask</i>	
not-advertise	

area rang

summary-address

```
redRuijie(config)# router ospf 20  
Ruijie(config-router)# summary-address 100.100.0.0  
255.255.0.0  
Ruijie(config-router)# redistribute static subnets  
Ruijie(config-router)# network 200.2.2.0 0.0.0.255  
area 1  
Ruijie(config-router)# network 172.16.24.0 0.0.0.255  
area 0  
Ruijie(config-router)# area 1 nssa
```

area range	

31.1.45 timers lsa-group-pacing

no

timers lsa-group-pacing seconds

no timers lsa-group-pacing



<i>spf-delay</i>	
------------------	--

spf-holdtime

31.1.47 timers throttle spf

timers throttle spf

timers **spf** *spf-delay spf-holdtime spf-max-waittime*

no timers throttle spf

<i>spf-delay</i>	
<i>spf-holdtime</i>	
<i>spf-max-waittime</i>	

spf-delay

spf-holdtime

spf-max-waittime

spf-delay

spf-holdtime

spf-max-waittime

spf-holdtime

spf-delay *spf-holdtime*

spf-max-waittime

timers spf

timers throttle spf

r :

show ip ospf

show ip ospf process-id

<i>process-id</i>	

show ip ospf

```
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
isenabled
Supports only single TOS(TOS0) routes
Supports opaque LSA
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
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 isselected

0 -1.4457 7126 area cnform

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



31.2.2 show ip ospf border-routers

show ip ospf border-routers

show ip ospf *process-id* border-routers

<i>process-id</i>	

show ip route

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
```

31.2.3 show ip ospf database

(shobaid2.688218540070)

show ip ospf *process-id area-id database asbr-summary link-state-id*

show ip ospf *process-id area-id database asbr-summary link-state-id* **adv-router** *ip-address*

show ip ospf *process-id area-id database asbr-summary link-state-id* **self-originate**

show ip ospf *process-id area-id database external link-state-id*

show ip ospf *process-id area-id database external link-state-id* **adv-router** *ip-address*

show ip ospf *process-id area-id database external link-state-id* **self-originate**

show ip ospf *process-id area-id database nssa-external link-state-id*

show ip ospf *process-id area-id database nssa-external link-state-id* **adv-router** *ip-address*

show ip ospf *process-id area-id database nssa-external link-state-id* **self-originate maxage**

show ip ospf *process-id area-id database database-summary*

Area-id

adv-router

link-state-id

nssa-external	
opaque-area	
opaque-as	
opaque-link	
database-summary	

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
192.88.88.27    1.1.1.1          120 0x80000001  0x5366

      Summary Link States (Area 0.0.0.0)

Link ID          ADV Router      Age  Seq#          CkSum
Route
10.0.0.0         1.1.1.1          2   0x80000003  0x350d
10.0.0.0/24
100.0.0.0        1.1.1.1          2   0x8000000c  0x1ecb
100.0.0.0/16

      Router Link States (Area 0.0.0.1 [NSSA])

```

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: /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



show ip ospf databa]unssa exutena

Router Link	

31.2.4 show ip ospf interface

show ip

ospf interface

show ip ospf interface *interface-type interface-number*

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

show ip ospf interface FastEthernet 1/0

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

31.2.5 show ip ospf neighbor

show ip ospf

neighbor

show ip ospf *process-id* **neighbor detail** *interface-type*
interface-number neighbor-id

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

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
BFD session state up

show ip ospf neighbor

--	--

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

31.2.7 show ip ospf summary-address

show ip ospf summary-address

show ip ospf summary-address

show ip ospf summary-address

Ruijie# **show ip ospf summary-address**

Aggregatedddrbnets 1 Tf0D<362e1aa10(----- 1 Tf9.32)Tj/TT1

show ip ospf neighbor

show ip ospf virtual-links

```
Ruijie# show ip ospf virtual-links
Virtual Link VLINK0 to router 1.1.1.1 is up
Transit area 0.0.0.1 via interface FastEthernet 0/1
Local address 10.0.0.37/32
Remote address 10.0.0.27/32
Transmit Delay is 1 sec, State Point-To-Point,
Timer intervals configured, Hello 10, Dead 40, Wait 40,
Retransmit 5
Hello due in 00:00:05
Adjacency state Full
```



32

32.1

32.1.1 distribute-list in

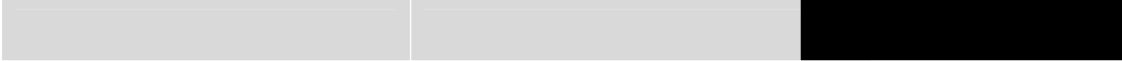
distribute-list in **no**


distribute-list *access-list-number name* **prefix** *prefix-list-name*
gateway *prefix-list-name* **in** *interface-type interface-number*

no distribute-list *access-list-number name* **prefix** *prefix-list-name*
gateway *prefix-list-name* **in** *interface-type interface-number*

<i>access-list-number</i>	
prefix <i>prefix-list-name</i>	
gateway <i>prefix-list-name</i>	
<i>nterface-type interface-number</i>	

```
router rip
network 200.168.23.0
distribute-list 10 in fastethernet 0/0
no auto-summary
!
access-list 10 permit 172.16.0.0 0.0.255.255
```





```

router rip
network 200.4.4.0
network 192.168.12.0
distribute-list 10 out
version 2
access-list 10 permit 192.168.12.0

```

access-list	
prefix-list	
redistribute	

32.1.3 ip community-list

no

```

ip community-list standard | expanded community-list-name
community-number permit deny community-number
no ip community-list standard | expanded community-list-name |
community-number

```

<i>community-list-name</i>	
standard	
expanded	
permit	
deny	

community-number

no ip default-network *network*

<i>network</i>	

default-network

```
ip route 192.168.100.0 255.255.255.0 serial 0/1  
ip default-network 192.168.100.0
```

```
ip default-network 200.200.200.0
```

show ip route	

32.1.5 ip prefix-list

no

ip prefix-list

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** *de70.0022 Tc[]j/TT5 1 Tf0.Tc0-5.2(64j/ Tf0.2 4 TfTw(Tj/TT14 1 Tf1.44 0 TD-*

```
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
```

32.1.6 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>	

```
Ruijie# configure terminal
```

```
Ruijie(config)# ip prefix-list pre description Deny
routes from Net-A
```

32.1.7 ip prefix-list sequence-number

```
no ip prefix-list description
ip prefix-list sequence-number
```

```
Ruijie# configure terminal
Ruijie(config)# ip prefix-list pre description Deny
routes from Net-A
```

32.1.8 ip route

```
ip route vrf vrf_name network net-mask ip-address interface
ip-address distance tag tag permanent weight number disable
enable
```

<i>vrf_name</i>	
<i>network</i>	

<i>net-mask</i>	
<i>ip-address</i>	
<i>interface</i>	
<i>distance</i>	
<i>tag</i>	
permanent	
<i>number</i>	
disable/enable	

show ip route weigh

```
ip route 172.16.100.0 255.255.255.0 192.168.12.1 115
```

```
ip route 172.16.100.0 255.255.255.0 fastethernet 0/0  
192.168.12.1
```

show ip route	

32.1.10 ip static route-limit

ip static route-limit

ip static route-limit *number*

ip static route-limit *number*

<i>number</i>	

route-limit

ip static

show running config

```
ip static route-limit 900
```

32.1.11 ipv6 prefix-list

ipv6

prefix-list

no

ipv6 prefix-list *prefix-list-name* **seq** *seq-number* **deny permit**

ipv6-prefix **ge** *minimum-prefix-length* **le** *maximum-prefix-length*

no ipv6 prefix-list *prefix-list-name* **seq** *seq-number* **deny permit**

ipv6-prefix **ge** *minimum-prefix-length* **le** *maximum-prefix-length*

<i>prefix-lis-name</i>	
<i>seq-number</i>	
deny	
permit	

2147483647

(

```
Ruijie# configure terminal
Ruijie(config)# ipv6 prefix-list pre permit 2222::/64
Ruijie(config)# ipv6 router rip
Ruijie(config-router)# distribute-list prefix pre out
ospf
Ruijie(config-router)# end
```

32.1.12 ipv6 prefix-list description

ipv6 prefix-list

description **no**

ipv6 prefix-list *prefix-lis-name* **description** *descripton-text*

<i>prefix-lis-name</i>	
<i>descripton-text</i>	

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

match interface

set

match

match

match ip route-source	
match metric	
match route-type	
match tag	
set metric	
set metric-type	
set tag	

32.1.17 match ip address

match ip 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 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...*

<i>access-list-number</i>	
<i>access-list-name</i>	
prefix-list <i>prefix-list-name</i>	

match ip address

set tag	
---------	--

32.1.18 match ip next-hop

match ip next-hop **no**

match ip next-hop *access-list-number access-list-number... |
access-list-name... [access-list-name access-list-number...]
access-list-name | prefix-list prefix-list-name [prefix-list-name...*

no match ip next-hop *access-list-number access-list-number... |
access-list-name... access-list-name access-list-number...|
access-list-name prefix-list prefix-list-name prefix-list-name...*

<i>access-list-number</i>	
<i>access-list-name</i>	
prefix-list <i>prefix-list-name</i>	

match ip next-hop

set **match** **match** **set**

```
router ospf
redistribute rip subnets route-map redrip
network 192.168.12.0 0.0.0.255 area 0
access-list 10 permit 192.168.100.1
access-list 20 permit 172.16.10.1
route-map redrip permit 10
match ip next-hop 10 20
```

access-list	
match ip address	
match interface	
match ip route-source	
match metric	
match route-type	
match tag	
set metric	
set metric-type	
set tag	

32.1.19 match ip route-source

match ip route-source **no**

match ip route-source *access-list-number access-list-number... |*

access-list-name... |access-list-name #|access-list-name

set **match** **match** **set**

```
ipv6 router ospf
redistribute rip subnets route-map redrip
ipv6 access-list v6acl
10 permit ipv6 2620::/64 any
route-map redrip permit 10
match ipv6 address v6acl
set metric 30
```

ipv6 access-list	
match interface	
match ipv6 next-hop	
match ipv6 route-source	
match metric	
match route-type	
match tag	
set metric	
set metric-type	
set tag	

32.1.21 match ipv6 next-hop

match ipv6 address **no**

match ipv6 next-hop *access-list-name* **prefix-list** *prefix-list-name*

no match ipv6 next-hop



<i>access-list-name</i>	
prefix-list <i>prefix-list-name</i>	

set
match
match
set

```

ipv6 router ospf
redistribute rip subnets route-map redrip
ipv6 access-list v6acl
10 permit ipv6 5200::/64 any
route-map redrip permit 10
match ipv6 route-source v6acl
set metric 50

```

ipv6 access-list	

match interface	
match ipv6 address	
match ipv6 route-source	
match metric	
match route-type	
match tag	
set metric	
set metric-type	
set tag	

32.1.23 match length

match

length **no**

match length *min-length max-length*

no match length *min-length max-length*

<i>min-length</i>	
<i>max-length</i>	

```

interface fastethernet 1/0
ip policy route-map smallpak

route-map smallpak permit 10
match length 0 500
set interface fastethernet 0/0

```

route-map	
match ip address	
set default interface	
set interface	
set ip default next-hop	
set ip next-hop	
set ip precedence	

32.1.24 match metric

```

no
match metric metric
no match metric

```

match metric

--	--

<i>Metric</i>	
---------------	--

set **match** **match** **set**

```
router ospf
redistribute rip subnets route-map redist-rip
network 192.168.12.0 0.0.0.255 area 0
```

```
route-map redist-rip permit 10
match metric 10
```

access-list	
match ip address	
match interface	
match ip next-hop	
match ip route-source	
match route-type	
match tag	

set metric	
set metric-type	
set tag	

32.1.25 match origin

match

```

origin          no
match origin egp igp incomplete
no match origin egp igp incomplete|

```

egp	
igp	
Incomplete	

```

route-map MY_MAP 10 permit
match origin egp
set community 109

```

```

route-map MAP20 20 permit
match origin incomplete
set community no-export

```

set **match** **match** **set**

```
router rip
redistribute ospf route-map redrip
network 192.168.12.0

route-map redrip permit 10
match route-type internal
```

access-list	
match ip address	
match interface	
match ip next-hop	
match ip route-source	
match metric	
match tag	
set metric	
set metric-type	
set tag	

32.1.27 match tag

match tag

no

match tag *tag ...tag*

no match tag *tag ...tag*

match ip address	
match interface	
match ip route-source	
match metric	
match ip next-hop	
match route-type	
set metric	
set metric-type	
set tag	

32.1.28 maximum-paths

maximum-paths

maximum-paths *number*

no maximum-paths *number*

<i>number</i>	

maximum-paths

config

show running

```
maximum-paths 10
no maximum-paths
```

32.1.29 route-map

route-map

no

```
route-map route-map-name permit deny sequence-number
```

```
no route-map route-map-name permit deny sequence-number
```

<i>route-map-name</i>	
permit	
deny	
<i>sequence-number</i>	

set

match

match

set

sequence-number

sequence-number

```
router ospf
redistribute rip subnets route-map redrip
```

```
network 192.168.12.0 0.0.0.255 area 0
```

```
route-map redrip permit 10  
match metric 4  
set metric 40  
set metric-type type-1  
set tag 40
```

Redistribute	

32.1.30 set aggregator as

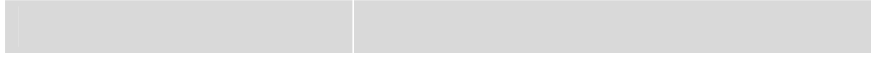
set aggregator as **no**

set aggregator as *as-num ip_addr*

no set aggregator as *as-num ip_addr*

<i>as-number</i>	
<i>ip_addr</i>	

```
match as-path 1
set aggregator as 3 2.2.2.2
```



match as-path	
match community	
match metric	
match origin	
set community	
set metric	
set metric-type	

32.1.32 set comm-list delete

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-number</i>	
<i>community-list-name</i>	

```
router bgp 100
neighbor 172.16.233.33 remote-as 120
neighbor 172.16.233.33 route-map ROUTEMAPIN in
neighbor 172.16.233.33 route-map ROUTEMAPOUT out
```

```
ip community-list 500 permit 100:10
ip community-list 500 permit 100:20
```

```
ip community-list 120 deny 100:50
ip community-list 120 permit 100:.*
```

```
route-map ROUTEMAPIN permit 10
set comm-list 500 delete
```

```
route-map ROUTEMAPOUT permit 10
set comm-list 120 delete
```

--	--

match as-path

```
route-map SET_COMMUNITY 10 permit
match as-path 1
set community 109:10
```

```
route-map SET_COMMUNITY 20 permit
match as-path 2
set community no-export
```

match as-path	
match community	
match metric	
match origin	
set as-path prepend	
set origin	
set metric-type	

32.1.34 set dampening

<i>half-life</i>	
<i>reuse</i>	
<i>suppress</i>	
<i>max-suppress-time</i>	

```

route-map tag
match as path 10
set dampening 30 1500 10000 120

```

```

router bgp 100
neighbor 172.16.233.52 route-map tag in

```

match as-path	
match community	
match metric	
match origin	
set as-path prepend	
set metric	
set local-preference	

32.1.35 set default interface

set default interface **no**

set default interface *interface-type interface-number ...interface-type interface-number*

no set default interface *interface-type interface-number ...interface-type interface-number*

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

set default interface

route-map	
match ip address	
match length	
set interface	
set ip default next-hop	
set ip next-hop	
set ip precedence	

32.1.36 set extcommunity

set extcommunity no

set extcommunity rt *extend-community-value* soo
extend-community-value

no set extcommunity rt soo



```

access-list 2 permit 192.168.78.0 255.255.255.0
route-map MAP_NAME permit 10
match ip-address 2
set extcommunity rt 100:2

```

match as-path	
match community	
match metric	
match origin	
set as-path prepend	
set metric	
set metric-type	

32.1.37 set interface

set

interface **no**

set interface *interface-type interface-number ...interface-type interface-number*

no set interface *interface-type interface-number ...interface-type interface-number*

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

32.1.38 set ip default next-hop

set ip next-hop **no**

set ip default next-hop *ip-address weight ...ip-address weight*

no set ip default next-hop *ip-address weight ...ip-address weight*

<i>ip-address</i>	
<i>weight</i>	

set ip default next-hop

B

