



RG-S8600

IPv6

RGOS 10.3(5b1)



'
'
'

1.

t

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

F

```

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# **show aliases exec**

exec mode alias:

h help

p ping

s show

u undebug

un undebug

alias	

disable

Ruijie# **disable** 10

enable	

2.1.2 enable

2.1.3 enable password

enable password
no
enable password level level password 0 7 encrypted-password
no enable password

Password

Level

0|7

encrypted-password

1
1

1
1

1
1

1
1

1
1

1
1

1
1

1
1

1
1

1
1

1
1

1
1

1
1

1
1

1
1

1
1

1
1

1
1

1
1

1
1

1
1

1
1

1
1

1
1

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

enable password	

2.1.5 service password-encryption

service password-encryption

Ruijie(config)# **service password-encryption**

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

username	

2.1.9 login authentication

no

```
login authentication default list-name
no login authentication default list-name
```

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

lock

lock

lock

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

lock

no

lockable

lockable

/source-interface	
--------------------------	--

```
Ruijie# telnet 192.168.1.11 /source interface vlan 1  
/vrf vpn1
```

Show sessions	
exit	

2.1.14 ip telnet source-interface

ip telnet source-interface

ip telnet source-interface *interface-name*

interface-name

telnet	

2.1.15 enable service

enable service

```
enable service ssh-sesrver telnet-server web-server
snmp-agent
```

ssh-sesrver	
telnet-server	
web-server	
snmp-agent	

no enable service

enable service ssh-sesrver

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

show service	

2.2

```
' clock set
' clock update-calendar
```

```
' exec-timeout
' hostname
' session-timeout
' show clock
' show running-config
' show startup-config
' reload
' show reload
' prompt
' banner motd
' banner login
' speed
' show line
' write
```

2.2.1 clock set

clock set

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

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

show clock	

2.2.2 clock update-calendar

clock

update-calendar

clock update-calendar

Ruijie# clock update-calendar

clock read-calendar	

2.2.3 exec-timeout

exec-timeout

no exec-timeout

exec-timeout *minutes seconds*

minutes
seconds

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

2.2.4 hostname

hostname

hostname *name*

name

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

2.2.5 session-timeout

session-timeout

no session-timeout

session-timeout *minutes seconds*

no session-timeout

minutes

seconds

```
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

```
running-config
show running-config
```

show

2.2.8 show startup-config

N

month

day

year

cancel

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

2.2.10 show reload

reload

show reload

show

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

2.2.11 prompt

no prompt

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

2.2.15 show line

show line

```
show line console line-num | vt line-num | line-num
```

console

vt

line-num

```
Ruijie# show line console 0  
CON      Type      speed  Overruns  
* 0      CON       9600   45927  
Line 0, Location: "", Type: "vt100"  
Length: 24 lines, Width: 79 columns  
          ^^x      none      ^M
```

write

write memory network terminal

memory

network

terminal

show running-config

memory

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

show running-config	
copy	

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>	

..

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

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

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

3.1.3 transport input

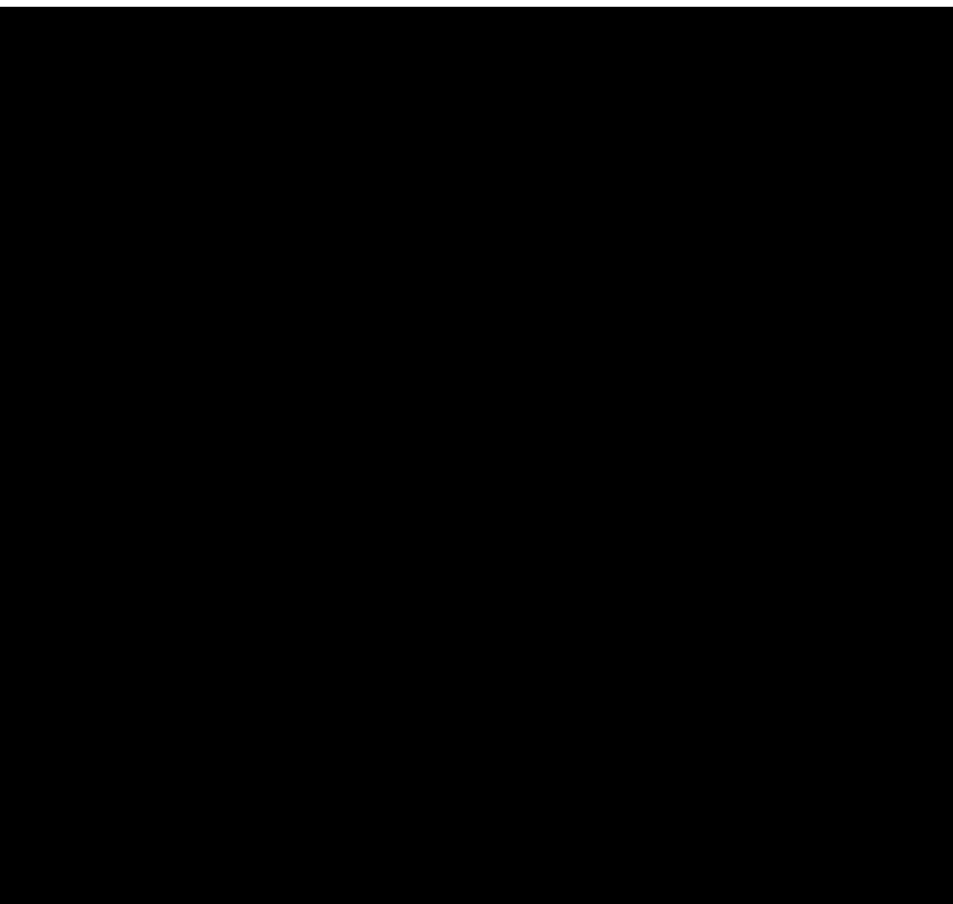
transport input
default transport input

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

all	
ssh	
telnet	
none	

default transport input

show running



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

4

4.1

' **copy xmodem**
' **copy tftp**

4.1.1 **copy xmodem**

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

filename

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

4.1.2 copy tftp

```
copy flash: filename tftp ocatation filename
```

```
copy tftp ocatation filename flash: filename
```

```
copy flash: filename tftp ocatation filename vrf
```

```
copy tftp ocatation filename flash: filename vrf
```

filename

vrfname

```
r . . .
```

```
copy tftp: flash: vrf
```

```
copy tftp: flash: vrf
```

```
Ruijie# copy tftp://192.168.12.1/config.bak flash:  
config.text
```

```
Ruijie# copy flash: swhich.bin tftp://
```

5

5.1

- ' ping
- ' traceroute
- ' line-detect

5.1.1 ping

ping vrf *vrf-name* **ip** *ip-address* **length** *length* **ntimes** *times*
timeout *seconds* **data** *data* **source** *source*

<i>vrf-name</i>	
<i>ip-address</i>	
<i>length</i>	
<i>times</i>	
<i>data</i>	
<i>source</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
```

5.1.3 Line-detect

line-detect

```
Ruijie(config)#int gigabitEthernet 3/1
Ruijie(config-if)#line-detect
start cable-diagnoses,please wait...
cable-daignoses end!this is result:
4 pairs
pair state      length(meters)
----  -
A      Ok          2
B      Ok          1
C      Short        1
D      Short        1
```

6

6.1

- ' interface aggregateport
- ' 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 giagbitEthernet

interface gigabitEthernet *mod-num/port-num*

mod-num/port-num

no **show interfaces**

show interfaces gigabitEthernet

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

show interfaces	

6.1.3 interface vlan

no

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

vlan-id

show interfaces **show interfaces vlan**

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

show interfaces	

6.1.4 medium-type

no

medium-type fiber | copper
no medium-type

fiber
copper

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

6.1.5 description

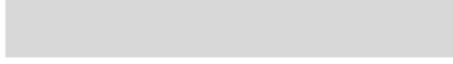
description *string*

no description

string

show interfaces

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



auto
full
half

show interfaces

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

show interfaces	

6.1.9 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	

6.1.10 mtu

Mtu *num*

num

```
Ruijie(config)# interface gigabitethernet 1/1  
Ruijie(config-if)# mtu 9216
```

show interfaces	

6.1.11 carrier-delay

no **carrier-delay**

carrier-delay *seconds*
no carrier-delay

seconds

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

6.1.12 clear counters

clear counters *interface-id*

interface-id

clear counters **show interfaces**

```
Ruijie# clear counters gigabitethernet 1/1
```

show interfaces	

6.1.13 clear interface

```
clear interface interface-id
```

interface-id

```
shutdown no shutdown
```

```
Ruijie# clear interface gigabitethernet 1/1
```

shutdown	

6.1.14 switchport

```
switchport  
no switchport
```

```
switchport  
no switchport
```

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

show interfaces	

6.1.15 switchport mode

no

switchport mode access | trunk
no switchport mode

access	
trunk	

switchport access vlan

switchport trunk

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

switchport access	
switchport trunk	

6.1.16 switchport access

access port

```
switchport access vlan vlan-id
```

```
no switchport access vlan
```

vlan-id

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

```
Ruijie(config-if)# switchport access vlan 2
```

switchport mode	
switchport trunk	

6.1.17 switchport trunk

**switchport trunk allowed vlan all | add | remove | except
vlan-list | native vlan vlan-id**

no switchport trunk allowed vlan | native vlan

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

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
```

show interfaces	
switchport access	

6.1.18 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
```

link-status	snmp trap
link-status	no snmp trap

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

```

duplex	
flowcontrol	
interface gigabitEthernet	
interface aggregateport	
interface vlan	
shutdown	
speed	
switchport priority	
switchport protected	

7 Aggregate Port

7.1

7.1.1 port-group

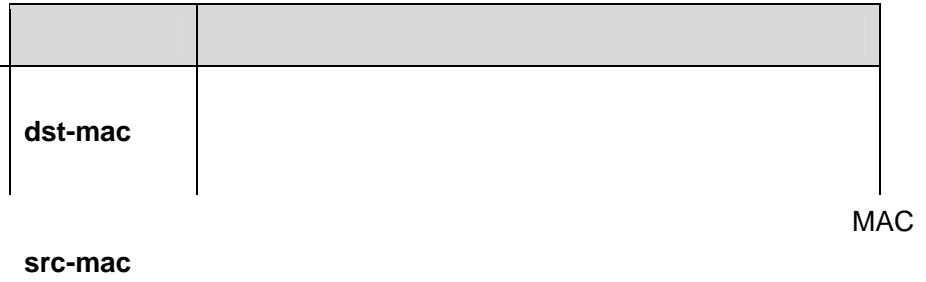
port-group *port-group-number*
no port-group

<i>port-group-number</i>	

```
Ruijie(config)# interface gigabitethernet 1/3  
Ruijie(config-if)# port-group 3
```

7.1.2 aggr8Wateport load-balance

**aggregateport load-balance dst-mac src-mac src-dst-mac
dst-ip src-ip src-dst-ip
no aggregateport load-balance**



show aggregateport load-balance	
--	--

7.2

7.2.1 show aggregateport

show aggregateport *aggregate-port-number* **summary**
load-balance

<i>aggregate-port-number</i>	
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>	

└───┘

└───┘

└───┘

```
Ruijie(config)# interface gigabitethernet 1/1  
Ruijie(config-if)# lacp port-priority 4096
```

	port-group <i>key mode active passive</i>	
	port-group <i>key mode</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



port-group *key*



Local information:

Port	Flags	LACP port State	Oper Priority	Port Key	Port Number	Port State
Gi0/1	SA	bndl	4096	0x3	0x1	0x3d
Gi0/2	SA	bndl	4096	0x3	0x2	0x3d
Gi0/3	SA	bndl	4096	0x3	0x3	0x3d

Partner information:

Port	Flags	LACP port Priority	Oper Dev ID	Port Key	Port Number	Port State
Gi0/1	SA	61440	00d0.f800.0002	0x3	0x1	0x3d
Gi0/2	SA	61440	00d0.f800.0002	0x3	0x2	0x3d
Gi0/3	SA	61440	00d0.f800.0002	0x3	0x3	0x3d

port-group key mode	

9 VLAN

9.1

9.1.1 vlan

vlan *vlan-id*

no vlan *vlan-id*

<i>vlan-id</i>	

G5B8 0005B5g8

no

name *vlan-name*

no name

<i>vlan-name</i>	

show vlan

Ruijie(config)# **vlan 10**

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

10.5

sh vlan	

1.1.3 switch port mode

switchport access vlan

switchport trunk

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

switchport access	
switchport trunk	

9.1.4 switchport access

no

switchport access vlan *vlan-id*

no switchport access vlan

<i>vlan-id</i>	

```
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-id	

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
```

show interfaces	
switchport access	

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	

10 Super-vlan

10.1

10.1.1 supervlan

supervlan

supervlan

no supervlan

end

Ctrl+C

exit

Ruijie(config)# **vlan 3**

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

show supervlan	

10.1.2 subvlan

subvlan *vlan-id-list*

no subvlan *vlan-id-list*

<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
```

show supervlan	

10.1.3 subvlan-address-range