```
access-list 1 permit ip 1.1.1.1 0.0.0.0
access-list 2 permit ip 2.2.2.2 0.0.0.0
```

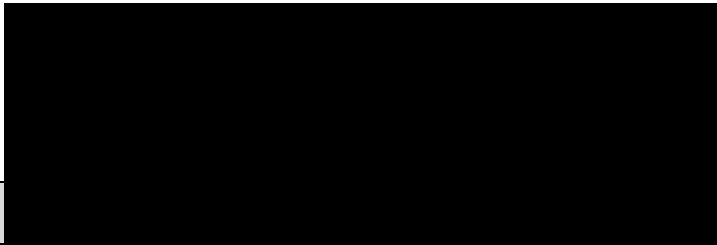
```
interface async 1
ip policy route-map equal-access
```

```
route-map equal-access permit 10
match ip address 1
set ip default next-hop 6.6.6.6
route-map equal-access permit 20
match ip address 2
set ip default next-hop 7.7.7.7
route-map equal-access permit 30
set default interface null0
```



set ips

--



14.5829 0.0171 TD73 Tc0 T TD0 090d47[725514e3b44>35.79Tj8d

32.1.40 set ip next-hop

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>	
<i>weight</i>	

set

set ip next-hop

```
interface serial 1/0
ip policy route-map load-balance

access-list 10 permit 10.0.0.0 0.255.255.255
access-list 20 permit 172.16.0.0 0.0.255.255

route-map load-balance permit 10
match ip address 10
set ip next-hop 192.168.100.1

route-map load-balance permit 20
match ip address 20
set ip next-hop 172.16.100.1

route-map load-balance permit 30
set interface Null0
```



32.1.41 set ip next-hop verify-availability

set ip

next-hop verify-availability no

set ip next-hop verify-availability *ip-address* track *track-object-num*

no set ip next-hop *ip-address* weight ...*ip-address* weight

<i>ip-address</i>	
<i>track-object-num</i>	

```
interface serial 1/0
ip policy route-map load-balance

access-list 10 permit 10.0.0.0 0.255.255.255
access-list 20 permit 172.16.0.0 0.0.255.255

route-map load-balance permit 10
match ip address 10
set ip next-hop 192.168.100.1

route-map load-balance permit 20
match ip address 20
set ip next-hop 172.16.100.1
```

```
route-map load-balance permit 30
set interface Null0
```

route-map	
match ip address	
set default interface	
set default interface	
set interface	
set ip default next-hop	
set ip precedence	

32.1.42 set ip precedence

set ip precedence

set ip precedence

```

access-list 1 permit 192.168.217.68 0.0.0.0
route-map name
match ip address 1
set ip tos 4
interface fa 0/0
ip policy route-map name

```

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	
set ip precedence	

32.1.44 set level

```

set level no
set level level 1 level 2 level 1-2 stub-area backbone
no set level

```

```
router ospf
redistribute rip subnets route-map redrip
network 192.168.12.0 0.0.0.255 area 0
```

```
route-map redrip permit 10
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	

32.1.45 set local-preference

set local-preference **no**

set local-preference *number*

no set local-preference

--	--

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

```
route-map SET_PREF permit 10
match as-path 1
set local-preference 6800
```

```
route-map SET_PREF permit 20
match as-path 2
set local-preference 50
```

match as-path	
match metric	
match origin	
set as-path prepend	
set metric	
set metric-type	

32.1.46 set metric

set

```
metric          no
set metric  metric-value - metric-value metric-value
no set metric
```

-	
<i>metric-value</i>	

match ip address	
match ip next-hop	
match ip route-source	
match metric	
match route-type	
match tag	
set metric-type	
set tag	

32.1.47 set metric-type

set metric-type no

set metric-type *type*

no set metric-type

<i>type</i>	

set **match** **match** **set**

```
router ospf
redistribute rip subnets route-map redrip
network 192.168.12.0 0.0.0.255 area 0
```

```
route-map redrip permit 10
set metric-type type-1
```

match interface	
match ip address	
match ip next-hop	
match ip route-source	
match metric	
match route-type	
match tag	
set metric	
set tag	

32.1.48 set next-hop

set next-hop **no**

```
set next-hop ip-address
no set next-hop ip-address
```

<i>p-address</i>	

set tag	
----------------	--

32.1.49 set origin

set origin no
set origin egp igp incomplete
no set origin

egp	
igp	
Incomplete	

```

route-map SET_ORIGIN 10 permit
match as-path 1
set origin igp
route-map SET_ORIGIN 20 permit
match as-path 2
set origin egp

```

match as-path	
match metric	
match origin	

set as-path prepend	
set metric	
set local-preference	

32.1.50 set originator-id

set originator-id no

set originator-id *ip-addr*

no originator-id *ip-addr*

<i>ip-addr</i>	

```

route-map SET_ORIGIN 10 permit
match as-path 1
set originator-id 5.5.5.5
route-map SET_ORIGIN 20 permit
match as-path 2
set originator-id 5.5.5.6

```

match as-path	
match metric	
match origin	
set as-path prepend	

set metric	
set local-preference	

32.1.51 set tag

set tag

no

set tag *tag*

no set tag

--	--

tag

m

o

?rTbC

match ip route-source	
match metric	
match route-type	
match tag	
set metric	
set metric-type	

32.1.52 set weight

set weight **no**

set weight *number*

no set weight

<i>number</i>	

router bgp 1

```
neighbor 1.1.1.1 route-map nei-rmap-in in
route-map nei-rmap-in permit 10
set weight 100
```

match as-path	
match community	
match metric	
match origin	
set community	
set metric	
set metric-type	

32.1.53 ip ref ecmp load-balance source

```
ip ref ecmp load balance
  crc32 lower crc32 upper dip port
  udf number
```

```
no ip ref ecmp load-balance
  crc32 lower crc32 upper dip port
  udf number
```

no

no

no ip ref ecmp route dip port
no

Ruijie(config)# ip ref ecmp load-balance crc32_upper

```
Ruijie# show route-map
route-map AAA, permit, sequence 10
Match clauses:
ip address 2
Set clauses:
metric 10
```

```
Community-list standard local
permit local-AS
Community-list standard Red-Giant
permit 0:10
deny 0:20
```

32.2.3 show ip prefix-list

show ip prefix-list

show ip prefix-list *prefix-name*


```
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
```

32.2.4 show ip route

show ip route

show ip route *vrf vrf_name network mask count protocol*
process-id weight

vrf <i>vrf_name</i>	
<i>network</i>	
<i>mask</i>	
count	
protocol	connected static bgp isis ospf rip
<i>process-id</i>	
weight	

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
C 192.1.1.254/32 is local host.
```

show ip route

--	--

show ip route count

```
Ruijie# show ip route count
----- route info -----
the num of active route: 5
```

show ip route weight

```
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
```

32.2.5 show ipv6 prefix-list

show ipv6

prefix-list

show ipv6 prefix-list *prefix-name*


```
Ruijie# show ipv6 prefix-list
ipv6 prefix-list p6: 2 entries
permit 13::/20
permit 14::/20
```

32.2.6 show ip ref

```
Ruijie# show ip ref
```

33

33.1

33.1.1 ip policy route-map

ip policy route-map

no

ip policy route-map *route-map*

no ip policy route-map

<i>route-map</i>	

r

```
access-list 1 permit 10.0.0.1
access-list 2 permit 20.0.0.1
route-map lab1 permit 10
match ip address 1
set ip next-hop 196.168.4.6
exit
route-map lab1 permit 20
match ip address 2
set ip next-hop 196.168.5.6
exit
interface FastEthernet 0/0
ip policy route-map lab1
exit
```

load-balance redundance	

set ip next-hop

```
access-list 1 permit 10.0.0.1
access-list 2 permit 20.0.0.1
route-map lab1 permit 10
match ip address 1
set ip next-hop 196.168.4.6
set ip next-hop 196.168.4.7
set ip next-hop 196.168.4.8
exit
route-map lab1 permit 20
match ip address 2
set ip next-hop 196.168.5.6
set ip next-hop 196.168.5.7
set ip next-hop 196.168.5.8
exit
interface FastEthernet 0/0
ip policy route-map lab1
exit
ip policy redundance
```

34 IPv6

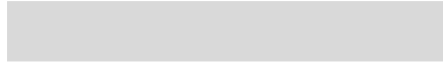
34.1

- ping ipv6
 - ipv6 address
 - ipv6 enable
 - ipv6 hop-limit
 - ipv6 neighbor
 - ipv6 source-route
 - ipv6 route
 - ipv6 ns-linklocal-src
 - ipv6 nd ns-interval
 - ipv6 nd reachable-time
 - ipv6 nd prefix
 - ipv6 nd ra-lifetime
 - ipv6 nd ra-interval
 - ipv6 nd ra-hoplimit
 - ipv6 nd ra-mtu
 - ipv6 nd managed-config-flag
 - ipv6 nd other-config-flag
 - ipv6 nd dad attempts
 - ipv6 nd suppress-ra
 - ipv6 redirects
 - show ipv6 route
 - show ipv6 neighbors
 - show ipv6 interface
 - clear ipv6 neighbors
 - tunnel destination
 - tunnel mode ipv6ip
-

r

no ipv6 enable

Ruijie(config-if)# **ipv6 enable**



interface-id

hardware-address

Ruijie(config)# **no ipv6 source-route**

34.1.7 ipv6 route

ipv6 route *ipv6-prefix prefix-length ipv6-address interface-id*
ipv6-address

no ipv6 route *ipv6-prefix prefix-length ipv6-address interface-id*
ipv6-address

ipv6-prefix
prefix-length
ipv6-address

interface-id

```
Ruijie(config)# ipv6 route 2001::/64 vlan 1 2005::1
```

show ipv6 route	

34.1.8 ipv6 ns-linklocal-src

```
no ipv6 ns-linklocal-src
```

```
ipv6 ns-linklocal-src
```

```
no ipv6 ns-linklocal-src
```

```
Ruijie(config)# no ipv6 ns-linklocal-src
```

34.1.9 ipv6 nd ns-interval

```
ipv6 nd ns-interval milliseconds
```

```
no ipv6 nd ns-interval
```

Ruijie(config-if)# **ipv6 nd ns-interval 2000**

show ipv6 interface	

34.1.10 ipv6 nd reachable-time

ipv6 nd reachable-time *milliseconds*

no ipv6 nd reachable-time

milliseconds

Ruijie(config-if)# **ipv6 nd reachable-time 1000000**

show ipv6 interface	

34.1.11 ipv6 nd prefix

ipv6 nd prefix *ipv6-prefix prefix-length* **default**

ipv6 nd prefix default

at valid-date preferred-date

```
Ruijie(config)#interface vlan 1  
Ruijie(config-if)# ipv6 nd prefix 2001::/64 infinite  
2592000
```

```
Ruijie(config)# interface vlan 1  
Ruijie(config-if)# ipv6 nd prefix default no-autoconfig
```

show ipv6 interface	

34.1.12 ipv6 nd ra-lifetime

ipv6 nd ra-lifetime *seconds*

no ipv6 nd ra-lifetime

```
Ruijie(config)# interface vlan 1  
Ruijie(config-if)# ipv6 nd ra-lifetime 2000
```

show ipv6 interface	
ipv6 nd ra-interval	
ipv6 nd ra-hoplimit	

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
```

show ipv6 interface	ra-info
ipv6 nd ra-lifetime	
ipv6 nd ra-hoplimit	
ipv6 nd ra-mtu	

34.1.14 ipv6 nd ra-hoplimit

ipv6 nd ra-hoplimit *value*

no ipv6 nd ra-hoplimit

value

```
Ruijie(config)# interface vlan 1
Ruijie(config-if)# ipv6 nd ra-hoplimit 110
```



show ipv6 interface

ra-info

ipv6 nd ra-lifetime	
ipv6 nd ra-interval	
ipv6 nd ra-hoplimit	

34.1.16 ipv6 nd managed-config-flag

managed address

configuration

ipv6 nd managed-config-flag

no ipv6 managed-config-flag

```
Ruijie(config)# int vlan 1
Ruijie(config)# ipv6 nd managed-config-flag
```

show ipv6 interface	
ipv6 nd other-config-flag	

34.1.17 ipv6 nd dad attempts

ipv6 nd dad attempts *value*

no ipv6 nd dad attempts

```
Ruijie(config)# interface vlan 1  
Ruijie(config-if)# ipv6 nd dad attempts 3
```

show ipv6 interface	

34.1.18 ipv6 nd suppress-ra

```
ipv6 nd suppress-ra  
no ipv6 nd suppress-ra
```

```
Ruijie(config)# interface vlan 1
Ruijie(config-if)# ipv6 nd suppress-ra
```

show ipv6 interface	

34.1.19 ipv6 redirects

```
Ruijie(config-if)# tunnel source vlan 1
```

tunnel source	
tunnel destination	
tunnel ttl	

34.1.22 tunnel destination

```
tunnel destination ipv4-address
```

```
no tunnel destination
```

```
r
```

```
Ruijie(config)# interface tunnel 1  
Ruijie(config-if)# tunnel mode ipv6ip  
Ruijie(config-if)# tunnel source vlan 1  
Ruijie(config-if)# tunnel destination 192.168.5.1
```

tunnel source	
tunnel mode	
tunnel ttl	

34.1.23 tunnel source

tunnel source *ipv4-address interface-type interface-number*

no tunnel source

ipv4-address

interface-type interface-number

r

```
Ruijie(config)# interface tunnel 1  
Ruijie(config-if)# tunnel mode ipv6ip
```

34.2.1 show ipv6 route

show ipv6 route static local connected

static

local

connected

```
Ruijie# show ipv6 route
Codes: C - Connected, L - Local, S - Static, R - RIP,
B - BGP
       I1 - ISIS L1, I2 - ISIS L2, IA - IIS interarea
L   ::1/128
    via ::1, loopback 0
C   fa::/64
    via ::, vlan 1
L   fa::1/128
    via ::, loopback 0
C   2001::/64
    via ::, vlan 2
L   2001::1/128
    via ::, loopback 0
L   fe80::/10
    via ::1, Null0
C   fe80::/64
    via ::, vlan 1
L   fe80::200:ff:fe00:1/128
    via ::, loopback 0
C   fe80::/64
    via ::, vlan 2
```



ipv6 route	
------------	--

34.2.2 show ipv6 neighbors

show ipv6 neighbors verbose *interface-id* *ipv6-address*

verbose

interface-id

ipv6-address

35 OSPFv3

35.1

35.1.1 area default-cost

no

area *area-id* **default-cost** *cost*

no area *area-id* **default-cost**

<i>area-id</i>	
<i>cost</i>	

default-cost

no

no

area *area-id* **virtual-link** *router-id*

-
- - **hello-interval** **dead-interval**
 - **instance**
 - **no area** *area-id*

```

ipv6 router ospf 1
area 1 virtual-link 192.1.1.1

```

show ipv6 ospf	
show ipv6 ospf neighbor	
show ipv6 ospf virtual-links	

35.1.5 auto-cost

no

auto-cost

ipv6 ospf cost

```
ipv6 router ospf 1
auto-cost reference-bandwidth 5
```

ipv6 ospf cost	
show ipv6 ospf	

35.1.6 clear ipv6 ospf process

```
clear ipv6 ospf process process-id
```

<i>process-id</i>	

F

no default-information originate always metric *metric*
metric-type *type* route-map *map-name*

always	
metric <i>metric</i>	
metric-type <i>type</i>	
route-map <i>map-name</i>	

redistribute default-information

redistribute

default-information originate

show ipv6 ospf database

show ipv6 route

default-information originate
default-metric

default-information originate always

redistribute	
show ipv6 ospf	
show ipv6 ospf database	

35.1.8 default-metric

no

default-metric *metric-value*

no default-metric

<i>metric-value</i>	

redistribute

default-information originate

default-metric 10

redistribute	
show ipv6 ospf	

35.1.9 ipv6 ospf area

no

ipv6 ospf *process-id* **area** *area-id* **instance** *instance-id*
no ipv6 ospf *process-id* **area** *instance* *instance-id*

<i>process-id</i>	
area <i>area-id</i>	
instance <i>instance-id</i>	

ipv6

router ospf

no ipv6 ospf area

no ipv6 router ospf

instance-id

```
int fastethernet 0/0
ipv6 ospf 1 area 2 instance 2
```

ipv6 ospf prefix-filter	
ipv6 router ospf	

35.1.11 ipv6 ospf dead-interval

no

ipv6 ospf dead-interval *seconds* **instance** *instance-id*

no ipv6 ospf dead-interval **instance** *instance-id*

<i>seconds</i>	
instance <i>instance-id</i>	

ip ospf hello-interval

ipv6 ospf dead-interval 60

ipv6 ospf hello-interval	
show ipv6 ospf interface	
instance <i>instance-id</i>	

35.1.12 ipv6 ospf hello-interval

no

ipv6 ospf hello-interval *seconds* **instance** *instance-id*

no ipv6 ospf hello-interval **instance** *instance-id*

<i>seconds</i>	
instance <i>instance-id</i>	

ipv6 ospf hello-interval 20

ipv6 ospf dead-interval	
show ipv6 ospf interface	
instance <i>instance-id</i>	

35.1.13 ipv6 ospf neighbor

no

ipv6 ospf neighbor *ipv6-address* **cost** **poll-interval**
priority **instance** *instance-id*

no ipv6 ospf neighbor *ipv6-address* **cost** **poll-interval**
priority **instance** *instance-id*

cost 1-65535>	
poll-interval 0-4294967295>	
priority 0-255	
instance <i>instance-id</i>	

no24c19352534b032447 -1.4457 TD -[<18 92.7 1636 1 Tf ee1>Tj /TT21c4>T Tf 14 1.4571

ipv6 ospf network point-to-point

ipv6 ospf priority	

show ipv6 ospf interface

ryá

ipv6 ospf priority 0

ipv6 ospf network	
router-id	
show ipv6 ospf interface	
instance <i>instance-id</i>	

35.1.16 ipv6 ospf retransmit-interval

no

ipv6 ospf retransmit-interval *seconds* **instance** *instance-id*
no ipv6 ospf retransmit-interval **instance** *instance-id*

<i>seconds</i>	
instance <i>instance-id</i>	

ipv6 ospf retransmit-interval 10

show ipv6 ospf interface	
instance <i>instance-id</i>	

35.1.17 ipv6 ospf transmit-delay

no

ipv6 ospf transmit-delay *seconds* **instance** *instance-id*
no ipv6 ospf transmit-delay **instance** *instance-id*

<i>seconds</i>	
instance <i>instance-id</i>	

ipv6 ospf transmit-delay 2

show ipv6 ospf interface	

35.1.18 ipv6 router ospf

no

ipv6 router ospf *process-id*
no ipv6 router ospf *process-id*

<i>process-id</i>	

ipv6 router ospf

no log-adj-changes detail

detail	

```
Ruijie(config)# router ospf 1  
Ruijie(config-router)# log-adj-changes detail
```

show ipv6 ospf	

35.1.20 max-concurrent-dd

max-concurrent-dd *number*
no max-concurrent-dd

<i>number</i>	

35.1.22 redistribute

match

match
metric metric-type

route-map set

redistribute connect metric 10 route-map test

default-information originate	
default-metric	
summary-prefix	
show ipv6 ospf	
show ipv6 ospf database	

35.1.23 router-id

no

router-id *router-id*

no router-id

--	--

Router-id

router-id 1.1.1.1

ipv6 ospf priority	
show ipv6 ospf	

35.1.24 timers spf

timers spf

no

timers spf *delay holdtime*

no timers spf

<i>delay</i>	
<i>holdtime</i>	

spf-delay
spf-holdtime

spf-delay *spf-holdtime*

timers spf 2 4

clear ipv6 ospf	
show ipv6 ospf	

35.2

35.2.1 show ipv6 ospf

show ipv6 ospf *process-id*

<i>process- id</i>	

```
Ruijie# show ipv6 ospf  
Routing Process "OSPFv3 (1)" with ID 1.1.1.1  
Process uptime is 24 minutes  
SPF schedule delay 5 secs, Hold time between SPFs 10 secs
```

Minimum LSA interval 5 secs, Minimum LSA arrival 1 secs
Number of incoming current DD exchange neighbors 0/5
Number of outgoing current DD exchange neighbors 0/5
Number of external LSA 0. Checksum Sum 0x0000
Number of AS-Scoped Unknown LSA 0
Number of LSA originated 11
Number of LSA received 4
Log Neighbor Adjency Changes : Enabled
Number of areas in this router is 2
Area BACKBONE(0)
Number of interfaces in this area is 1(1)
SPF algorithm executed 4 times
Number of LSA 3. Checksum Sum 0x1DDF1
Number of Unknown LSA 0

Ruijie# **show ipv6 ospf**

Routing Process "OSPFv3 (1)" with ID 1.1.1.1
Process uptime is 24 minutes
SPF schedule delay 5 secs, Hold time between SPFs 10 secs
Minimum LSA interval 5 secs, Minimum LSA arrival 1 secs
Number of incoming current DD exchange neighbors 0/5
Number of outgoing current DD exchange neighbors 0/5
Number of external LSA 0. Checksum Sum 0x0000
Number of AS-Scoped Unknown LSA 0
Number of LSA originated 11
Number of LSA received 4
Log Neighbor Adjency Changes : Enabled
Number of areas in this router is 2
BFD is enabled
Area BACKBONE(0)
Number of interfaces in this area is 1(1)
SPF algorithm executed 4 times

default-metric	
<i>router-id</i>	
timers spf	

35.2.2 show ipv6 ospf database

show ipv6 ospf process-id database lsa-type adv-router
router-id

<i>process-id</i>	
<i>lsa-type</i>	
adv-router <i>router-id</i>	

```
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



ipv6 router ospf

```
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
```

ipv6 router ospf	
ipv6 ospf area	

35.2.4 show ipv6 ospf neighbor

show ipv6 ospf *process-id* **neighbor** *interface-type*
interface-number **detail** *neighbor-id* **detail**

<i>process-id</i>	
<i>detail</i>	
<i>interface-type</i>	

```
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
```

ipv6 router ospf	
ipv6 ospf area	
area virtual-link	
show ipv6 ospf interface	

35.2.5 show ipv6 ospf route

```
show ipv6 ospf process-id route count
```

<i>process-id</i>	
<i>count</i>	

```

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 2222::/64                                1/20
via fe80::c800:eff:fe84:1c, FastEthernet 1/0
O 3333::/64                                  11
via fe80::c800:eff:fe84:1c, FastEthernet 1/0, Area
0.0.0.0

```

ipv6 router ospf	

35.2.6 show ipv6 ospf topology

```
show ipv6 ospf process-id topology area area-id
```

<i>process-id</i>	
<i>area-id</i>	

```

Ruijie# show ipv6 ospf topology
OSPFv3 Process (1)
OSPFv3 paths to Area (0.0.0.0) routers
Router ID      Bits  Metric  Next-Hop
Interface
1.1.1.1        EB   --

```

```
2.2.2.2          E 1          2.2.2.2
FastEthernet 1/0
```

```
OSPFv3 paths to Area (0.0.0.1) routers
Router ID      Bits Metric  Next-Hop
Interface
1.1.1.1        B  --
```

ipv6 router ospf	
area range	

35.2.7 show ipv6 ospf virtual-links

show ipv6 ospf *process-id* virtual-links

<i>process-id</i>	



ipv6 router ospf	
area virtual-link	

36 IGMP

36.1 IGMP

- clear ip igmp group
 - clear ip igmp interface
 - ip igmp access-group
 - ip igmp join-group
 - ip igmp static-group
 - ip igmp immediate-leave group-list
 - ip igmp last-member-query-count
 - ip igmp last-member-query-interval
 - ip igmp limit ()
 - ip igmp query-interval
 - ip igmp query-max-response-time
 - ip igmp querier-timeout
 - ip igmp robustness-variable
 - ip igmp version
 - ip igmp limit ()
 - ip igmp prn6 Tw[(ip ig)5.7(mp prn6 Tw[(ip ig)5.7(mp prn6 Tw[(ip ig)5.7(mp prn6 T
 -
-

clear ip igmp group *group-address interface-type interface-number*

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

clear ip igmp group

Ruijie# **clear ip igmp group**

show ip igmp groups

show ip igmp interface

36.1.2 clear ip igmp interface

clear ip igmp interface *ifname*

<i>ifname</i>	

```
Ruijie# clear ip igmp interface eth1
```

36.1.3 ip igmp access-group

```
ip igmp access-group access-list
```

```
no ip igmp access-group
```

<i>access-list</i>	

ip igmp access-group

```
Ruijie# configure terminal  
Ruijie(config)# access-list 1 permit 225.2.2.2 0.0.0.0  
Ruijie(config)# interface ethernet 0  
Ruijie(config-if)# ip igmp access-group 1
```

36.1.4 ip igmp join-group

ip igmp join-group *group-address*

no ip igmp join-group *group-address*

<i>group-address</i>	

```
Ruijie# configure terminal  
Ruijie(config)# interface ethernet 0  
Ruijie(config-if)# ip igmp join-group 233.3.3.3  
Ruijie(config-if)# exit
```

36.1.5 ip igmp static-group

ip igmp static-group *group-address*

no ip igmp static-group *group-address*

--	--

<i>group-address</i>	
----------------------	--

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0
Ruijie(config-if)# ip igmp static-group 236.6.6.6
Ruijie(config-if)# exit
```

36.1.6 ip igmp immediate-leave group-list

ip igmp immediate-leave group-list *access-list*
no ip igmp immediate-leave group-list

<i>access-list</i>	

```
Ruijie# configure terminal
Ruijie(config)# access-list 1 permit 225.192.20.0
0.0.0.255
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if)# ip igmp immediate-leave group-list
1
Ruijie(config-if)# exit
```

ip igmp last-member-query-interval

36.1.7 ip igmp last-member-query-count

last-member-query-count

last-member-query-count

ip igmp last-member-query-count *number*

no ip igmp last-member-query-count

<i>number</i>	

last member query count

last-member-query-count

```
Ruijie# configure terminal  
Ruijie(config)# interface ethernet 0  
Ruijie(config-if)# ip igmp last-member-query-count 3
```

36.1.8 ip igmp last-member-query-interval

ip igmp immediate-leave

36.1.9 ip igmp limit ()

ip igmp limit *number* **except** *access-list*

no ip igmp limit



number

ip igmp query-interval *seconds*

no ip igmp query-interval

<i>seconds</i>	

Ruijie(config-if)# **ip igmp query-interval** 120

Ruijie(config-if)# **no ip igmp query-interval**

36.1.11 ip igmp query-max-response-time

ip igmp query-max-response-time *seconds*

no ip igmp query-max-response-time

<i>seconds</i>	

S

!

—

```
Ruijie(config-if)# no ip igmp query-timeout
```

36.1.13 ip igmp robustness-variable

```
ip igmp robustness-variable number
```

```
no ip igmp robustness-variable
```

1 2 3	
-----------	--

```
Ruijie# configure terminal  
Ruijie(config)# interface ethernet 0  
Ruijie(config-if)# ip igmp version 2
```

36.1.15 ip igmp limit ()

ip igmp limit *number* **except** *access-list*

no ip igmp limit *number* **except** *access-list*

<i>number</i>	
except	
<i>access-list</i>	

```
Ruijie config # ip igmp limit 300
```

36.1.16 ip igmp proxy-service

```
ip igmp proxy-service  
no ip igmp proxy-service
```

```
mroute-proxy interface
```

```
ip igmp
```

```
Ruijie(config-if)# ip igmp proxy-service
```

36.1.17 ip igmp mroute-proxy

36.1.19 ip igmp ssm-map static

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>	
<i>a.b.c.d</i>	

ip igmp ssm-map enable

Ruijie(config)# **ip igmp ssm-map static** 11 192.168.2.2.

36.1.20 show ip igmp groups

show ip igmp groups *group-address interface-type*

interface-number detail

<i>group-address</i>	
<i>interface-type</i>	

<i>interface-number</i>

detail

show ip igmp interface *interface-type interface-number*

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

```
Ruijie# show ip igmp interface
Interface vlan 1(Index 4294967295)
IGMP Active, Non-Querier, Version 3 (default)
IGMP querying router is 0.0.0.0
IGMP query interval is 125 seconds
IGMP querier timeout is 255 seconds
IGMP max query response time is 10 seconds
Last member query response interval is 1000 milliseconds
Group Membership interval is 260 seconds
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
```

36.1.22 show ip igmp ssm-mapping

show ip igmp ssm-mapping *A.B.C.D*

<i>A.B.C.D</i>	

```
Ruijie# sh ip igmp ssm-mapping
SSM Mapping : Enabled
Database    : Static mappings configured
```

```
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
```

37 PIM-DM

37.1 PIM-DM

- **ip pim dense-mode**
- **ip pim neighbor-filter**
- **ip pim query-interval**
- **ip pim state-refresh disable**
- **ip pim state-refresh origination-interval**
- **show ip pim dense-mode interface**
- **show ip pim dense-mode neighbor**
- **show ip pim dense-mode nexthop**
- **show ip pim dense-mode mroute**

37.1.1 ip pim dense-mode

ip pim dense-mode

ip pim dense-mode

no ip pim dense-mode

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim dense-mode
```



37.1.2 ip pim neighbor-filter

ip pim neighbor-filter

ip pim neighbor-filter *access-list*

no ip pim neighbor-filter *access-list*

<i>access-list</i>	

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim neighbor-filter 14
```



ip pim neighbor-filter

37.1.3 ip pim query-interval

ip pim query-interval

ip pim query-interval *interval-seconds*

no ip pim query-interval

<i>interval-seconds</i>	

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim query-interval 123
```

37.1.4 ip pim state-refresh disable

state-refresh disable

ip pim

ip pim state-refresh origination-interval *interval-seconds*

no ip pim state-refresh origination-interval

<i>interval-seconds</i>	

Ruijie# **configure ie#**

50.50.50.50 VLAN 4 2 v2/D 1



37.1.8 show ip pim dense-mode nexthop

show ip pim dense-mode nexthop

show ip pim dense-mode nexthop

```
Ruijie# show ip pim dense-mode nexthop
Destination Nexthop Nexthop Nexthop Metric Pref
            Num      Addr      Interface
1.1.1.111   1        50.50.50.1 VLAN 4    0      1
```


37.1.9 show ip pim dense-mode mroute

show ip pim dense-mode mroute

show ip pim dense-mode mroute A.B.C.D A.B.C.D [summary]

A.B.C.D A.B.C.D	
summary	

```
Ruijie# show ip pim dense-mode mroute
PIM-DM Multicast Routing Table
(1.1.1.111, 229.1.1.1)
MRT lifetime expires in 205 seconds
RPF Neighbor: 50.50.50.1, Nexthop:50.50.50.1,VLAN 4
Upstream IF: VLAN 4
Upstream State: Pruned, PLT:200
Assert State: NoInfo
Downstream IF List:
FastEthernet 0/45:
Downstream State: NoInfo
Assert State: Loser, AT:170
```


-
- **show ip pim sparse-mode interface**
 - **show ip pim sparse-mode local-members**
 - **show ip pim sparse-mode mroute**
 - **show ip pim sparse-mode neighbor**
 - **show ip pim sparse-mode nextthop**
 - **show ip pim sparse-mode rp mapping**
 - **show ip pim sparse-mode rp-hash**

38.1.1 clear ip mroute

clear ip mroute *group_address source_address*

*	
<i>group_address</i>	
<i>group_address</i> <i>source_address</i>	

```
Ruijie# clear ip mroute *
Ruijie# clear ip mroute 224.2.2.2
Ruijie# clear ip mroute 224.2.2.2 2.2.2.2
```

38.1.2 clear ip mroute statistics

clear ip mroute statistics *group_address source_address*

<i>group_address</i>	
<i>group_address</i>	

8B0mfk QAFp]4rDQØ

hash-mask-length priority-value

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

hash-mask-length

<i>access-list</i>	

e i #) g R u f D i e # u R

-

-

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim dr-priority 10000
```

38.1.9 ip pim ignore-rp-set-priority

ip pim ignore-rp-set-priority

```
Ruijie# configure terminal
Ruijie(config)# ip pim ignore-rp-set-priority
```

38.1.10 ip pim jp-timer

ip pim jp-timer *interval-seconds*



<i>access_list</i>	

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim neighbor-filter 14
Ruijie(config-if)# exit
Ruijie(config)# access-list 14 deny 192.168.1.5
0.0.0.255
```

access-list

38.1.13 ip pim query-interval

ip pim query-interval *interval-seconds*

<i>interval-seconds</i>	

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim query-interval 123
```

38.1.14 ip pim register-rate-limit

ip pim register-rate-limit *rate*

<i>rate</i>	

```
Ruijie# configure terminal
Ruijie(config)# ip pim register-rate-limit 3000
```

38.1.15 ip pim register-rp-reachability

ip pim register-rp-reachability

```
Ruijie# configure terminal
Ruijie(config)# ip pim register-rp-reachability
```

38.1.16 ip pim register-source

```
ip pim register-source local_address interface-type
interface-number
```

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

r

```
Ruijie# configure terminal
Ruijie(config)# ip pim register-source 192.168.195.80
Ruijie(config)# ip pim register-source g 0/3
```

38.1.17 ip pim register-suppression

ip pim register-suppression *seconds*

<i>seconds</i>	

```
Ruijie# configure terminal
Ruijie(config)# ip pim register-suppression 100
```