```
subvlan-address-range start-ip end-ip
no subvlan-address-range
```

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

end

Ctrl+C

exit

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



```
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 ipv4** *addr mask addr* **vlan** *id*
- ' **protocol-vlan profile** *num* **frame-type** *type* **ether-type** *type*
- ' **protocol-vlan profile** *num* **vlan** *id*

11.1.1 protocol-vlan ipv4 addr mask addr vlan id

add k

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

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

no :

```
Ruijie(config)# interface gigabitEthernet 0/1  
Ruijie(config-if)# switchport mode private-vlan host  
Ruijie(config-if)# switchport private-vlan host-association 22 23
```

show vlan private-vlan

12.1.6 switchport private-vlan association trunk

switchport private-vlan association trunk *p_vid s_vid*

no switchport private-vlan association trunk *p_vid s_vid*

p_vid

s_vid

no :

```
Ruijie(config)# interface gigabitEthernet 0/1  
Ruijie(config-if)# switchport mode
```

```
Ruijie(config-if)# switchport private-vlan associatio  
n trunk 22 23
```

```
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
```

12.2

show vlan private-vlan

12.2.1 show vlan private-vlan

show vlan private-vlan community primary isolated

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

12.3.2 switchport hybrid native vlan

```
switchport hybrid native vlan vid  
no switchport hybrid native vlan
```

```
no
```

```
Ruijie(config-if)# switchport hybrid native vlan 3
```

12.3.3 switchport hybrid allowed vlan

```
switchport hybrid allowed vlan add tagged | untagged | remove  
list  
no switchport hybrid allowed vlan
```

```
no
```

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

13 802.1Q Tunneling

13.1

```
' switchport mode dot1q-tunnel
' switchport mode uplink
' switchport dot1q-tunnel allowed vlan
' switchport dot1q-tunnel native vlan
' dot1q outer-vid
' dot1q relay-vid
' traffic-redirect access-group outer-vlan
' traffic-redirect access-group inner-vlan
' traffic-redirect access-group nested-vlan
' frame-tag tpid tpid
' inner-priority-trust enable
' l2protocol-tunnel
' l2protocol-tunnel enable
```

13.1.1 switchport mode dot1q-tunnel

```
switchport mode dot1q-tunnel
no switchport mode
```

```
no
```

```
ruijie(config)#interface gigabitEthernet 0/1
ruijie(config-if)#switchport mode dot1q-tunnel
ruijie(config)#end
```

show vlan

13.1.2 switchport mode uplink

switchport mode uplink
no switchport mode

no

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

show vlan

13.1.3 switchport dot1q-tunnel allowed vlan

switchport dot1q-tunnel allowed vlan add tagged|untagged
v_list

switchport dot1q-tunnel allowed vlan remove *v_list*

no switchport dot1q-tunnel allowed vlan

tagged :

untagged :

v_list :

no

```
ruijie(config)#interface gigabitEthernet 0/1  
ruijie(config-if)#switchport dot1q-tunnel allowed vlan  
tagged 3-6  
ruijie(config)#end
```

show interface dot1q-tunnel

13.1.4 switchport dot1q-tunnel native vlan

m

```
ruijie(config)#interface gigabitEthernet 0/1
ruijie(config-if)#switchport dot1q-tunnel native vlan
8
ruijie(config)#end
```

```
show interface dot1q-tunnel
```

13.1.5 dot1q outer-vid

```
dot1q outer-vid vid register inner-vid v_list
no dot1q outer-vid vid register inner-vid v_list
```

v_list

vid

no

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

```
show registration-table interface intf-id
```

13.1.6 dot1q relay-vid

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

v-list

vid

no

vid

no

Ruijie#**configure**

Ruijie(config)#**ip access-list standard 2**

Ruijie(config-std-nacl)#**permit host 1.1.1.1**

Ruijie(config-std-nacl)#**exit**

Ruijie(config)# **15j/T 1 13.9771 -D(1.1.-24 -1.44jie(config/4.8 0 1**

```
Ruijie#configure
Ruijie(config)#ip access-list standard to_6
Ruijie(config-std-nacl)#permit host 1.1.1.2
Ruijie(config-std-nacl)#exit
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# traffic-redirect access-group to_6
inner-vlan 6 out
Ruijie(config-if)# end
```

```
show traffic-redirect
```

13.1.9 traffic-redirect access-group acl nested-vlan

```
traffic-redirect access-group acl nested-vlan vid in
no traffic-redirect access-group acl nested -vlan
```

```
acl
```

```
vid
```

```
no
```

```
ruijie#configure
ruijie(config)#ip access-list standard 20
ruijie(config-std-nacl)#permit host 1.1.1.3
```

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

```
show l2protocol-tunnel gvrp|stp
```

13.1.13 l2protocol-tunnel *proto-type* enable

```
l2protocol-tunnel stp gvrp enable  
no l2protocol-tunnel stp gvrp enable
```

```
stp
```

```
gvrp
```

```
no
```

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

```
show l2protocol-tunnel gvrp stp
```

13.2

```
' show dot1q-tunnel  
' show interface dot1q-tunnel  
' show frame-tag tpid  
' show inner-priority-trust  
' show registration-table
```

-
- ' **show translation-table**
 - ' **show traffic-redirect**
 - ' **show l2protocol-tunnel**

13.2.1 show dot1q-tunnel

show dot1q-tunnel interface *intf-id*

intf-id

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

13.2.2 show interface dot1q-tunnel

show interface *intf-id* dot1q-tunnel

intf-id

```
ruijie# show inner-priority-trust
Ports    inner-priority-trust
-----  -
Gi0/1    enable
```

13.2.5 show registration-table

```
show registration-table interface intf-id
```

intf-id

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

13.2.6 show translation-table

```
show translation-table interface intf-id
```

intf-id

```
ruijie# show translation-table
Ports      Relay-VID Local-VID-list
```

gvrp

stp

ruijie# **show l2protocol-tunnel stp**

L2protocol-tunnel: Stp Enable

ruijie# **show l2protocol-tunnel gvrp**

L2protocol-tunnel: gvrp Disable

14 MAC

14.1

- ' **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**
- ' **nmp trap mac-notification**
- ' **address-bind**
- ' **address-bind ip-address**
- ' **address-bind uplink**
- ' **address-bind install**
- ' **address-bind ipv6-mode**
- ' **mac-manage-learning uniform**
- ' **mac-manage-learning uniform learning-synchronization**
- ' **mac-manage-learning dispersive**