38.1.18 ip pim rp-address

ip pim rp-address *rp-address access_list*

<i>rp-address</i>	
<i>access_list</i>	

-
- -
 -
 -
 -
 -

```
Ruijie# configure terminal
Ruijie(config)# ip pim rp-address 210.34.0.55
Ruijie(config)# ip pim rp-address 210.34.0.55 4
Ruijie(config)# access-list 4 permit 225.1.1.1
0.0.0.255
```

access-list

38.1.19 ip pim rp-candidate

```
ip pim rp-candidate interface-type interface-number [priority  
priority-value][interval interval-seconds][group-list
```

<i>interface-type</i> <i>interface-number</i>	
<i>priority-value</i>	
<i>Interval-seconds</i>	
<i>access_list</i>	

```
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
```

access-list

38.1.20 ip pim rp-register-kat

```
ip pim rp-register-kat seconds
```

<i>seconds</i>	

```
Ruijie# Figure terminal  
Ruijie(TD1]g)# ip pim rp-register-kat 250
```

38.1.21 ip pim sparse-mode

ip pim sparse-mode

```
Ruijie# Figure terminal  
Ruijie(TD1]g)# interface g 0/3  
Ruijie(TD1]g-if)# ip pim sparse-mode
```



38.1.22 ip pim spt-threshold

ip pim spt-threshold group-list *access-list*

<i>access-list</i>	

SPT

SPT

access-list

38.1.23 ip pim ssm

ip pim ssm default / range access_list

default	
<i>access_list</i>	

```
Ruijie# configure terminal  
Ruijie(config)# ip pim ssm default
```

```
Ruijie(config)# ip pim ssm range 10  
Ruijie(config)# access-list 10 permit 232.0.0.1  
0.0.0.255
```

access-list

38.1.24 show debugging

```
Ruijie #show debugging
PIM-SM Debugging status:
  PIM packet debugging is on
```

38.1.25 show ip pim sparse-mode bsr-router

```
show ip pim sparse-mode bsr-router
```

```
Ruijie# show ip pim sparse-mode bsr-router
PIMv2 Bootstrap information
This system is the Bootstrap Router (BSR)
BSR address: 192.168.127.1
Uptime:      01d23h14m, BSR Priority: 64, Hash mask
length: 10
Next bootstrap message in 00:00:42
Role: Candidate BSR  Priority: 64, Hash mask length: 10
State: Elected BSR
Candidate RP: 30.30.100.200(GigabitEthernet 0/3)
Advertisement interval 60 seconds
Next Cand_RP_advertisement in 00:00:32
```

38.1.26 show ip pim sparse-mode interface

show ip pim sparse-mode interface *interface-type interface-number*
detail

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

```
Ruijie# show ip pim sparse-mode interface detail
GigabitEthernet 0/3 (vif 2):
Address 30.30.100.200, DR 30.30.100.200
Hello period 30 seconds, Next Hello in 13 seconds
Triggered Hello period 5 seconds
Neighbors:
30.30.100.1
```

38.1.27 show ip pim sparse-mode local-members

show ip pim sparse-mode local-members *interface-type*
interface-number

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

```
Ruijie# show ip pim sparse-mode local-members
PIM Local membership information
GigabitEthernet 0/3:
```

(* , 225.1.1.1) : Include
Loopback 1:

38.1.28 show ip pim sparse-mode mroute

show ip pim sparse-mode mroute *group_address| source_address*

--	--

group_address

38.1.30 show ip pim sparse-mode nexthop

show ip pim sparse-mode rp-hash *group-address*

<i>group-address</i>	

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

39

39.1

- clear ip mroute
- clear ip mroute statistics
- ip mroute
- ip multicast route-limit
- ip multicast ttl-threshold
- ip multicast-routing
- ip multicast-rpf
- ip multicast boundary
- ip multicast static
- show ip mroute
- show ip rpf
- show ip mvif

39.1.1 clear ip mroute

clear ip mroute * *group-address source -address*

<i>group-address</i>	
<i>source -address</i>	

Ruijie# **clear ip mroute 230.0.0.1**

show ip mroute	

39.1.2 clear ip mroute statistics

clear ip mroute statistics * *group-address source -address*

<i>group-address</i>	
<i>source -address</i>	

Ruijie# **clear ip mroute statistics 230.0.0.1**

show ip mroute

clear ip mroute

39.1.3 ip mroute

ip mroute *source-address mask protocol rpf-address interface-type interface-number distance*

no ip mroute *source-address mask protocol rpf-address interface-type interface-number distance*

<i>source-address</i>	
<i>mask</i>	
<i>protocol</i>	
<i>rpf-address</i>	
<i>interface-type</i> <i>interface-number</i>	

no

ip multicast ttl-threshold *tvl value*

no ip multicast ttl-threshold

<i>tvl-value</i>	

tvl-value

Ruijie(config-if)# **ip multicast ttl-threshold 5**

39.1.6 ip multicast-routing

no

ip multicast-routing

no ip multicast-routing

r

Ruijie(config)# **ip multicast-rounting**



39.1.7 ip multicast-rpf

ip multicast-rpf *rpf-mode*

no ip multicast-rpf

<i>rpf-mode</i>	

39.1.8 ip multicast boundary

no

ip multicast boundary *access-list*

no ip multicast boundary *access-list*

<i>access-list</i>	

r

```
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
```

39.1.9 ip multicast static

ip multicast static *source-address group-address interface-type interface-number*

no ip multicast static *source-address group-address interface-type interface-number*

--	--

source -address

show ip mroute *group-address* *source-address* **dense** **sparse**
summary **count**

<i>group-address</i>	
<i>source-address</i>	
dense	
sparse	
summary	
count	

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

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

Ruijie# **show ip mroute count**

IP Multicast Statistics
Total 1 routes using 132 bytes memory
Route limit/Route threshold: 2147483647/2147483647
Total NOCACHE/WRONGVIF/WHOLEPKT rcv from fwd: 1/0/0
Total NOCACHE/WRONGVIF/WHOLEPKT sent to clients: 1/0/0
Immediate/Timed stat updates sent to clients: 0/0
Reg ACK rcv/Reg NACK rcv/Reg pkt sent: 0/0/0
Next stats poll: 00:01:10
Forwarding Counts: Pkt count/Byte count, Other Counts:
Wrong If pkts
Fwd msg counts: WRONGVIF/WHOLEPKT rcv
Client msg counts: WRONGVIF/WHOLEPKT/Imm Stat/Timed
Stat sent
Reg pkt counts: Reg ACK rcv/Reg NACK rcv/Reg pkt sent
(10.10.1.52, 224.0.1.3), Forwarding: 2/19456, Other: 0
Fwd msg: 0/0, Client msg: 0/0/0/0, Reg: 0/0/0

Ruijie# **show ip mroute summary**

IP Multicast Routing Table
Flags: I - Immediate Stat, T - Timed Stat, F - Forwarder
installed
Timers: Uptime/Stat Expiry
Interface State: Interface (TTL)
(10.10.1.52, 224.0.1.3), 00:01:32/00:03:20, PIM-SM,
Flags: T

```
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
```

39.1.12 show ip mvif

```
show ip mvif interface-type interface-number
```

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

```
Ruijie# show ip mvif vlan 1
```

Interface		Vif	Owner	TTL	Local
Remote		Uptime			
Idx	Module	Address		Address	
VLAN 1		1	PIM-DM	2	192.168.1.1
0.0.0.0		00:13:16			

39.2 IP

- **debug nsm mcast all**
- **debug nsm mcast fib-msg**
- **debug nsm mcast vif**
- **debug nsm mcast register**
- **debug nsm mcast stats**

39.2.1 debug nsm mcast all

no

debug nsm mcast all

Ruijie# **debug nsm mcast all**

39.2.2 debug nsm mcast fib-msg

no

debug nsm mcast fib-msg

40

40.1

- **storm-control**
- **switchport protected**
- **switchport port-security**
- **switchport port-security aging**
- **switchport port-security mac-address**
- **port-security arp-check**

40.1.1 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

broadcast

multicast

unicast

percent

packets

Rate-bps

64k-2M

2-100M

100M

show storm-control

```
Ruijie# configure terminal  
Ruijie(config)# interface GigabitEthernet 1/1  
Ruijie(config-if)# storm-control multicast 4096  
Ruijie(config-if)# end
```

show storm-control	

40.1.2 switchport protected

no

switchport protected
no switchport protected

show interfaces

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# switchport protected
```

show interfaces	

40.1.3 switchport port-security

```
switchport port-security violation protect restrict shutdown
no switchport port-security violation
```

--	--

```
/TT3 1 Tf10.5 0 0 TD-0TD0 Tc0 Twb74192353c1b8d1e1403e1TT2 1 Tf26 0 T( )Tj/TT5 1
```

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# switchport port-security
Ruijie(config-if)# switchport port-security
violation shutdown
```

show port-security	

40.1.4 switchport port-security aging

```
switchport port-security aging static time time
no switchport port-security aging static time
```

Static	
time time	

```
time
```

no switchport port-security aging
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
```

show port-security	

40.1.5 switchport port-security mac-address

```
switchport port-security mac-address mac-address ip-address
ip-address maximum value
```

```
no switchport port-security mac-address mac-address
ip-address ip-address maximum
```

mac-address <i>mac-address</i>	
ip-address <i>ip-address</i>	
ip-address <i>ipv6-address</i>	
maximum <i>value</i>	

```
Ruijie# configure terminal
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# switchport mode access
```

show port-security	

40.2

- **show storm-control**
- **show port-security**

40.2.1 show storm-control

show storm-control *interface-id*

<i>interface-id</i>	

```
Ruijie# show storm-control gigabitethernet 1/1  
Interface Broadcast Control Multicast Control Unicast  
Control  
-----  
G11/1 Disabled Disabled Disabled
```

--	--

show port-security address interface *interface-id*

address	
interface <i>interface-id</i>	

```
Ruijie# show port-security  
Secure Port MaxSecureAddr(count) CurrentAddr(count)  
Security Action  
-----  
Gi1/1 128 1 Restrict  
Gi1/2 128 0 Restrict  
Gi1/3 8 1 Protect
```

switchport port-security	
switchport port-security aging	
switchport port-security mac-address	

Req-Interval: 30 Second

show dot1x auto-req	

41.1.2 dot1x auto-req packet-num

dot1x auto-req packet-num *num*

no dot1x auto-req packet-num

num

show dot1x auto-req

```
Ruijie# configure terminal
Ruijie(config)# dot1x auto-req packet-num 0
Ruijie(config)# end
Ruijie# show dot1x auto-req
Auto-Req: Enabled
User-Detect : Enabled
Packet-Num : 0
Req-Interval: 30 Second
```

show dot1x auto-req	

41.1.3 dot1x auto-req req-interval

no

dot1x auto-req req-interval *interval*
no dot1x auto-req req-interval

interval

show dot1x auto-req

```
Ruijie# configure terminal
Ruijie(config)# dot1x auto-req req-interval 60
Ruijie(config)# end
Ruijie#
```

show dot1x auto-req

```
Ruijie# configure terminal
Ruijie(config)# dot1x auto-req user-detect
Ruijie(config)# end
Ruijie# show dot1x auto-req
Auto-Req: Enabled
User-Detect : Enabled
Packet-Num : 0
Req-Interval: 60 Second
```

show dot1x auto-req	

41.2 dot1x

- **dot1x timeout quiet-period**
- **dot1x timeout re-authperiod**
- **dot1x timeout server-timeout**
- **dot1x timeout supp-timeout**
- **dot1x timeout tx-period**

41.2.1 dot1x timeout quiet-period

no

dot1x timeout quiet-period

seconds

show dot1x

```
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
```

show dot1x	

41.2.2 dot1x timeout re-authperiod

no

dot1x timeout re-authperiod seconds
no dot1x timeout re-authperiod

seconds

show dot1x

```
Ruijie# configure terminal
Ruijie(config)# dot1x timeout re-authperiod 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:      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 Request:       3 times
Filter Non-RG Supp:    Disabled
Client Oline Probe:    Disabled
Eapol Tag Enable:      Disabled
Authorization Mode:     Group Server
```

show dot1x	

41.2.3 dot1x timeout server-timeout

no

<code>show dot1x</code>

41.2.4 dot1x timeout supp-timeout

dot1x timeout supp-timeout *seconds*

no dot1x timeout supp-timeout

seconds

show dot1x

```
Ruijie# configure terminal
Ruijie(config)# dot1x timeout supp-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:    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
```

show dot1x	

41.2.5 dot1x timeout tx-period

dot1x timeout tx-period *seconds*

no dot1x timeout tx-period

seconds

show dot1x

```
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

show dot1x	

41.3 dot1x

- dot1x re-authentication
- dot1x reauth-max

41.3.1 dot1x re-authentication

no dot1x re-authentication

show dot1x

```
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

show dot1x	

41.3.2 dot1x reauth-max

no

dot1x reauth-max *count*
no dot1x reauth-max

count

show dot1x

```
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

show dot1x	

41.4 dot1x

- dot1x probe-timer
- dot1x client-probe enable

41.4.1 dot1x probe-timer

dot1x probe-timer interval *alive interval*
no dot1x probe-timer

no

interval

alive

interval

show dot1x

```
Ruijie# configure terminal
Ruijie(config)# dot1x probe-timer interval 30
Ruijie(config)# dot1x probe-timer alive 120
Ruijie(config)# end
Ruijie# show dot1x probe-timer
Hello Interval: 30 Seconds
Hello Alive: 120 Seconds
```

Show dot1x probe-timer	

41.4.2 dot1x client-probe enable

no dot1x client-probe enable

```

Ruijie# configure terminal
Ruijie(config)# dot1x client-probe enable
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:    Enabled
Eapol Tag Enable:      Disabled
Authorization Mode:     Group Server

```

show dot1x	

41.5 dot1x

- **dot1x authentication**
 - **dot1x auth-address-table**
 - **dot1x auth-mode**
 - **dot1x default**
 - **dot1x dynamic-vlan enable**
 - **dot1x guest-vlan enable**
 - **dot1x eapol-tag**
 - **dot1x max-req**
 - **dot1x private-supplicant-only**
 - **dot1x port-control auto**
 - **dot1x port-control-mode**
 - **dot1x stationarity enable**
-

41.5.1 dot1x authentication

no

dot1x authentication default *list-name*

no dot1x authentication default *list-name*

default

list-name

```
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
Ruijie#
```

aaa new-model	
aaa authentication dot1x	

41.5.2 dot1x auth-address-table

no

dot1x auth-address-table address *mac-addr* interface *interface*
no dot1x auth-address-table address *mac-addr* interface *interface*

mac-addr

Interface

show dot1x

auth-address table

```
Ruijie# configure terminal  
Ruijie(config)# dot1x auth-address-table address  
00d0f8000000 interface ethernet 1/1  
Ruijie(config)# end  
Ruijie#
```

show dot1x auth-address-table	

41.5.3

dot1x auth-fail max-attempt *num*

no dot1x auth-fail max-attempt

<i>num</i>	

```
show dot1x
```

```
VLAN
```

```
Ruijie# configure terminal
```

```
Ruijie(config)# dot1x auth-fail max-attempt 5
```

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

```
Ruijie#write
```

show dot1x	

-	

41.5.4 dot1x auth-fail vlan

```
dot1x auth-fail vlan vid
```

```
no dot1x auth-fail vlan
```

vid	

```
show dot1x interface
```

```
Ruijie# configure terminal
```

```
Ruijie(config)# interface fa 0/1
```

```
Ruijie(config-if)# dot1x auth-fail vlan 2
```

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

```
show dot1x interface
```

```
-
```

41.5.5 dot1x auth-mode

```
dot1x auth-mode eap-md5 chap pap
no dot1x auth-mode
```

```
eap-md5
```

```
chap
```

```
pap
```

```
show dot1x
```

```
Ruijie# configure terminal
Ruijie(config)# dot1x auth-mode chap
Ruijie(config)# end
Ruijie#
```

show dot1x	

41.5.6 dot1x default

dot1x default

show dot1x

```
Ruijie# configure terminal  
Ruijie(config)# dot1x default  
Ruijie(config)# end  
Ruijie# end
```

show dot1x	

41.5.7 dot1x dynamic-vlan enable

no

show dot1x dynamic-vlan

```
Ruijie# configure terminal  
Ruijie(config)# interface fastEthernet 0/1  
Ruijie(config-if)# dot1x dynamic-vlan enable  
Ruijie(config-if)# end  
Ruijie#
```

show dot1x	

show running-config

```
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# dot1x guest-vlan 10
Ruijie(config)# end
Ruijie#
```

show running-config	

41.5.9 dot1x eapol-tag

```
dot1x eapol-tag
no dot1x eapol-tag
```

show dot1x

```
Ruijie# configure terminal
Ruijie(config)# dot1x eapol-tag
Ruijie(config)# end
Ruijie#
```



dot1x mac-auth-bypass timeout-activity *value*

no dot1x mac-auth-bypass timeout-activity

<i>value</i>	

show run

```
Ruijie# configure terminal
Ruijie(config)# interface fa 0/1
Ruijie(config-if)# dot1x mac-auth-bypass timeout-activity 3600
Ruijie(config-if)# end
Ruijie#write
```

show dot1x port-control interface	

-	

41.5.12 dot1x mac-auth-bypass violation

dot1x mac-auth-bypass violation

no dot1x mac-auth-bypass violation

<i>v</i>	

show run

```
Ruijie# configure terminal
Ruijie(config)# interface fa 0/1
Ruijie(config-if)# dot1x mac-auth-bypass violation
Ruijie(config-if)# end
Ruijie#write
```

show dot1x port-control interface	

-	

41.5.13 dot1x max-req

no

```
dot1x max-req count
no dot1x ma87x-req
```

count

show dot1x

```
Ruijie# configure terminal
Ruijie(config)# dot1x max-req 7
Ruijie(config)# end
Ruijie#
```

show dot1x	

41.5.14 dot1x private-supPLICANT-only

no

```
dot1x private-supPLICANT-only
no dot1x private-supPLICANT-only
```

41.5.15 dot1x port-control auto

no

dot1x port-control-mode mac-based port-based single-host
no dot1x port-control-mode

mac-based

port-based

single-host

show dot1x port-control

port-control **show dot1x**
dot1x port-control-mode port-based single-host **show running-config**

```
Ruijie(config)# interface g 0/1  
Ruijie(config-if)# dot1x port-control auto  
Ruijie(config-if)# dot1x port-control-mode  
port-based  
Ruijie(config-if)# end  
Ruijie#
```

```
Ruijie(config)# interface g 0/1  
Ruijie(config-if)# dot1x port-control auto  
Ruijie(config-if)# dot1x port-control-mode  
port-based single-host  
Ruijie(config-if)# end  
Ruijie#
```

show dot1x port-control	
Show running-config	

41.5.17 dot1x stationarity enable

dot1x stationarity enable
no dot1x stationarity enable

```
Ruijie# configure terminal  
Ruijie(config)# dot1x stationarity enable  
Ruijie(config)# end  
Ruijie#
```

41.5.18 dot1x redirect url

<i>url-string</i>	

┌

┌

┌

Ruijie(config)# **dot1x redirect url** http://ruijie.net/web

dot1x redirect for special tcp-destination port	
dot1x redirect time-out	
dot1x redirect num for special source-ip	
show dot1x	

┌

-	

41.5.19 dot1x redirect for special tcp-destination port

	<i>port num</i>	

```
Ruijie(config)# dot1x redirect time-out 5
```

dot1x redirect url	
dot1x redirect for special tcp-destination port	
dot1x redirect num for special source-ip	
show dot1x	

-	

41.5.21 dot1x redirect num for special source-ip

<i>num</i>	

Ruijie(config)# dot1x redirect num for special source-ip 3

dot1x redirect url

**dot1x redirect for special tcp-
destination port**

destinNp

```
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: 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#
```

dot1x auth-mode	
dot1x max-req	
dot1x port-control auto	
dot1x reauth-max	
dot1x re-authentication	
dot1x timeout quiet-period	

dot1x timeout re-authperiod	
dot1x timeout server-timeout	
dot1x timeout supp-timeout	
dot1x timeout tx-period	

41.6.2 show dot1x auth-address-table

show dot1x auth-address-table *addressmac-addr interface interface*

mac-addr

interface

```
Ruijie# show dot1x auth-address-table
interface:g3/1
-----
mac addr: 00D0.F800.0001
Ruijie#
```

dot1x auth-mode	
dot1x max-req	
dot1x port-control auto	

dot1x reauth-max	
dot1x re-authentication	
dot1x timeout quiet-period	
dot1x timeout re-authperiod	
dot1x timeout server-timeout	
dot1x timeout supp-timeout	
dot1x timeout tx-period	

41.6.3 show dot1x auto-req

show dot1x auto-req

```
Ruijie# show dot1x auto-req  
Auto-Req: Disabled  
User-Detect : Enabled  
Packet-Num : 0  
Req-Interval: 30 Seconds  
Ruijie#
```

--	--

dot1x auth-mode	
dot1x max-req	
dot1x port-control auto	
dot1x reauth-max	

dot1x auth-mode	
dot1x max-req	
dot1x port-control auto	
dot1x reauth-max	
dot1x re-authentication	
dot1x timeout quiet-period	
dot1x timeout re-authperiod	
dot1x timeout server-timeout	
dot1x timeout supp-timeout	
dot1x timeout tx-period	

41.6.5 show dot1x max-req

show dot1x max-req

```
Ruijie# show dot1x max-req  
max-req: 2 times  
Ruijie#
```

dot1x auth-mode	
dot1x max-req	
dot1x port-control auto	
dot1x reauth-max	
dot1x re-authentication	
dot1x timeout quiet-period	
dot1x timeout re-authperiod	
dot1x timeout server-timeout	
dot1x timeout supp-timeout	
dot1x timeout tx-period	

41.6.6 show dot1x port-control

show dot1x port-control interface *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#
```

dot1x auth-mode	
dot1x max-req	
dot1x port-control auto	
dot1x reauth-max	
dot1x re-authentication	
dot1x timeout quiet-period	
dot1x timeout re-authperiod	
dot1x timeout server-timeout	
dot1x timeout supp-timeout	
dot1x timeout tx-period	

41.6.7 show dot1x probe-timer

```
show dot1x probe-timer
```

```
Ruijie# show dot1x reauth-max
reauth-max: 2 times
Ruijie#
```

dot1x auth-mode	
dot1x max-req	
dot1x port-control auto	
dot1x reauth-max	
dot1x re-authentication	
dot1x timeout quiet-period	
dot1x timeout re-authperiod	
dot1x timeout server-timeout	
dot1x timeout supp-timeout	
dot1x timeout tx-period	

41.6.10 show dot1x summary

```
show dot1x summary
```

```

Ruijie# show dot1x summary
ID      MAC          Interface VLAN Auth-State
Backend-State Port-Status Type
-----
1 00d0f8000000 Gi0/1      1 Authenticated Idle
Authed   Static
Ruijie#

```

dot1x auth-mode	
dot1x max-req	
dot1x port-control auto	
dot1x reauth-max	
dot1x re-authentication	
dot1x timeout quiet-period	
dot1x timeout re-authperiod	
dot1x timeout server-timeout	
dot1x timeout supp-timeout	
dot1x timeout tx-period	

41.6.11 show dot1x user id

```
show dot1x user id
```

id

dot1x timeout quiet-period	
dot1x timeout re-authperiod	
dot1x timeout server-timeout	
dot1x timeout supp-timeout	
dot1x timeout tx-period	

41.6.12 show dot1x timeout

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
```

dot1x auth-mode	
dot1x max-req	

dot1x port-control auto	
dot1x reauth-max	
dot1x re-authentication	
dot1x timeout quiet-period	
dot1x timeout re-authperiod	
dot1x timeout server-timeout	

u5luppout servout quiet-period

42 AAA

42.1

- **aaa authentication dot1x**
- **aaa authentication enable**
- **aaa authentication login**
- **aaa authentication ppp**
- **login authentication**

42.1.1 aaa authentication dot1x

aaa

authentication dot1x

aaa authentication dot1x default *list-name method1 method2*

no aaa authentication dot1x default *list-name*

default

list-name

method

local	
none	
group	

aaa authentication dot1x

```
Ruijie(config)# aaa authentication dot1x rds_d1x group  
radius local
```

aaa new-model	
dot1x authentication	
username	

42.1.2 aaa authentication enable

aaa authentication

enable

```
aaa authentication enable default method1 method2
```

```
no aaa authentication enable default
```

default

method

local	
none	
group	

aaa authentication enable

local	
none	
group	

aaa authentication login

```
Ruijie(config)# aaa authentication login list-1 group  
radius local
```

aaa new-model	
username login authentication	

42.1.4 aaa authentication ppp

authentication ppp

aaa

aaa authentication ppp default *list-name method1 method2*

no aaa authentication ppp default *list-name*

default

list-name

method

local	
none	
group	

aaa authentication ppp

Ruijie(config)# **aaa authentication ppp *rds_ppp* group
radius local**

19r3QyS #B&8RA82rC2Pgy2rLQ,

42.1.5 login authentication

login authentication

login authentication default *list-name*

no login authentication

default

list-name

```
Ruijie(config)# aaa authentication login list-1 local  
Ruijie(config)# line vty 0 4  
Ruijie(config-line)# login authentication list-1
```

aaa new-model	
username	
login authentication	

42.2

-
- **aaa authorization commands**
 - **aaa authorization config-commands**
 - **aaa authorization console**
 - **aaa authorization exec**
 - **aaa authorization network**
 - **authorization commands**
 - **authorization exec**

42.2.1 aaa authorization commands

aaa authorization commands

Ruijie(config)# **aaa authorization config-commands**

aaa new-model	
aaa authorization commands	

42.2.3 aaa authorization console

aaa authorization console

aaa authorization console

no aaa authorization console

Ruijie(config)# **aaa authorization console**



Ruijie(config)# **aaa authorization network default group
radius**

--	--

aaa new-model

"

```
Ruijie(config)# aaa authorization commands 15 cmd group  
tacacs+ none  
Ruijie(config)# line vty 0 4  
Ruijie(config-line)# authorization commands 15 cmd
```

aaa new-model	
aaa authorization commands	

42.2.7 authorization exec

authorization exec

authorization exec default *list-name*

no authorization exec

default

list-name

level

default

list-name

method



aaa new-model	
aaa authentication	
accounting commands	

42.3.3 aaa accounting network

aaa accounting network

aaa accounting network default *list-name* **start-stop** **group** **radius**

no aaa accounting network default *list-name*

network

resource

list-name

start-stop

group

radius

start-stop

```
Ruijie(config)# aaa accounting network default  
start-stop group radius
```



aaa new-model



42.3.5 aaa accounting update periodic

aaa accounting update

periodic

aaa accounting update periodic *interval*

no aaa accounting update periodic

interval

```
Ruijie(config)# aaa new-model  
Ruijie(config)# aaa accounting update  
Ruijie(config)# aaa accounting update periodic 1
```

aaa new-model	
aaa accounting network	

42.3.6 accounting commands

accounting commands

accounting commands *level* default *list-name*

no accounting commands *level*

level

default

list-name

list-name

```
Ruijie(config)# aaa accounting exec exec-1 group radius  
none  
Ruijie(config)# line vty 0 4  
Ruijie(config-line)# accounting exec exec-1
```

aaa new-model	
aaa accounting commands	

42.4 AAA

- **aaa group server**
- **ip vrf forwarding**
- **server**
- **show aaa group**

42.4.1 aaa group server

```
aaa group server radius tacacs+ name
```

```
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
```

aaa group server	

show aaa group

```
Ruijie(config)# aaa group server radius ss
Ruijie(config-gs-radius)# server 192.168.4.12
acct-port 5 auth-port 6
Ruijie(config-gs-radius)# end
Ruijie# show aaa group
Group Name: ss
Group Type: radius
Referred: 2
Server List:
IP Address: 192.168.4.12
Authentication Port: 6
Accounting Port: 5
Referred: 1
```

Referred: 2
Server List:
IP Address: 192.168.217.64
Authentication Port: 1812
Accounting Port: 1813
Referred: 1

aaa group server	

42.5 AAA

- **aaa local authentication attempts**
- **aaa local authentication lockout-time**
- **aaa new-model**
- **clear aaa local user lockout**
- **debug aaa**
- **show aaa method-list**
- **show aaa user lockout**

42.5.1 aaa local authentication attempts

aaa local authentication attempts *max-attempts*

max-attempts

Ruijie# **configure terminal**

Ruijie(config)# **aaa local authentication attempts 6**

show running-config	
show aaa lockout	

42.5.2 aaa local authentication lockout-time

aaa local authentication lockout-time *lockout-time*

lockout-time

Ruijie# **configure terminal**
Ruijie(config)# **aaa local authentication lockout-time**
5

show running-config	
show aaa lockout	

42.5.3 aaa new-model

aaa new-model

no

aaa new-model

no aaa new-model

aaa new-model

Ruijie(config)# **aaa new-model**

aaa authentication	
aaa authorization	
aaa accounting	

42.5.4

t

clear aaa local user lockout all user-name *word*

word

Ruijie# **clear aaa local user lockout all**

show running-config	
show aaa lockout	

42.5.5 debug aaa

no

debug aaa event

no debug aaa event

42.5.6 show aaa method-list

show aaa method-list

```

Ruijie# show aaa method-list
Authentication method-list
aaa authentication login default group radius
aaa authentication ppp default group radius
aaa authentication dot1x default group radius
aaa authentication dot1x san-f local group angel group
rain none
aaa authentication enable default group radius
Accounting method-list
aaa accounting network default start-stop group radius
Authorization method-list
aaa authorizing network default group radius

```

aaa authentication	
aaa authorization	
aaa accounting	

42.5.7

```

show aaa user lockout all user-name word

```

word

```

Ruijie# show aaa user lockout all

```

show running-config	
show aaa lockout	

Ruijie(config)#

radius-server host	

43.1.3 radius-server host

radius-server

no

radius-server host *ip-address* **auth-port** *port-number* **acct-port**
port-number

no radius-server host *ip-address*

ip-address

auth-port

port-number

acct-port:

port-number:

radius-server

Ruijie(config)# **radius-server host** 192.168.12.1

aaa authentication	

radius-server key	
radius-server retransmit	
radius-server timeout	

43.1.4 radius-server key

radius-server key

radius-server key 0|7 *text-string*

no radius-server key

text-string

Ruijie(config)# **radius-server key aaa**

radius-server host	
radius-server retransmit	

radius-server timeout

radius-server retransmit

no

radius-server retransmit *retries*

no radius-server retransmit

retries

Ruijie(config)# **radius-server retransmit 4**

radius-server host	
radius-server key	
radius-server timeout	

43.1.6 radius-server timeout

radius-server timeout

no

radius-server timeout *seconds*

no radius-server timeout

seconds

Ruijie(config)# **radius attribute 16 vendor-type 211**

radius set qos cos	

43.1.9 radius set qos cos

radius set qos cos
no radius set qos cos

Ruijie(config)# **radius set qos cos**

radius vendor-specific extend	

43.1.10 radius vendor-specific extend

radius vendor-specific extend
no radius vendor-specific extend

Ruijie(config)# **radius vendor-specific extend**

radius attribute	
radius set	

43.2 RADIUS

radius-server host	
radius-server retransmit	
radius-server key	
radius-server timeout	

43.2.4 show radius vendor-specific

show radius vendor-specific

```
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
9       file-directory           9
10      file-count               10
11      file-name-0              11
12      file-name-1              12
13      file-name-2              13
14      file-name-3              14
15      file-name-4              15
16      max up-rate              75
```

17	version to server	17
18	flux-max-high32	18
19	flux-max-low32	19
20	proxy-avoid	20
21	dailup-avoid	21
22	ip privilige	22
23	login privilige	42
24	limit to user number	50



44 TACACS+

44.1 TACACS+

- **aaa group server tacacs+**
- **server TACACS+**
- **ip vrf forwarding TACACS+**
- **ip tacacs source-interface**
- **tacacs-server host**
- **tacacs-server key**
- **tacacs-server timeout**