14.1.1 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	

14.1.2 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	

14.1.3 clear mac-address-table filtering

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

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

show mac-address-table filtering

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

<u>mac-address-table filtering</u>	
show mac-address-table filtering	

14.1.4 clear mac-address-table static

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

static	
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	

14.1.5 max-dynamic-mac-count

no

max-dynamic-mac-count *<address-number>*

<i>address-number</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	

14.1.7 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	

14.1.8 mac-address-table notification

no

```
mac-address-table notification interval value history-size value  
no mac-address-table notification interval value history-size
```

interval <i>value</i>	
history-size <i>value</i>	

snmp-server

enable traps mac-notification

```
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

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

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

14.1.10 address-bind ip-address

address-bind *ip-address mac-address*

no address-bind *ip-address*

	'
<i>ip-address</i>	' ID
<i>mac-address</i>	' aUW

```
Ruijie(config)# address-bind 3.3.3.3 00d0.f811.1112
```

'	'
show address-bind	'

14.1.11 address-bind uplink

address-bind uplink *intf-id*

no address-bind uplink *intf-id*

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

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

show address-bind uplink	

14.1.12 address-bind install

address-bind install

no address-bind install

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

'	'
show address-bind uplink	'

14.1.13 address-bind ipv6-mode

address-bind ipv6-mode compatible

address-bind ipv6-mode loose

address-bind ipv6-mode strict

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

14.1.14 mac-manage-learning uniform

**14.1.15 mac-manage-learning uniform
learning-synchronization**

no mac-manage-learning uniform learning-synchronization

show mac-address-table mac-manage-learning	

14.1.16 mac-manage-learning dispersive

show mac-address-table mac-manage-learning	

14.2

- ' **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**
- ' **show mac-address-table mac-manage-learning**

14.2.1 show mac-address-table address

show mac-address-table

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	

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

```
Vlan      MAC Address      Type      Interface
----      -
1         0000.0000.0001   DYNAMIC   gigabitethernet 1/1
1         0001.960c.a740   DYNAMIC   gigabitethernet 1/1
1         0007.95c7.dff9   DYNAMIC   gigabitethernet 1/1
1         0007.95cf.eee0   DYNAMIC   gigabitethernet 1/1
1         0007.95cf.f41f   DYNAMIC   gigabitethernet 1/1
1         0009.b715.d400   DYNAMIC   gigabitethernet 1/1
1         0050.bade.63c4   DYNAMIC   gigabitethernet 1/1
```

clear mac-address-table dynamic	

14.2.5 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
```

14.2.7 show mac-address-table notification

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

interface <i>interface-id</i>	

```
Ruijie# show mac-address-table notification interface
Interface          MAC Added Trap  MAC Removed Trap
-----
GigabitEthernet1/14  Disabled        Disabled
```

```
Ruijie# show mac-address-table notification
MAC Notification Feature : Disabled
Interval between Notification Traps : 1 secs
Maximum Number of entries configured in History Table :1
Current History Table Length : 0
```

```
Ruijie# show mac-address-table notification history
History Index : 0
MAC Changed Message :
Operation:ADD Vlan : 1 MAC Addr: 00f8.d012.3456
GigabitEthernet 3/1
```

mac-address-table notification	
snmp trap mac-notification	

14.2.8 show mac-address-table static

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

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

```
Ruijie# show mac-address-table static
Vlan    MAC Address      Type      Interface
-----  -
1       00d0.f800.1001   STATIC    gigabitethernet 1/1
1       00d0.f800.1002   STATIC    gigabitethernet 1/1
1       00d0.f800.1003   STATIC    gigabitethernet 1/1
```

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

```
Ruijie# show mac-address-table vlan 1
Vlan    MAC Address      Type      Interface
-----  -
1       00d0.f800.1001   STATIC    gigabitethernet 1/1
1       00d0.f800.1002   STATIC    gigabitethernet 1/1
1       00d0.f800.1003   STATIC    gigabitethernet 1/1
```

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	

14.2.10 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	

14.2.11 show mac-address-table mac-manage-learning

```
Ruijie# show mac-address-table mac-manage-learning
#####MAC manage-learning
running mode: uniform
configuration mode: uniform
dynamic address learning-synchronization: off.
```

mac-manage-learning uniform	
mac-manage-learning uniform learning-synchronization	
mac-manage-learning dispersive	

15 DHCP Snooping

15.1 DHCP snooping

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

15.1.1 ip dhcp snooping

no ip dhcp snooping

show ip dhcp snooping

r · · ·

..

show ip dhcp snooping	

15.1.4 ip dhcp snooping verify mac-address

no ip dhcp snooping verify mac-address

no ip dhcp snooping information option

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

```

show ip dhcp snooping	

15.1.6 ip dhcp snooping database write-delay

```
' ip dhcp snooping database write-delay time
' no ip dhcp snooping database write-delay
```

time

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping database write-delay
3600
Ruijie(config)# end
Ruijie# show ip dhcp snooping
Switch DHCP snooping status  ENABLE
```

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

15.2 DHCP snooping

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

15.2.1 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
```

15.2.2 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 binding

15.3.1 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	
ip dhcp snooping verify mac-address	
ip dhcp snooping write-delay	
ip dhcp snooping information option	
ip dhcp snooping bootp-bind	
ip dhcp snooping trust	

15.3.2 show ip dhcp snooping binding

show ip dhcp snooping binding