44.1.1 aaa group server tacacs+

```
aaa group server tacacs+ group-name  
no aaa group server tacacs+ group-name
```

```
group-name
```

```
Ruijie(config)# aaa group server tacacs+ tac1  
Ruijie(config-gs-tacacs+)#server 1.1.1.1
```

server	
ip vrf forwarding	

44.1.2 server(TACACS+)

server *ip-address*
no server *ip-address*

ip-address

aaa group server tacacs+

tacacs-server host

```
Ruijie(config)# aaa group server tacacs+ tac1  
Ruijie(config-gs-tacacs+)# server 1.1.1.1
```

aaa group server tacacs+	
ip vrf forwarding	

44.1.3 ip vrf forwarding(TACACS+)

ip vrf forwarding *vrf-name*
no ip vrf forwarding

vrf-name

```
Ruijie(config)# aaa group server tacacs+ tac1  
Ruijie(config-gs-radius)# server 1.1.1.1  
Ruijie(config-gs-radius)# ip vrf forwarding vpn1
```

aaa group server tacacs+	
server	

44.1.4 ip tacacs source-interface

ip tacacs source-interface *interface*
no ip tacacs source-interface

Interface

```
Ruijie(config)# ip tacacs source-interface  
fastEthernet 0/0
```

tacacs-server host	
ip address	

44.1.5 tacacs-server host

```
tacacs-server host ip-address port integer timeout key  
0 | 7 string  
no tacacs-server host ip-address
```

```
ip-address  
port integer  
timeout integer  
key string  
0 7
```

tacacs-server

Ruijie(config)# **tacacs-server host** 192.168.12.1

aaa authentication	
tacacs-server key	
tacacs-server timeout	

44.1.6 tacas-server key

tacacs-server key 0 | 7 *string*

no tacacs-server key

string

7

Ruijie(config)#**tacacs-server key** aaa

tacacs-server host	
tacacs-server timeout	

44.1.7 tacacs-server timeout

tacacs-server timeout *seconds*

no tacacs-server timeout

seconds

```
Ruijie(config)# tacacs-server timeout 10
```

--	--

44.2.1 debug tacacs+

debug tacacs+
no debug tacacs+

44.2.2 show tacacs

show 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
```

tacacs-server host	

45 SSH

45.1 SSH

- **crypto key generate**
- **crypto key zeroize**
- **ip ssh version**
- **ip ssh time-out**
- **ip ssh authentication-retries**

45.1.1 crypto key generate

crypto key generate rsa | dsa

rsa	
dsa	

enable service ssh-server

r

no crypto key generate crypto
key zeroize

```
Ruijie# configure terminal  
Ruijie(config)# crypto key generate rsa
```

show ip ssh	
crypto key zeroize rsa dsa	

45.1.2 crypto key zeroize

crypto key zeroize rsa / dsa

rsa	
dsa	

Ruijie# **configure terminal**

Ruijie(config)# **crypto key zeroize rsa**

ò

```
Ruijie# configure terminal
Ruijie(config)# ip ssh version 2
```

show ip ssh	

45.1.4 ip ssh time-out

no

```
ip ssh time-out time
no ip ssh time-out
```

<i>time</i>	

no ip ssh

time-out

show ip ssh

```
Ruijie# configure terminal
Ruijie(config)# ip ssh time-out 100
```

--	--

show ip ssh	
-------------	--

45.1.5 ip ssh authentication-retries

ip ssh authentication-retries *retry times*
no ip ssh authentication-retries

<i>retry times</i>	

authentication-retries **no ip ssh**

ip ssh **show**

```
Ruijie# configure terminal  
Ruijie(config)# ip ssh ssh authentication-retries 2
```

show ip ssh	

45.2 SSH

- `show ip ssh`
- `show ssh`
- `show crypto key mypubkey`
- `disconnect ssh`

45.2.1 show ip ssh

`show ip ssh`

Ruijie# `show ip ssh`

<code>ip ssh version 1 2</code>	
<code>ip ssh time-out time</code>	
<code>ip ssh authentication-retries retry times</code>	

45.2.2 show ssh

show ssh

Ruijie# **show ssh**

45.2.3 show crypto key mypubkey

show crypto key mypubkey *rsa/dsa*

rsa	
dsa	

Ruijie# **show crypto key mypubkey rsa**

crypto key generate rsa dsa	

45.2.4 disconnect ssh

disconnect ssh vty *session-id*

<i>session-id</i>	

Ruijie# **disconnect ssh 1**
Ruijie# **disconnect ssh vty 1**

show ssh	
Clear line vty <i>line_number</i>	

46 CPU

46.1

- **cpu-protect type** *packet-type* **traffic-class** *traffic class num*
- **cpu-protect traffic-class id** *id_num* **bandwidth** *bandwidth value*
- **cpu-protect traffic-class al** **bandwidth** *bandwidth value*
- **cpu-protect cpu bandwidth** *bandwidth value*
- **cpu-protect mac-address storm-control enable** *value*

46.1.1 cpu-protect type packet-type traffic-class

traffic-class-num

```
cpu-protect type bpdu arp igmp dot1x gvrp dhcp unicast
multicast broadcast error_ttl other traffic-class
traffic class num
```

traffic class num

```
Ruijie(config)# cpu-protect type bpdu traffic-class 5
Ruijie(config)# end
Ruijie # show cpu-protect type bpdu traffic-class
%*****packet type traffic-class*****
                bpdu                5
```



cpu-protect traffic-class id <i>id_num</i> bandwidth <i>bandwidth value</i>	
cpu-protect traffic-class all bandwidth <i>bandwidth value</i>	
cpu-protect cpu bandwidth bandwidth_value	

46.1.2 cpu-protect traffic-class id *id_num* bandwidth *bandwidth_value*

cpu-protect traffic-class id *id_num* **bandwidth** *bandwidth value*

id_num

bandwidth value

```
Ruijie#configure terminal
Ruijie(config)#  cpu-protect  traffic-class  id  7
bandwidth 312
Ruijie(config)#end
Ruijie# show cpu-protect traffic-class id 7
%*****traffic class      bandwidth(kbps)*****
              7              312
```

cpu-protect type <i>packet-type</i> traffic-class <i>traffic class num</i>	
cpu-protect traffic-class all bandwidth <i>bandwidth value</i>	

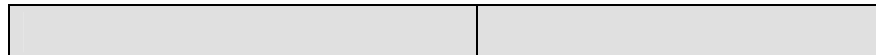
cpu-protect cpu bandwidth bandwidth_value	
--	--

46.1.3 **cpu-protect traffic-class all bandwidth *bandwidth_value***

cpu-protect traffic-class id *id_num* bandwidth *bandwidth value*

bandwidth value

```
Ruijie#configure terminal  
Ruijie(config)#    cpu-protect    traffic-class    all  
bandwidth 312  
Ruijie(config)#end
```



bandwidth value

```
Ruijie#configure terminal
Ruijie(config)#cpu-protect cpu bandwidth 2000
Ruijie(config)#end
Ruijie#show cpu-protect cpu
%cpu port bandwidth: 2000(kpbs)
```

cpu-protect type <i>packet-type</i> traffic-class <i>traffic class num</i>	
cpu-protect traffic-class id <i>id_num</i> bandwidth <i>bandwidth value</i>	
cpu-protect traffic-class all bandwidth <i>bandwidth value</i>	

46.2

- **show cpu-protect type** *packet-type*
- **show cpu-protect traffic-class id**
- **show cpu-protect traffic-class all**
- **show cpu-protect cpu**

46.2.1 show cpu-protect type packet-type

show cpu-protect type *packet-type*

show cpu-protect type all

```
%*****packet type      traffic-class*****
      bpdu                6
      arp                 5
      igmp                3
      dot1x               3
      gvrp                3
      dhcp                2
      unicast             4
      multicast           1
      broadcast           0
      error_ttl           0
      co-operate          6
      other                0
```

show cpu-protect traffic-class <i>id id_num</i>	
show cpu-protect traffic-class all	
show cpu-protect cpu	

46.2.2

id_num

show cpu-protect traffic-class id *id_num*

idt_num

Ruijie#show cpu-protect traffic-class id 1

```
%*****traffic class      bandwidth(kbps)*****
                1                1000
```

show cpu-protect type <i>packet-type</i>	
show cpu-protect traffic-class all	
show cpu-protect cpu	

46.2.3

show cpu-protect traffic-class all

show cpu-protect traffic-class all

```
Ruijie# show cpu-protect traffic-class all
%*****traffic class      bandwidth(kbps)*****
                0                1000
                1                1000
                2                1000
                3                1000
                4                1000
                5                1000
                6                1000
                7                100000
```

show cpu-protect type <i>packet-type</i>	
show cpu-protect traffic-class id <i>id_num</i>	
show cpu-protect cpu	

46.2.4

show cpu-protect cpu

```
Ruijie# show cpu-protect cpu
%cpu port bandwidth: 100000(kbps)
```

show cpu-protect type <i>packet-type</i>	
show cpu-protect traffic-class id <i>id_num</i>	
show cpu-protect traffic-class all	

Show system-guard	

47.1.2 system-guard isolate-time seconds

no

system-guard isolate-time *seconds*

no system-guard isolate-time

<i>seconds</i>	<i>second</i>

Ruijie(config-if)# **system-guard isolate-time 100**

system-guard same-dest-ip-attack-packets *number*

no system-guard same-dest-ip-attack-packets

<i>number</i>	

Ruijie(config-if)# **system-guard**
same-dest-ip-attack-packets *100*

system-guard enable	

47.1.4 system-guard scan-dest-ip-attack-packets *number*

no

system-guard scan-dest-ip-attack-packets *number*

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

```
Ruijie(config-if)# system-guard  
scan-dest-ip-attack-packets 100
```

system-guard enable	

47.1.5 system-guard detect-maxnum *number*

no

system-guard detect-maxnum *number*

no system-guard detect-maxnum

<i>num</i>	

Ruijie(config)# **system-guard detect-maxnum 200**



system-guard enable **fjuTj/TT5** **Trf0TD-5086 0 TD0 4572714 Tc049b7472135424c06**



```
Ruijie(config-if)# system-guard exception  
192.168.5.145 255.255.255.0
```

system-guard enable	

47.1.7 clear system-guard [interface interface-id [ip-address ip-address]]

```
clear system-guard interface interface-id ip-address
```

interface <i>interface-id</i>	
ip-address <i>ip-address</i>	

```
Ruijie(config)# clear system-guard interface  
fastethernet 0/1
```

system-guard enable	

47.2

- **show system-guard interface** *interface-id*
- **show system-guard isolate-ip interface** *interface-id*
- **show system-guard detect-ip interface** *interface-id*
- **show system-guard exception-ip**

47.2.1 show system-guard [interface interface-id]

show system-guard interface *interface-id*

interface <i>interface-id</i>	

```
Ruijie# show system-guard
detect-maxnum number : 100 //
isolated host number : 11 //
inteface state isolate time same-attack-pkts
scan-attack-pkts
-----
Fa 0/1 ENABLE 120 20 10
Fa 0/2 DISABLE 110 21 11
.....
Ruijie# show system-guard interface Fa 0/1
detect-maxnum number : 100 //
isolated host number : 11 //
inteface state isolate time same-attack-pkts
scan-attack-pkts
-----
Fa 0/1 ENABLE 120 20 10
```

system-guard enable	

47.2.2 show system-guard isolate-ip [interface interface-id]

show system-guard isolate-ip interface *interface-id*

interface <i>interface-id</i>	

```
Ruijie# show system-guard isolated-ip  
interface  ip-address      isolate reason  
remain-time(second)
```

```
-----  
Fa 0/1     192.168.5.119  scan ip attack    110  
Fa 0/1     192.168.5.109  same ip attack    61
```

system-guard enable	

interface <i>interface-id</i>	
--------------------------------------	--

```
Ruijie# show system-guard detect-ip  
interface ip-address same ip attack packets scan ip  
attack packets
```

```
-----  
Fa 0/1    192.168.5.118      0      8  
Fa 0/1    192.168.5.108     12     2
```

--	--

48.1.2 security community

```
security v1 | v2 community community v3 user username  
no security v1 | v2 community community v3 user username
```

```
community community  
username
```

snmp-server

```
Ruijie(config)# security v1 community public
```

```
Ruijie(config)# security v3 user start
```

48.1.3 smp-server host

```
smp-server host ip-address  
no smp-server host
```

ip-address

show smp-server

Ruijie(config)#**smp-server host 192.168.4.243**

show smp-server	

48.1.4 security event interval

security event interval *interval*

no security event interval

interval

show security event interval

Ruijie(config)# **security event interval 10**

show security event interval	

48.1.5 security address-bind enable

security address-bind enable
no security address-bind enable

Ruijie(config-if)# **security address-bind enable**

security gsn enable	

48.2

show smp-server
show security event interval

48.2.1 show smp-server

```
Ruijie# show smp-server  
SMP-Server IP 192.168.20.30
```

smp-server host	

48.2.2 show security event interval

49 DAI

49.1 VLAN DAI

- ip arp inspection vlan

49.1.1 ip arp inspection vlan vlan-id

vlan-id
vlan-id
vlan-id

ip arp inspection vlan *vlan-id*
no ip arp inspection vlan *vlan-id*

<i>vlan-id</i>	

```
Ruijie(config)# ip arp inspection  
Ruijie(config)# ip arp inspection vlan 1
```

show ip arp inspection vlan	

49.2

49.2.1 ip arp inspection trust

```
trust          no          ip arp inspection
ip arp inspection trust
no ip arp inspection trust
```

```
Ruijie(config)# interface gigabitEthernet 0/19
Ruijie(config-if)# ip arp inspection trust
```

-
- ip arp inspection limit-rate

49.3.1 ip arp inspection limit-rate limit-rate

ip arp

```
inspection limit-rate          no
ip arp inspection limit-rate limit-rate none
no ip arp inspection limit-rate
```

none	
<i>limit-rate</i>	

```
Ruijie(config)# ip arp inspection
Ruijie(config)# interface gigabitEthernet 0/2
Ruijie(config-if)# ip arp inspection limit-rate 10
```

49.4 DHCP Snooping

50 IP Source Guard

50.1 IP Source Guard

- ip source binding

50.1.1 ip source binding

no

no ip source binding *mac-address* **vlan** *vlan-id* *ip-address* **interface**
interface-id

mac-address

vlan-id

ip-address

interface-id

```
Ruijie# configure terminal
Ruijie(config)# ip source binding 00d0.f801.0101 vlan
1 192.168.4.243 interface fastEthernet 0/1
Ruijie(config)# end
Ruijie# show ip source binding
MacAddress IpAddress Lease(sec) Type VLAN
Interface
-----
```

```
00d0.f801.0101 192.168.4.243 infinite static 1
FastEthernet 0/1
Total number of bindings: 1
```

show ip source binding	

50.2 IP Source Guard

- ip verify source

50.2.1 ip verify source

no

no ip verify source port-security

port-security

fastEthernet 0/1

```
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip verify source
Ruijie(config-if)# end
Ruijie# show ip verify source
```

inactive-trust-port

active

```
Ruijie # show ip verify source
Interface          Filter-type      Filter-mode
Ip-address Mac-address  VLAN
-----
FastEthernet 0/1  ip             active        192.168.4.243
00d0.f801.0101  1
```

ip verify source	

50.3.2 show ip source binding

```
show ip source binding ip-address mac-address
dhcp-snooping static vlan vlan-id interface interface-id
```

ip-address
mac-address

vlan-id
interface-id

```
Ruijie#show ip source binding
MacAddress      IpAddress      Lease(sec)    Type
VLAN  Interface
-----
00d0.f801.0101  192.168.4.243  infinite     static
1  FastEthernet 0/1
Total number of bindings: 1
```

ip source binding	

50.3.3 debug ip source bind

debug ip source bind

```
Ruijie# debug ip source bind
```

-
- ip access-group
 - mac access-group
 - expert access-group
 - ipv6 traffic-filter

51.1.1 access-list

no

access-list *id* **deny** **permit** *source* *source-wildcard* **host** *source*
any

access-list *id* **deny** **permit** **protocol** *source* *source-wildcard* **host**
source **any** *destination* *destination-wildcard* **host** *destination* **any**
precedence *precedence* **tos** *tos* **fragments** **time-range**
time-range-name

access-list *id* **deny** **permit** **any** **host** *source-mac-address* **any**
host *destination-mac-address* *ethernet-type* **cos** *out* **inner** *in*

access-list *id* **deny** **permit** **protocol** *ethernet-type* **cos** *out*

(d]TJ9)9(

destination-mac-address **any** **precedence** *precedence* **tos** *tos*
fragments **time-range** *time-range-name*

-
- **urg**
 - **ack**
 - **psh**
 - **rst**
 - **syn**
 - **fin**

 - **ACL**
-

-
- information-request
 - mask-reply
 - mask-request
 - mobile-redirect
 - net-redirect
 - net-tos-redirect
 - net-tos-unreachable
 - net-unreachable
 - network-unknown
 - no-room-for-option
 - option-missing
 - packet-too-big
 - parameter-problem
 - port-unreachable
 - precedence-unreachable
 - protocol-unreachable
 - redirect
 - router-advertisement
 - router-solicitation
 - source-quench
 - source-route-failed
 - time-exceeded
 - timestamp-reply
 - timestamp-request
 - ttl-exceeded
 - unreachable

- bgp
 - chargen
 - cmd
 - daytime
 - discard
 - domain
 - echo
 - exec
 - finger
 - ftp
-

-
- ftp-data
 - gdfher p - d a t a t f t p - d a t a p

72130c309b709e12fc4020

-
- pim-auto-rp
 - rip
 - snmp
 - snmptrap
 - sunrpc
 - syslog
 - tacacs
 - talk
 - tftp
 - time
 - who
 - xdmcp

- aarp
- appletalk
- decnet-iv
- diagnostic
- etype-6000
- etype-8042
- lat
- lavc-sca
- mop-console
- mop-dump
- mumps
- netbios
- vines-echo
- xns-idp