```
Ruijie# show ip dhcp snooping binding
Total number of bindings: 1
MacAddress      IpAddress Lease  Type  VLAN  Interface
-----
00d0.f801.0101 192.168.1.1 - static 1 fastethernet 0/1
```

ip dhcp snooping binding	
clear ip dhcp snooping binding	

15.4 DHCP snooping

- ' **clear ip dhcp snooping binding**
- ' **debug ip dhcp snooping**

15.4.1 clear ip dhcp snooping binding

clear ip dhcp snooping binding

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

16 IGMP Snooping

16.1

- ' 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 vlan
- ' ip igmp snooping dyn-mr-aging-time
- ' ip igmp snooping query-max-response-time
- '

no ip igmp profile *profile-number*



profile-number

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

ip igmp profile	
deny	
permit	

16.1.3 deny

deny

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

ip igmp profile	
range	

16.1.4 permit

permit

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

ip igmp profile	
range	

16.1.5 ip igmp snooping ivgl

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	

16.1.6 ip igmp snooping svgl

ip

igmp snooping svgl
ip igmp snooping svgl
no ip igmp snooping

Ruijie(config)# ip igmp snooping svgl

Ruijie(config)# ip igmp snooping svgl profile 1



ip ii[(igmp sno2.ing svsn2.gl pro).64(i/TT9 1 Tf6.6343 0f0()T.16 TD()TjET44a41j/

ip igmp snooping profile *profile-number*, **no ip igmp snooping profile**

ip igmp snooping profile *profile-number*

no ip igmp snooping profile

<i>profile-number s</i>	

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

ip igmp snooping svgl	
ip igmp snooping ivgl-svgl	

16.1.8 ip igmp snooping ivgl-svgl

ip igmp snooping ivgl-svgl

ip igmp snooping ivgl-svgl
no ip igmp snooping

ip igmp snooping vlan

ip igmp snooping vlan *num*

no ip igmp snooping vlan *num*

<i>num</i>	

Ruijie(config)#no ip igmp snooping vlan 100

ip igmp snooping ivgl	
ip igmp snooping ivgl-svgl	

16.1.10 ip igmp snooping dyn-mr-aging-time

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**

16.1.11 ip igmp snooping query-max-response-time

ip igmp snooping query-max-response-time
no ip igmp snooping query-max-response-time

ip igmp snooping query-max-response-time *num*
no ip igmp snooping query-max-response-time

--	--

num

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

16.1.12 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>	

ip igmp snooping vlan mrouter interface	
--	--

16.1.15 ip igmp snooping fast-leave enable

snooping fast-leave enable

ip igmp

ip igmp snooping fast-leave enable

no ip igmp snooping fast-leave enable

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

16.1.16 ip igmp snooping suppression enable

snooping suppression enable

ip igmp

ip igmp snooping suppression enable

no ip igmp snooping suppression enable

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

16.1.17 ip igmp snooping source-check port

```
snooping source-check port
```

```
ip igmp snooping source-check port
```

```
no ip igmp snooping source-check port
```

```
ip igmp
```

Ruijie(config)# **ip igmp snooping source-check port**

ip igmp snooping source-check default-server	

16.1.18 ip igmp snooping source-check default-server

ip igmp snooping source-check default-server

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

no ip igmp snooping souce-check

<i>address</i>	

```
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	

16.1.20 ip igmp snooping filter

```
ip igmp snooping filter profile-number
no ip igmp snooping filter profile-number
```

<i>Profile-number</i>	

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

ip igmp profile	

16.1.21 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 @

HÁR17a SáEáÖi ACE Dz1¼ !ÇH Sm Ú v : 4rt

ó,RÜG5B

ÆUjje(config)#()Tj /TTT5 1 Tf 9.1 0

debug igmp-snp

16.2.1 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)
```

16.2.2 show ip igmp profile

show ip igmp profile

show ip igmp profile *profile-number*



clear ip igmp snooping gda-table

16.2.4 clear ip igmp snooping statistics

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

16.2.5 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	

17 PIM-Snooping

17.1 PIM-Snooping

ip pim snooping

ip pim snooping
no ip pim snooping

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

/

17.1.3 show ip pim snooping

show ip pim snooping

show ip pim snooping

```
Ruijie#show ip pim snooping
PIM Snooping table: 2 neighbours, Memory:16
Interface VLAN 7(4103), PC:2
Port GigabitEthernet 0/7(7), NC:1
Neighbour 4.4.4.1, GenID 0X2f853a91, Holdtime 105s, NLT
79s
Port GigabitEthernet 0/8(8), NC:1
Neighbour 4.4.4.2, GenID 0X38545b24, Holdtime 105s, NLT
81s
```

17.1.4 show ip pim snooping vlan

18 MSTP

18.1

18.1.1 spanning-tree

spanning-tree forward-time *seconds* **hello-time** *seconds*
max-age *seconds*

no spanning-tree forward-time hello-time max-age

forward-time *seconds*

hello-time *seconds*

max-age *seconds*

forward-time hello-time max-age

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

Ruijie(config)# **spanning-tree forward-time 10**

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

18.1.2 spanning-tree bpdudfilter

spanning-tree bpdudfilter enabled disabled

enabled

Disabled

no spanning-tree max-hops

hop-count

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

show

```
Ruijie(config)# spanning-tree mst configuration
Ruijie(config-mst)# instance 1 vlan 3 5-10
Ruijie(config-mst)# name region 1
Ruijie(config-mst)# revision 1
Ruijie(config-mst)# show
MST configuration
Name [region1]
Revision 1
Instance  Vlans Mapped
-----  -----
0          1-2,4,11-4094
1          3,5-10
-----
Ruijie(config-mst)# exit
Ruijie(config)#
```

```
Ruijie(config-mst)# no instance 1 vlan 3
```

```
Ruijie(config-mst)# no instanceMST
```

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 priority

18.1.9 spanning-tree mst port-priority

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

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

Instance-id

priority

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# spanning-tree mst 20 port-priority
0
```

show spanning-tree mst instance interface *interface-id*

show spanning-tree mst

spanning-tree mst cost

spanning-tree mst priority

18.1.10 spanning-tree mst priority

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

no spanning-tree [*ce-id* *DA*] *show* (M

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

no spanning-tree tx-hold-count

tx-hold-count

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

show spanning-tree

18.1.13 spanning-tree pathcost method

spanning-tree pathcost method long short

no spanning-tree pathcost method

long

short

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

show spanning-tree interface

18.1.14 spanning-tree portfast

spanning-tree portfast disabled

disabled

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

show spanning-tree interface

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

show spanning-tree interface

18.1.18 spanning-tree tc- protection

spanning-tree tc- protection

no spanning-tree tc- protection

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

18.1.19 spanning-tree tc-protection tc-guard

spanning-tree tc-protection tc-guard

no spanning-tree tc-protection tc-guard

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

18.1.20 spanning-tree tc-guard

```
spanning-tree tc-guard
```

```
no spanning-tree tc-guard
```

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

18.1.21 spanning-tree guard root

```
spanning-tree guard root
```

```
no spanning-tree guard root
```

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

18.1.22 spanning-tree loopguard default

```
spanning-tree loopguard default
```

```
no spanning-tree loopguard default
```

```
Ruijie(config)# spanning-tree loopguard default
```

18.1.23 spanning-tree guard loop

```
spanning-tree guard loop
```

```
no spanning-tree guard loop
```

18.1.26 bpdu src-mac-check

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

no bpdu src-mac-check

H.H.H

no

show spanning-tree interface

18.1.28 spanning-tree compatible enable

spanning-tree compatible enable

no spanning-tree compatible enable

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

18.1.29 logging event status

logging event status

no logging event status

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

**show spanning-tree interface *interface-id* bpdudfilter portfast
bpduguard link-type**

interface-id

bpdudfilter

portfast

bpduguard

link-type

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

spanning-tree bpdudfilter

spanning-tree portfast

spanning-tree bpduguard

spanning-tree link-type

18.2.3 show spanning-tree mst

**show spanning-tree mst configuration *instance-id* interface
*interface-id***

configuration

instance-id Instance

interface-id

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

19 SPAN

19.1 monitor session

monitor session *session_number* **source interface** *interface-id* **both**
rx tx destination interface *interface-id* **switch** **acl name**

no monitor session *session_number* **source interface** *interface-id*
both rx tx destination interface *interface id* **switch** **acl name**

no monitor session all

<i>session_number</i>	
source interface <i>interface-id</i>	
destination interface <i>interface-id</i>	
both acl name	acl name/id
rx	
tx	
all	
switch	

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	

19.2 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

20 RSPAN

20.1

20.1.1 monitor session

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

monitor session *session-num* **destination remote vlan** *vlan-id*
interface *interface-name* **switch**

monitor session *session-num* **source interface** *interface-id* **rx tx**
both

<i>session-num</i>	
<i>vlan-id</i>	remote span vlan id
<i>Interface-id</i>	

end

exit

```
Ruijie(config)# monitor session 1 source interface  
fastethernet 0/1
```

```
Ruijie(config)# monitor session 1 destination  
remote vlan 5 reflector-port interface fastethernet 0/5
```

```
Ruijie(config)# monitor session 1 remote-destination
```

show monitor	

20.1.2 remote-span

RSPAN VLAN

```
no remote-span
```

```
end
```

```
exit
```

```
Ruijie(config)# vlan 5
```

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

show vlan	

`ip address 10.10.10.1 255.255.255.0`

<code>show interface</code>	

21.1.2 ip unnumbered

`ip unnumbered interface-type interface-number`

`no ip unnumbered interface-type interface-number`

<code>interface-type</code>	

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

,

,

,

,

ip unnumbered fastEthernet 0/1

show interface	

-
- ' **arp unresolve**
 - ' **arp gratuitous-send interval**
 - ' **arp timeout**
 - ' **ip proxy-arp**
 - ' **service trustedarp**

21.2.1 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



<i>number</i>	

arp trusted 1000

	,
--	---

arp timeout

service trustedarp	

21.2.6 arp unresolve

arp unresolve *number*

no arp unresolve

<i>number</i>	

arp unresolved 500

21.2.7 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
```

21.2.8 arp timeout

arp timeout *seconds*

no arp timeout

<i>seconds</i>	

```
interface fastEthernet 0/1  
arp timeout 120
```

clear arp-cache	
show interface	

21.2.9 ip proxy-arp

ip proxy-arp

ip proxy-arp

no ip proxy-arp

```
interface fastEthernet 0
ip proxy-arp
```

21.2.10 service trustedarp

service trustedarp

service trustedarp

no service trustedarp

```
config
service trustedarp
```

21.3

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

21.3.1 ip broadcast-addresss

ip broadcast-addresss

ip broadcast-addresss *ip-address*

no ip broadcast-addresss *ip-address*



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

no ip directed-broadcast

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

21.4 IP

-
- ' **show ip arp**
 - ' **show ip interface**

21.4.1 clear arp-cache

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

r · · ·

show arp ip mask mac-address static complete incomplete

<i>ip</i>	
<i>ip mask</i>	
<i>mac-address</i>	
static	
complete	
incomplete	

```

Ruijie# show arp
Total Numbers of Arp: 7
Protocol Address          Age(min)  Hardware
Type  Interface
Internet 192.168.195.68    0          0013.20a5.7a5f
arpa  VLAN 1
Internet 192.168.195.67    0          001a.a0b5.378d
arpa  VLAN 1
Internet 192.168.195.65    0          0018.8b7b.713e
arpa  VLAN 1
Internet 192.168.195.64    0          0018.8b7b.9106
arpa  VLAN 1
Internet 192.168.195.63    0          001a.a0b5.3990
arpa  VLAN 1
Internet 192.168.195.62    0          001a.a0b5.0b25
arpa  VLAN 1
Internet 192.168.195.5     --         00d0.f822.33b1
arpa  VLAN 1

```

```
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
```

21.4.3 show arp counter

show arp counter

Ruijie# show arp detail

ARP



```
clear ip route 192.168.12.0
```

show ip route	

21.4.7 show ip arp

```
show ip arp
```

show ip arp

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

--	--

21.4.8 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
```

22 IP

22.1 IP

- ' ip mask-reply
- ' ip mtu
- ' ip redirects
- ' ip source-route
- ' ip unreachablees

22.1.1 ip mask-reply

ip mask-reply

ip mask-reply

no ip mask-reply

ip mtu

ip mtu *bytes*

no ip mtu

<i>bytes</i>	

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

22.1.4 ip source-route

```
source-route
```

```
ip source-route
```

```
no ip source-route
```