```
Ruijie(config)# access-list 1 permit 192.168.1.64  
0.0.0.63
```

ip access-list extended standard *id name*
no ip access-list extended standard *id name*

id

name

deny permit **show ip**
access-lists

```
Ruijie(config)# ip access-list extended 123
Ruijie(config-ext-nacl)# show ip access-lists
ip access-list extended 123
Ruijie(config-ext-nacl)#
```

```
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)#
```

show ip access-lists	

51.1.3 MAC access-list

no

mac access-list extended *id name*
no mac access-list extended *id name*

Id
Name

show mac access-lists

```
Ruijie(config)# mac access-list extended mac-acl  
Ruijie(config-mac-nacl)# show mac access-lists  
mac access-list extended mac-acl  
Ruijie(config-mac-nacl)#
```

```
Ruijie(config)# mac access-list extended 704  
Ruijie(config-mac-nacl)# show mac access-lists  
mac access-list extended 704  
Ruijie(config-mac-nacl)#
```

show mac access-lists	

51.1.4 expert access-list

no

expert access-list extended *id name*
no expert access-list extended *id name*

Id
Name

show expert access-lists

```
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)#
```

```
Ruijie(config)# expert access-list extended 2704  
Ruijie(config-exp-nacl)# show expert access-lists  
expert access-list extended 2704  
Ruijie(config-exp-nacl)#
```

show expert access-lists	

51.1.5 ipv6 access-list

no

ipv6 access-list *name*
no ipv6 access-list *name*

Name

show access-lists

```
Ruijie(config)# ipv6 access-list v6-acl  
Ruijie(config-ipv6-nacl)# show access-lists  
ipv6 access-list extended v6-acl  
Ruijie(config-ipv6-nacl)#
```

show access-lists	

51.1.6 ip access-list resequence

no

```
ip access-list resequence id name start-sn inc-sn  
no ip access-list resequence id name
```

Id

Name

start-sn

inc-sn

start-sn

inc-sn

show access-lists

```
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
Ruijie#
```

show access-lists	

51.1.7 deny

sn deny source source-wildcard host source any

*sn deny protocol source source-wildcard destination
destination-wildcard precedence precedence tos tos fragments
time-range time-range-name*

Internet Control Message Protocol

sn deny icmp source source-wildcard host source any destination destination-wildcard host destination any icmp-type icmp-type icmp-code icmp-message precedence precedence tos tos fragments time-range time-range-name

Transmission Control Protocol

sn deny tcp source source-wildcard host Source any operator port port destination destination-wildcard host destination any operator port port precedence precedence tos tos fragments time-range time-range-name match-all tcp-flag

User Datagram Protocol

sn source source-wildcard host source any operator port port destination destination-wildcard host destination any operator port port precedence precedence tos tos fragments time-range time-range-name

sn deny any host source-mac-address any host destination-mac-address ethernet-type cos out inner in

sn deny protocol ethernet-type cos out inner in VID out inner in

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

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 time-range time-range-name match-all tcp-flag

User Datagram Protocol

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 time-range time-range-name

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 time-range time-range-name

Internet Control Message Protocol

sn deny icmp source-ipv6-prefix / prefix-length | any source-ipv6-address host destination-ipv6-prefix prefix-length host destination-ipv6-address any icmp-type icmp-type icmp-code icmp-message dscp dscp flow-label flow-label fragments time-range time-range-name

Transmission Control Protocol

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 time-range time-range-name match-all tcp-flag

User Datagram Protocol

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 time-range time-range-name

access-list

Sn

source-ipv6-prefix

destination-ipv6-prefix

prefix-length

source-ipv6-address

destination-ipv6-address

dscp

dscp

flow-label

flow-label

protocol

```
Ruijie(config)# interface gigabitethernet 1/1  
Ruijie(config-if)# ipv6 traffic-filter v6-acl in
```



*icmp-type icmp-type icmp-code icmp-message precedence
precedence tos tos fragments time-range time-range-name*

Transmission Control Protocol

*sn permit tcp source source-wildcard host Source any operator
port port destination destination-wildcard host destination any
operator port port precedence precedence tos tos fragments
time-range time-range-name match-all tcp-flag*

User Datagram Protocol

*sn permit udp source source -wildcard host source any operator
port port destination destination-wildcard host destination any
operator port port precedence precedence tos tos fragments
time-range time-range-name*

*sn permit any host source-mac-address any host
destination-mac-address ethernet-type cos out inner in*

*sn permit protocol ethernet-type cos out inner in VID
out][inner in] source source-wildcard host source any host
source-mac-address any destination destination-wildcard host
destination any host destination-mac-address any precedence
precedence tos tos fragments time-range time-range-name*

*sn permit ethernet-type|cos out inner in VID out inner in
source source-wildcard host source any host
source-mac-address any destination destination-wildcard host
destination any host destination-mac-address any time-range
time-range-name*

*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 time-range time-range-name*

Internet Control Message Protocol

*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

*sn permit tcp VID ou 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 time-range time-range-name
match-all tcp-flag*

User Datagram Protocol

*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 time-range time-range-name*

*sn permit protocol source-ipv6-prefix prefix-length any host
source-ipv6-address destination-ipv6-prefix prefix-length any
hostdestination-ipv6-address dscp dscp flow-label
flow-label fragments time-range time-range-name*

Internet Control Message Protocol

*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

*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 time-range time-range-name
match-all tcp-flag*

User Datagram Protocol

*sn permit udp source-ipv6-prefix prefix-length host
source-ipv6-address any operator port port
destination-ipv6-prefix prefix-length host*

expert access-list	
ipv6 access-list	
deny	

51.1.9 list-remark

no

list-remark *text*

Text

```
Ruijie# ip access-list extended 102
Ruijie(config-ext-nacl)# list-remark this acl is to
filter the host 192.168.4.12
Ruijie(config-ext-nacl)# show access-lists
ip access-list extended 102
deny ip host 192.168.4.12 any
1000 hits
this acl is to filter the host 192.168.4.12
Ruijie(config-ext-nacl)#
```

```
Ruijie# configure terminal
```

```
Ruijie(config)# access-list 88 list-remark
last_comment
```

--	--

```
show access-lists
```

51.1.11 no sn

no *sn*

sn

```
Ruijie(config)# ipv6 access-list extended v6-acl
Ruijie(config-ipv6-nacl)# permit ipv6
host ::192.168.4.12 any
Ruijie(config-ipv6-nacl)# 12 deny ipv6 host any any
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
10 permit ipv6 host ::192.168.4.12 any
12 deny ipv6 any any
Ruijie(config-ipv6-nacl)# no 12
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
10 permit ipv6 host ::192.168.4.12 any
Ruijie(config-ipv6-nacl)#
```

show access-lists	
ip access-list	
ipv6 access-list	
deny	
permit	

51.1.13 MAC access-group

no

```
mac access-group id name in out  
no mac access-group id name in out
```

id

name

in

out

show running-config

```
Ruijie(config)# interface GigaEthernet 1/1  
Ruijie(config-if)# mac access-group  
accept_00d0f8xxxxxx_only in
```

show access-group	

51.1.14 expert access-group

no

expert access-group *id name in out*
no expert access-group *id name in out*

id
name
in
out

show access-group

```
Ruijie(config)# interface GigaEthernet 0/1  
Ruijie(config-if)# expert access-group  
accept_00d0f8xxxxxx_only in
```

show access-group	

51.1.15 ipv6 traffic-filter

ipv6 traffic-filter *name in out*
no ipv6 traffic-filter *name in out*

name

in
out

show ipv6 traffic-filter

```
Ruijie(config)# interface GigaEthernet 0/1  
Ruijie(config-if)# ipv6 traffic-filter v6-acl in
```

show access-group	

51.2

- show access-lists
- show ip access-group
- show expert access-group
- show mac access-group
- show ipv6 traffic-filter
- show access-group

51.2.1 show access-lists

show access-lists *id name*

id
name

id name

```
Ruijie# show access-lists n_acl  
ip access-list standard n_acl  
Ruijie# show access-lists 102  
ip access-list extended 102  
Ruijie# show access-lists  
ip access-list standard n_acl  
ip access-list extended 101  
mac access-list extended mac-acl  
expert access-list extended exp-acl  
ipv6 access-list extended v6-acl
```

ip access-list	
mac access-list	
expert access-list	
ipv6 access-list	

51.2.2 show ip access-group

```
Ruijie# show ip access-group interface gigabitethernet
0/1
ip access-group aaa in
Applied On interface GigabitEthernet 0/1.
```

ip access-list	

51.2.3 show expert access-group

```
show expert access-group interface interface
```

```
interface
```

51.2.4 show mac access-group

show mac access-group interface *interface*

interface

```
Ruijie# show mac access-group interface gigabitethernet  
0/3  
mac access-group mm in  
Applied On interface GigabitEthernet 0/3.
```

mac access-list	

51.2.5 show ipv6 traffic-filter

show ipv6 traffic-filter interface *interface*

interface

```
Ruijie# show ipv6 traffic-filter interface
gigabitethernet 0/4
ipv6 traffic-filter v6 in
Applied On interface GigabitEthernet 0/4.
```

ipv6 access-list	

51.2.6 show access-group

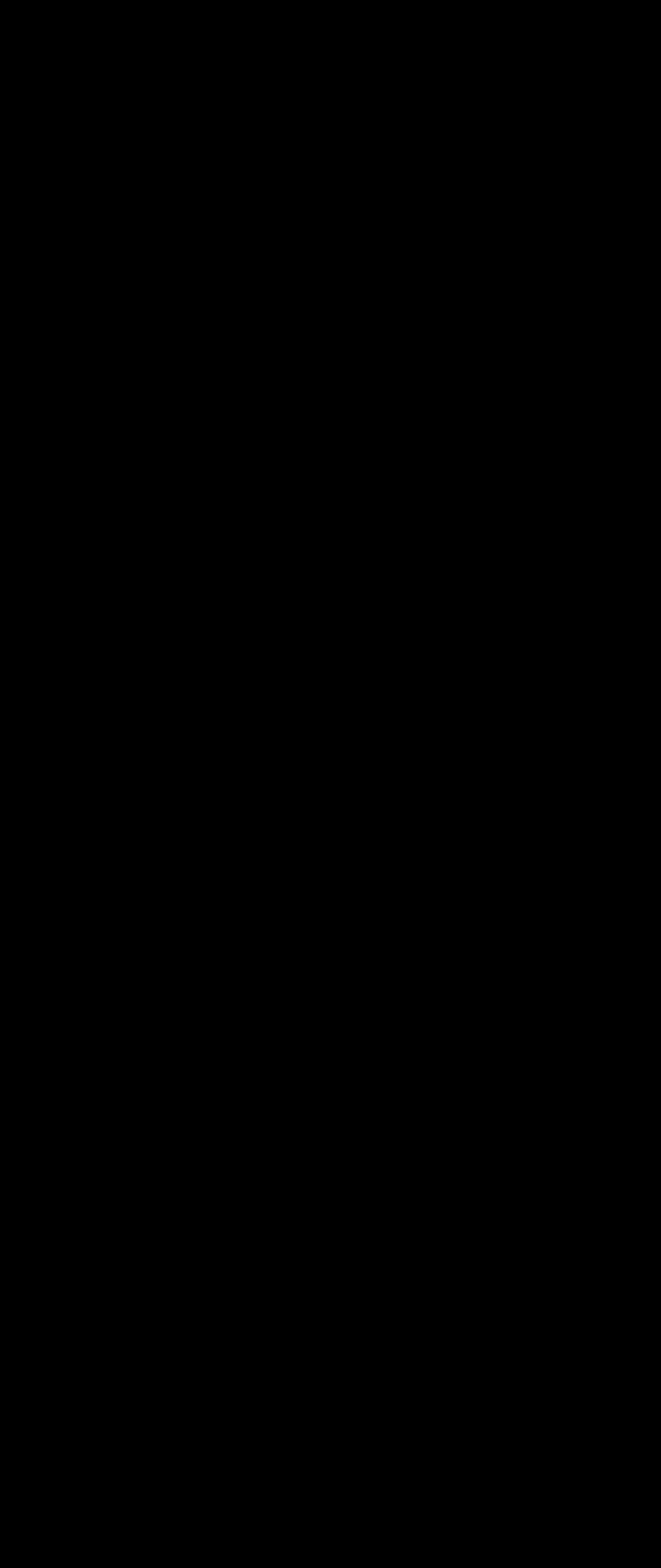
```
show access-group interface interface
```

interface

```
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.
```

ip access-group	
mac access-group	
expert access-group	
ipv6 traffic-filter	

--	--	--	--	--	--	--	--	--	--



Ruijie(config)# **mac access-list extended me**

Ruijie(config-ext-macl)# **permit host 1111.2222.3333
any**

Ruijie(config-ext-macl)# **exit**

Ruijie(config)# **class-map cm**

Ruijie(config-cmap)# **match access-group me**

Ruijie(config-cmap)# **exit**

show mac access-lists

show ip access-lists

show class-map

52.2.4 Policy Maps

no policy-map *policy-map-name*

no class *class-map-name*

set ip dscp *new-dscp*

no set ip dscp

police *rate-bps burst-byte exceed-action drop dscp dscp-value*

no police

policy-map-name

no policy-map *policy-map-name*

class-map-name

no class *class-map-name*

new-dscp

rate-bps

burst-byte

drop

dscp-value

Ruijie(config)# **policy-map po**

Ruijie(config-pmap)# **class cm**

Ruijie(config-pmap-c)# **set ip dscp 10**

Ruijie(config-pmap-c)# **police 1000000 4096**
exceed-action dscp 16

show policy-map

52.2.5 service-policy

service-policy **input output** *policy-map-name*

no service-policy input output

policy-map-name

no

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

Ruijie(config-if)# **service-policy input po**

Ruijie(config)# **virtual-group 3**

Ruijie(config-if)# **service-policy input po**

show mls qos interface

52.2.6 priority-queue

no priority-queue

priority-queue

no priority-queue

Ruijie(config)# **no priority-queue**

show mls qos queueing

52.2.7 priority-queue cos-map

priority-queue cos-map *qid cos0 cos1 cos2 cos3 cos4 cos5 cos6 cos7*

no priority-queue cos-map

qid

cos0 ... cos7

no

Ruijie(config)# **priority-queue cos-map 1 0 1**

show mls qos queueing

52.2.8 wrr-queue bandwidth

wrr-queue bandwidth *weight1 ... weightn*

no wrr-queue bandwidth

weight1...weightn

no

```
Ruijie(config)# wrr-queue bandwidth 1 2 3 4 5 6 7 8
```

```
show mls qos queueing
```

```
show mls qos queueing
```

52.2.9 mls qos map cos-dscp

```
P          C          5B          D
```

```
mls qos map cos-dscp
```

dscp-list

cos

no

?•5 ,ÖG!5B

?•e ,ÖG!5B

mls qos scheduler sp wrr drr
no mls qos scheduler

sp
wrr
drr
no

Ruijie(config)# **mls qos scheduler sp**

show mls qos scheduler

52.2.13 drr-queue bandwidth

drr-queue bandwidth *weight1...weight8*
no drr-queue bandwidth

weight1...weight8
no

Ruijie(config)# **drr-queue bandwidth 1 2 3 4 5 6 7 8**

show mls qos queueing

52.2.14 mls qos map ip-prec-dscp

mls qos map ip-prec-dscp dscp1...dscp8

no mls qos map ip-prec-dscp

dscp

no

```
Ruijie(config)# mls qo map ip-prec -dscp 8 10 16 18 24  
26 32 34
```

show mls qos maps

buffer management qos queue

buffer management qos queue *queue-number*

<i>queue-number</i>	

queue-number

```
Ruijie(config)# interface gigabitethernet 0/52  
Ruijie(config-if)# buffer management qos queue 8
```

show buffer management queue	

virtual-group

```
virtual-group virtual-group-number  
no virtual-group virtual-group-number
```

<i>virtual-group-number</i>	

class-name

Ruijie# **show policy-map**

52.3.3 show mls qos interface

show mls qos interface *interface-id* **policers**

interface-id

policers

Ruijie# **show mls qos interface fastEthernet 0/1**

52.3.4 show mls qos virtual-group

show mls qos virtual-group *virtual-group-number* **policers**

virtual-group-number

policers

```
Ruijie# show mls qos virtual-group 1
```

```
Ruijie# show mls qos virtual-group policers
```

52.3.5 show mls qos queueing

```
show mls qos queueing
```

```
Ruijie# show mls qos queueing
```

52.3.6 show mls qos scheduler

```
show mls qos scheduler
```

```
Ruijie# show mls qos scheduler
```

52.3.7 show mls qos maps

```
show mls qos maps cos-dscp dscp-cos ip-prec-dscp
```

```
cos-dscp
```

```
dscp-cos
```

```
ip-prec-dscp
```

```
Ruijie# show mls qos maps
```

52.3.8 show mls qos rate-limit

```
show mls qos rate-limit interface interface-id
```

```
interface
```

```
Ruijie# show mls qos rate-limit
```

52.3.9 how buffer management qos queue

```
show buffer management qos queue
```

```
Ruijie#show buffer management qos queue
```

```
Interface                Status Queue
```

```
-----
```

```
FastEthernet 0/1    Auto   8
```

```
FastEthernet 0/2    Admin  8
```

```
....
```

```
GigabitEthernet 0/52  Auto   8
```

52.3.10 show virtual-group

show virtual-group *virtual-group-number* | **summary**

virtual-group-number

summary

Ruijie# **show virtual-group 1**

Ruijie# **show virtual-group summary**

53 VRRP

53.1

- vrrp authentication
- vrrp delay
- vrrp description
- vrrp ip
- z vrrp dela

```
vrrp 1 authentication x30dn78k
```

<code>vrrp group ip ipaddress secondary</code>	

53.1.2 vrrp delay

```
vrrp delay minimum min-seconds reload reload-seconds
```

```
no vrrp delay
```

min-seconds

min-seconds

reload-seconds

min-seconds *reload-seconds*

min-seconds

```
interface FastEthernet 0/0
shutdown
ip address 10.0.1.1 255.255.255.0
vrrp delay minimum 10
vrrp 1 ip 10.0.1.20
no shutdown
show vrrp 1
```

<i>ipaddress</i> vrrp group ip secondary	

53.1.3 vrrp description

no

53.1.4 vrrp ip

no

```
vrrp group ip ipaddress secondary  
no vrrp group ip ipaddress secondary
```

group

ipaddress

secondary

1ñÄ

vrrp *group* **preempt** **delay** *seconds*

no vrrp *group* **preempt** **delay**

group

delay *seconds*

group

level

vrrp 1 priority 254

vrrp group ip <i>ipaddress secondary</i>	
vrrp group preempt delay <i>seconds</i>	

53.1.7 vrrp timers advertise

vrrp group timers advertise *interval*

no vrrp group timers advertise

group

interval

vrrp 1 timers advertise 4

vrrp group ip <i>ipaddress</i> secondary	
vrrp group timers learn	

53.1.8 vrrp timers learn

vrrp group timers learn
no vrrp group timers learn

group

vrrp 1 timers learn

vrrp group ip <i>ipaddress secondary</i>	
vrrp group timers advertise msec <i>interval</i>	

53.1.9 vrrp track

vrrp group track *interface-type number*

vrrp group track *ip-address*

vrrp group track bfd

no

vrrp group track [*interface-type number* **bfd** *interface-type interface-number ipv4-address priority*

vrrp group track *ip-address interval interval-value*

timeout *timeout-value priority*

vrrp group track [*interface-type number* **bfd** *interface-type interface-number ipv4-address ip-address*

group

interface-type

number

ipv4-address

interval-value

timeout-value

priority

```
vrrp 1 track FastEthernet 1/1 30
```

```
Ruijie#
```

-
- **debug vrrp events**
 - **debug vrrp packets**
 - **debug vrrp state**

53.2.1 debug vrrp

debug vrrp errors
no debug vrrp errors

```
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
```

53.2.3 debug vrrp events

debug vrrp events
no debug vrrp events

```
Ruijie# debug vrrp events
VRRP: Grp 1 Event - Advert higher or equal priority
VRRP: Grp 1 Event - Advert higher or equal priority
VRRP: Grp 1 Event - Advert higher or equal priority
```

53.2.4 debug vrrp packets

no

```
Ruijie# debug vrrp state
Ruijie#
%VRRP-6-STATECHANGE: FastEthernet 0/0 Grp 2 state Master
-> Backup
%VRRP-6-STATECHANGE: FastEthernet 0/0 Grp 2 state Backup
-> Master

Ruijie# config terminal
Enter configuration commands, one per line. End with
CNTL/Z.

Ruijie(config)# interface fastethernet 0/0
Ruijie(config-if)# no shutdown
Ruijie(config-if)# end
Ruijie#
%VRRP-6-STATECHANGE: FastEthernet 0/0 Grp 2 state Master
-> Init
```

53.3

53.3.1 show vrrp

```
show vrrp brief grou
```

```
brief
```

```
group
```

```
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
```

```
Ruijie(config-if)# bfd interval 100 min_rx 100 multiplier 3
```

bfd all-interfaces	
clear bfd	
ip ospf bfd	
ip rip bfd	

```
Ruijie(config)# router ospf 123  
Ruijie(config-router)# bfd all-interface
```

bfd	

```
ip ospf bfd
```

Ruijie(config)# **bfd cpp**

-	

54.1.4 bfd echo

bfd echo

no

bfd echo

no bfd echo

Interval milliseconds *min_rx milliseconds*

r

redirects

no ip

no ip deny land

```
Ruijie(config)# no switchport
Ruijie(config-if)# bfd echo
```

bfd	
ip redirects	
ip deny land	
bfd slow-timer	

54.1.5 bfd slow-timer

bfd slow-timer

no

bfd slow-timer *milliseconds*

no bfd slow-timer

<i>milliseconds</i>	fl tBFD %\$\$\$ ' \$\$\$z %\$\$\$

%\$\$\$ag

```
Ruijie(config)# bfd slow-timer 14000
```

bfd echo	

54.1.6 ip ospf bfd

```
ip ospf bfd
  disable
  no ip ospf bfd
  ip ospf bfd disable
  no ip ospf bfd
```

disable	fl t CGDF BFD

X]gU`Y

BFD

```
no bfd all-interfaces
```

```
ip ospf bfd [disable]
```

```
Ruijie(config)# interface FastEthernet 0/2
```

```
Ruijie(config-if)# no switchport
```

```
Ruijie(config-if)# ip ospf bfd disable
```

```
bfd
```

```
Ruijie(config-if)# ip rip bfd disable
```

bfd	
bfd all-interfaces	

54.1.8 ip route static bfd

ip route static 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*

<i>j fZ j fZ! bUaY</i>	
<i>] bhYfZUMV! hndY</i> <i>] bhYfZUMV! bi aVYf</i>	
<i>[UhYkUm</i>	I D BFD I D BFD
gci fW]d! UXXfYgg	fl Ł BFD I D ž I D

BFD

r	BFD
----------	-----

BFD

r	ID	BFD
#	BFD	BFD 172.16.0.2

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 ip address** 1

Ruijie(config-route-map)# **set ip precedence** priority

Ruijie(config-route-map)#**set ip next-hop**
verify-availability 172.16.0.2 **bfd** FastEthernet 0/1
172.16.0.2

Ruijie(config-route-map)#**end**

bfd	

54.1.10 vrrp bfd

vrrp bfd

no

vrrp group-number bfd ip-address

no vrrp group-number bfd ip-address



<i>milliseconds</i>	fl Ł ID \$ ' \$\$\$\$z \$z " DCKB ID \$

\$ag

\$ ID

ID

*\$z\$\$\$

"

up-dampening

bfd	

10.3(5)	

54.2

- [_____](#)

54.2.1 show bfd neighbors

BFD

show bfd neighbors vrf *vrf-name*

Int

172.16.11.1 172.16.11.2 1/2 1 532 (3) Up
Ge2/1

Local Diag: 0, Demand mode: 0, Poll bit: 0

MinTxInt: 200000, MinRxInt: 200000, Multiplier: 5

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

-	

55 RLDP

55.1

-
-
-
-

55.1.1 rldp loop-detect enable

rldp loop-detect enable

no rldp loop-detect enable

┌

┌

┌

┌
Ruijie(config)# rldp loop-detect enable

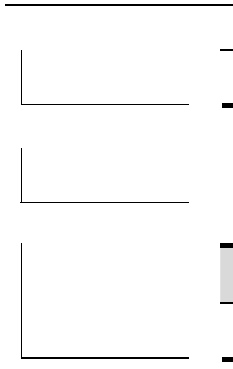
rldp port		

55.1.3 rldp detect-max

rldp detect-max *num*

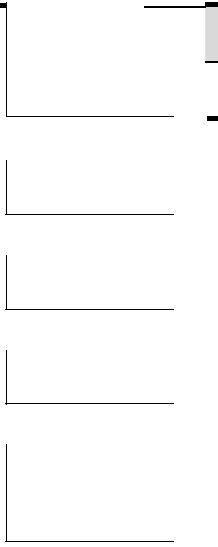
no rldp detect-max

--	--	--



55.1.7 rldp re

rldp rese



L

L

L

L

L

L

56 DLDP

56.1

- _____
- _____
- _____

56.1.1 dldp

dldp *ip-address* **next-hop** *ipv4-address* **interval** *tick* **retry** *retry-num*
resume *resume-num*

no dldp *ip-address*

<i>ip-address</i>	
<i>ipv4-address</i>	
<i>tick</i>	
<i>retry-num</i>	
<i>resume-num</i>	

Ruijie#**config**

```
Ruijie(config)#interface vlan 1
Ruijie(config-if-VLAN 1)#ip address 10.83.132.1 255.255.255.0

Ruijie(config-if-VLAN 1)#dldp 10.83.132.10

Ruijie#config
Ruijie(config)#interface vlan 1
Ruijie(config-if-VLAN 1)#ip address 10.83.132.1 255.255.255.0

Ruijie(config-if-VLAN 1)#dldp 10.83.131.10 next-hop 10.83.132.2

Ruijie#config
Ruijie(config)#interface vlan 1
Ruijie(config-if-VLAN 1)#no dldp 10.83.132.10
```

```
Ruijie#config
```

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

```
Ruijie(config-if-VLAN 1)#ip address 10.83.132.1 255.255.255.0 //  
vlan1 IP
```

```
Ruijie(config-if-VLAN 1)#dldp passive
```



Ruijie#show dldp

56.3

56.3.1 clear dldp

clear dldp interface *interface-name ip-address*

<i>interface-name</i>	
<i>ip-address</i>	

Ruijie#**clear dldp**

Ruijie#**clear dldp interface vlan 1**

Ruijie# **clear dldp interface vlan 1 10.83.132.1**

L

57 TPP

57.1

57.1.1 topology guard

no topology guard

cpu topology-limit

```
Ruijie(config)# topology guard  
Ruijie(config)# no topology guard
```

tp-guard port enable

cpu topology-limit

57.1.2 tp-guard port enable

```
Ruijie(config-if)# tp-guard port enable  
Ruijie(config-if)# no tp-guard port enable
```

topology guard

57.2 TPP

Ruijie# **show tpp**

topology guard

58

58.1

- cd
- cp
- ls
- makefs
- mkdir
- mv
- pwd
- rm
- rmdir

58.1.1 cd

`cd DIRECTORY`

DIRECTORY

ls

Ruijie# `cd tmp`

ls	

58.1.2 cp

cp dest *DESTINE_FILE* *DIRECTORY* **sour** *SOURCE_FILE*

cp sour *SOURCE_FILE* **dest** *DESTINE_FILE* *DIRECTORY*

DESTINE_FILE

DIRECTORY

SOURCE_FILE

r

cp

Ruijie# **cp sour** *log.txt* **dest** *../log_bak.txt*

58.1.3 ls

ls *PATHNAME*

PATHNAME

Ruijie# **ls**

Ruijie# **ls** *tmp*

58.1.4 makefs

makefs dev *DEVNAME* **fs** *FSNAME*

makefs fs *FSNAME* **dev** *DEVNAME*

DEVNAME

FSNAME

```
Ruijie# makefs dev /dev/mtdblock/1 fs jffs2
```

58.1.5 mkdir

```
mkdir DIRECTORY
```

```
DIRECTORY
```

```
Ruijie# mkdir test
```

58.1.6 mv

```
mv sour SOURCE_FILE dest DESTINE_FILE DIRECTORY  
mv dest DESTINE_FILE DIRECTORY sour SOURCE_FILE
```

```
SOURCE_FILE
```

```
DESTINE_FILE/DIRECTORY
```

```
type file
```

```
Ruijie# mv sour tmp/log.txt dest ../config.txt
```

```
Ruijie# mv dest /mnt/tmp sour tmp/log.txt
```

58.1.7 pwd

```
pwd
```

pwd	

Ruijie# **pwd**

58.1.8 rm

rm *FILE*

FILE

Ruijie# **rm** *log.txt*

rmdir	

58.1.9 rmdir

'5 Ö Ä • Q)èfñ ~ !gPÀÄj€ '

59

59.1 CPU-LOG

- show cpu
- cpu-log

59.1.1 show cpu

show cpu

show cpu

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
40	0%	0%	0%	ip6_tunnel_rcv_pkt
41	0%	0%	0%	res6t
42	0%	0%	0%	tunrt6
43	0%	0%	0%	ef6_rcv_msg
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

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

-
-
-
-

59.1.2 cpu-log

cpu-log

cpu-log *log-limit low_num high_num*

log-limit

low_num

high_num

show memory

Ruijie#**show memory**

System Memory Statistic:

32cd54192>

59.2.2 memory-lack exit-policy

show memory protocols



Ruijie(config)# **show memory protocols**

=====

59.3.1.1 threshold set

no
Đ •@ 51 Úíá ¨šŸ^1^q Àc ÄÄAc`Đ •@ €XñF† ìªp'N1^qÇw ò 6 <! 1æ† ÍrÅ€AH † ,†m j î®À @

threshold set cpu member 2 70 90

show threshold	

59.3.2



59.3.2.1 show threshold

show threshold {cpu | memory | temperature} [M1 | M2 | slot *n* | member *n*]

cpu memory temperature	memory cpu temperature
M1 M2 slot <i>n</i>	<i>n</i>
member <i>n</i>	<i>n</i>

Ruijie# show threshold cpu M1

Ruijie# show threshold memory

threshold set	

60

60.1

60.1.1 logging on

logging on

no logging on

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

logging buffered	
logging	
logging file flash:	
logging console	

logging monitor	
logging trap	

60.1.2 terminal monitor

terminal monitor

terminal no monitor



```
Ruijie# terminal monitor
Ruijie#
```

60.1.3 logging buffered

```
60.gim3( fered )]?0Cmo#?#
```

buffer-size

levell

show logging

Ø

```
Ruijie(config)# logging server ipv6 AAAA:BBBB::FFFF
```



show logging

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

logging on	
show logging	

60.1.7 logging monitor

logging monitor *level*

no logging monitor

level

terminal monitor
logging monitor

Logging monitor

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

logging on	
show logging	

60.1.8 logging trap

logging trap *level*

no logging trap

level

show logging

Ruijie(config)# **logging** 202.101.11.22

Ruijie(config)# **logging trap informational**

logging on	
logging	
show logging	

60.1.9 logging source interface

logging source interface *interface-type interface-number*

no logging source interface

interface-type

interface-number

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

logging	

60.1.10 logging source ip| ipv6

logging source ip *ip-address* **ipv6** *ipv6-address*

no logging source ip ipv6

ip-address

ipv6-address

Ruijie(config)# **logging source ip** 192.168.1.1

logging	

60.1.11 logging facility

logging facility *facility-type*

no logging facility

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

logging console	

60.1.12 logging count

logging count

no logging count

no logging count

Ruijie(config)# **logging count**

show logging count	
show logging	

60.1.13 logging rate-limit

logging rate-limit *number all number console number all number except severity*

no logging rate-limit

number

except

severity

Ruijie(config)# **service sequence-numbers**

logging on	
service timestamps	

60.1.16 service timestamps

service timestamps *message-type uptime datetime msec year*

no service timestamps *message-type*

default service timestamps *message-type*

message-type

uptime

datetime

msec

year

```
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
```

```
Mar 22 15:28:02 %SYS-5-CONFIG: Configured from console by
console
Ruijie# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# service sysname
Ruijie(config)# end
Ruijie#
Mar 22 15:35:57 S3250 %SYS-5-CONFIG: Configured from console
by console
```

show logging	

60.1.18 more flash

more flash:filename

Filename

logging file flash:	

60.1.19 clear logging

clear logging

Ruijie# **clear logging**

logging on	
show logging	
logging buffered	

60.2

logging on	

clear logging	
---------------	--

60.2.2 show logging count

show logging count

logging count

show logging count

show logging

show logging count

```
Ruijie# show logging count
Module Name  Message Name Sev Occur      Last Time
=====SYS
CONFIG_I     5  1          Jul 6 10:29:57
-----SYS
TOTAL                               1
```

logging count	
show logging	
clear logging	

60.2.3 show logging reverse

show logging