ip

```
no ip source-route
```

22.1.5 ip unreachables

unreachables

ip unreachables

no ip unreachables

ip

23 DHCP

23.1 DHCP

23.1.1 bootfile

bootfile **no**

bootfile *file-name*

no bootfile

<i>file-name</i>	

next-server

bootfile router.conf

ip dhcp pool	

next-server

hardware-address	
host	
ip dhcp pool	

23.1.3 client-name

client-name

client-name *client-name*

no client-name

<i>client-name</i>	

client-name river

host	

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

23.1.4 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

ip dhcp pool	

23.1.5 dns-server

dns-server no

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

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	

23.1.7 hardware-address

hardware-address **no**

hardware-address *hardware-address type*

no hardware-address

<i>hardware-address</i>	



type ±



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

host 192.168.12.91 255.255.255.240

--	--

client-identifier

ip dhcp excluded-address 192.168.12.100 192.168.12.150

ip dhcp pool	
network	

23.1.11 ip dhcp force-send-nak

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

ip dhcp ping packets 3

ip dhcp ping timeout 600



0E0MÉuDgeQ68gxNBgeç0f13Au(NăuC)E)5u()F¼

host	
ip dhcp excluded-address	
network	

23.1.15 lease

lease no

lease *days hours minutes* **infinite**

no lease

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

lease 0 1

lease 0 0 1

ip dhcp pool	

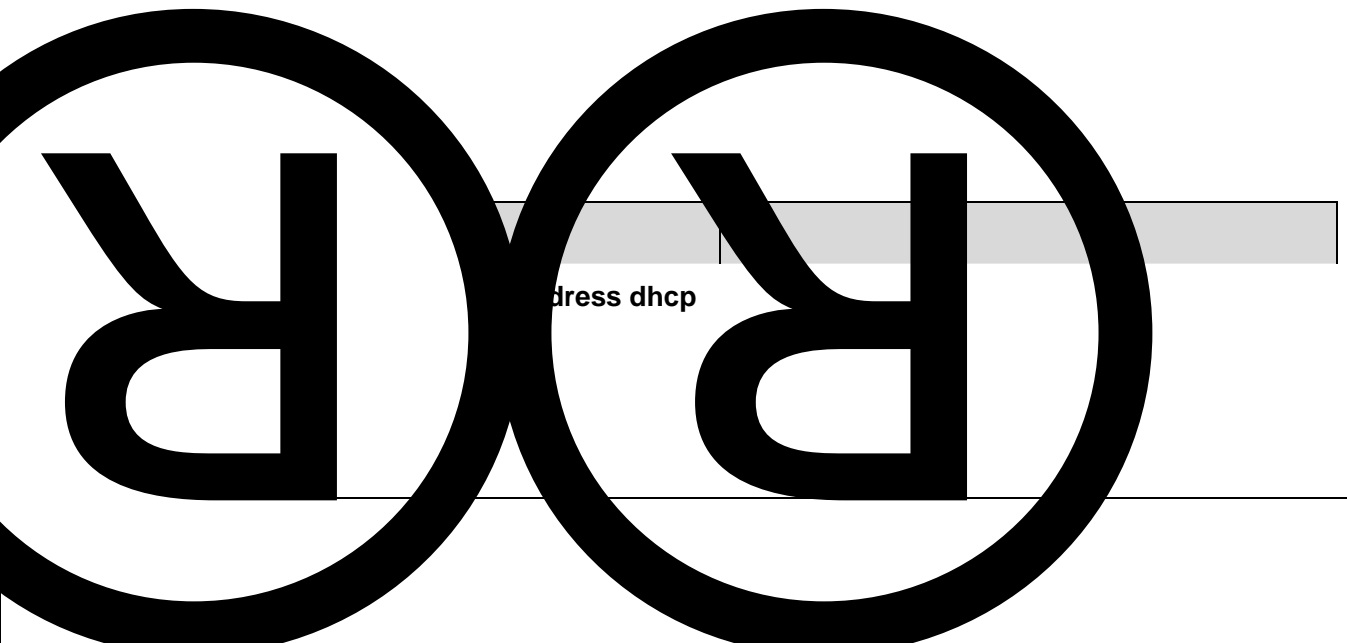
23.1.16 netbios-name-server

netbios-name-server

netbios-name-server *ip-address ip-address2...ip-address8*

no netbios-name-server

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



23.1.17 netbios-node-type

netbios-node-type **no**

netbios-node-type *type*
no netbios-node-type

<i>type</i>	\pm \pm \pm \pm \pm \pm \pm \pm

netbios-node-type h-node

ip dhcp pool	
netbios-name-server	

23.1.18 network DHCP

network no

network *net-number net-mask*

no network

<i>net-number</i>	
<i>net-mask</i>	

network 192.168.12.0 255.255.255.240

ip dhcp excluded-address	
ip dhcp pool	

23.1.19 next-server

next-server **no**

next-server *ip-address ip-address2...ip-address8*

no next-server

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

next-server 192.168.12.4

bootfile	

ip dhcp pool	
ip help-address	
option	

23.1.20 option

no

option

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

no option

<i>code</i>	
ascii <i>string</i>	
hex <i>string</i>	
ip <i>ip-address</i>	

```
option 33 ip 172.16.12.0 192.168.12.12 172.16.16.0
192.168.12.16
```

ip dhcp pool	

23.1.21 service dhcp

```
dhcp          no
service
service dhcp
no service dhcp
```

```
service dhcp
```

show ip dhcp server statistics	

23.2

- ' 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

23.2.1 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	
----------------------	--

23.2.2 clear ip dhcp conflict

clear ip dhcp conflict

clear ip dhcp conflict * *ip-address*

debug ip dhcp client

23.2.5 debug ip dhcp server

debug ip dhcp server

debug ip dhcp server

no debug ip dhcp server

debug ip dhcp server

23.2.6 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
DHCP Lease server: 192.168.5.70, state: 3 Bound
DHCP transaction id: 168F
Lease: 600 secs, Renewal: 300 secs, Rebind: 525 secs
Temp default-gateway addr: 192.168.5.1
Next timer fires after: 00:04:29
Retry count: 0 Client-ID:
redgaint-00d0.f8fb.5740-Fa0/0
```

23.2.7 show ip dhcp binding

show ip dhcp binding

show ip dhcp binding *ip-address*

<i>ip-address</i>	

show ip dhcp binding

```
Ruijie# show ip dhcp binding
IP address Client-Id/ Lease expiration Type
```

Hardware address
192.168.1.2 00d0.f866.4777 IDLE Manual

```
dhcpd excluded ipaddress  
192.168.12.100
```



DHCPREQUEST	25
DHCPDECLINE	0
DHCPRELEASE	1
DHCPINFORM	150

Message	Sent
BOOTREPLY	16
DHCPOFFER	9
DHCPACK	7
DHCPNAK	0

R

...

...

24 DHCP Relay

24.1 DHCP Relay

- ' service dhcp
- ' ip helper-address

24.1.1 service dhcp

ervice dhcp

service dhcp

no service dhcp

service dhcp



ip helper-address vrf *A.B.C.D*

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

service dhcp	

24.1.3 ip dhcp relay information option dot1x

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

Ip dhcp relay information option dot1x

service dhcp	
ip dhcp relay information option dot1x access-group	

24.1.4 ip dhcp relay information option dot1x access-group

dhcp option dot1x acl

dhcp option dot1x acl

Ip dhcp relay information option82

Service dhcp	
ip dhcp relay information option dot1x	

24.1.6 ip dhcp relay check server-id

ip dhcp relay check *server-id*
ip dhcp relay information check *server-id*

Ip dhcp relay check server-id

Service dhcp	

24.1.7 ip dhcp relay suppression

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

service dhcp	

25 DNS

25.1

25.1.1 ip domain-lookup

<i>ip-address</i>	

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

show hosts	

25.1.3 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	

25.1.4 clear host

clear host *host-name*

<i>host-name</i>	

clear host *

show hosts	

25.1.5 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	

26 SNTP

26.1

- ' sntp enable
- ' sntp server
- ' sntp interval

26.1.1 sntp enable

no

no sntp enable

show sntp

Ruijie(config)# sntp enable

show sntp	
clock update-calendar	
clock set	

26.1.2 sntp server

sntp server *ip-addr*
no sntp server

ip-addr

show sntp

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

show sntp	
sntp enable	

26.1.3 sntp interval

sntp interval

show sntp

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

sntp enable	
show sntp	
clock update-calendar	

r

26.2

show sntp

26.2.1 show sntp

27 NTP

27.1 NTP

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

27.1.1 no ntp

no ntp

no ntp

ntp server	

27.1.2 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

r . . .

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

ip access-list	

27.1.3 ntp authenticate

ntp authenticate

no ntp authenticate

ntp authentication-key ntp trusted-key

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

ntp authentication-key	
ntp trusted-key	

27.1.4 ntp authentication-key

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

no ntp authentication-kemd5 *keke@40TfT3 - 1 Tf key5 1 Tf 0.28 0 TD[(enc-)7594.66 0.4*

ntp trusted-key

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

ntp authenticate	
ntp trusted-key	
ntp server	

27.1.5 ntp disable

ntp disable

rip

no ntp

27.1.6 ntp master

ntp master [*stratum*]
no ntp master

<i>stratum</i>	

r

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

27.1.7 ntp server

ntp server *ip-addr* **version** *version* **source** *if-name* **key**
keyid **prefer**

no ntp server *ip-addr*



```
Ruijie(config)# ntp server 192.168.210.222
```



ntp authenticate	
ntp authentication-key	
ntp server	

27.1.9 ntp update-calendar

ntp update-calendar
no ntp update-calendar

```
Ruijie(config)# ntp update-calendar
```

27.2

- ' **debug ntp**
- ' **show ntp status**

```
show ntp status
```

28 UDP-Helper

28.1

28.1.1 udp-helper enable

udp-helper enable no
udp-helper enable

udp-helper enable
no udp-helper enable

```
Ruijie(config)# udp-helper enable
```

ip forward-protocol	

28.1.2 ip helper-address

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

<i>address</i>	&\$

no ip helper-address

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

ip forward-protocol	

28.1.3 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**

<i>port</i>	
tftp	
domain	
time	
netbios-ns	
netbios-dgm	
tacacs	

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

udp-helper enable	
ip forward-protocol	

29 SNMP

29.1

```
' 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
```

29.1.1 no snmp-server

no snmp-server

no snmp-server

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

29.1.2 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**



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

show snmp-server	
no snmp-server	

29.1.5 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	

29.1.6 snmp-server host

snmp-server host

snmp-server host *host-addr* **ipv6** *ipv6-addr* **vrf** *vrfname* **traps**
version **1** **2c** **3** **auth** **noauth** **priv** *community-string* **udp-port**
port-num *notification-type*

no snmp-server host *host-addr*

host-addr

ipv6-addr

vrfname

version

auth **noauth** **priv**

community-string

port-num

notification-type

snmp-server enable traps

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

snmp-server enable traps	

29.1.7 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	

29.1.8 snmp-server packetsize

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

byte-count

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

snmp-server queue-length	

29.1.9 snmp-server queue-length

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

length

Ruijie(config)# **snmp-server queue-length 4**

snmp-server packetsize	

29.1.10 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	

29.1.12 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	

29.1.13 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	

29.1.14 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 snmp group	

29.1.15 snmp-server view

snmp-server view

snmp-server view *view-name* *oid-tree* **include exclude**

no snmp-server view *view-name* *oid-tree*

view-name

oid-tree

include

exclude

show run	

29.2

29.2.1 show snmp

show snmp

show snmp mib

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

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

30 RMON

30.1

```
' 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
```

30.1.1 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>	

30.1.2 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 collection stats <i>index</i> owner <i>owner-name</i>	

30.1.3 rmon alarm

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 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>	

30.2

30.2.1 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>	

30.2.2 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

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

30.2.3 show rmon alarm

show rmon alarm

```
Ruijie# show rmon alarm  
Event : 1  
Description : firstevent  
Event type : log-and-trap  
Community : public  
Last time sent : 0d:0h:0m:0s  
Owner : zhangsan  
Log : 1  
Log time : 0d:0h:37m:47s  
Log description : ipttl
```

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

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

30.2.4 show rmon event

show rmon event

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

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

31 IPFIX

31.1 IPFIX

31.1.1 cache

cache

cache entries timeout active inactive

no cache entries timeout active inactive

entries *number*

timeout

active *minutes*

inactive *seconds*

```
Ruijie(config)# ip flow-aggregation cache
protocol-port
Ruijie(config-flow-cache)# cache entries 2046
Ruijie(config-flow-cache)# cache timeout inactive 199
Ruijie(config-flow-cache)# cache timeout active 45
Ruijie(config-flow-cache)# enabled
```

show ip flow cache	
show ip flow cache aggregation	

31.1.2 cache-timeout

cache-timeout *milliseconds*

no cache-timeout

milliseconds

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

31.1.3 clear ip flow stats

clear ip flow stats

protocol-port

```
Ruijie(config)# ip flow-aggregation cache  
protocol-port  
Ruijie(config-flow-cache)# enabled
```

protocol-port

```
Ruijie(config)# ip flow-aggregation cache  
protocol-port  
Ruijie(config-flow-cache)# no enabled
```

ip flow-aggregation cache	
cache	
export destination (aggregation cache)	
mask (IPv4)	
show ip flow cache aggregation	

'%%) **export**

export

export

export destination aggregation cache	
mask IPv4	
show ip flow cache aggregation	

31.1.6 flow-sampler

flow-sampler *sampler-map-name* **egress**

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

sampler-map-name

egress

ip flow ingress ip flow

egress

ip flow ingress egress

flow-sampler

service-policy

```
Ruijie# config terminal
```

```
Ruijie(config)# flow-sampler-map my_sampler
```

```
Ruijie(config-sampler)# mode random one-out-of 666
```

```
Ruijie(config-sampler)# exit
```

```
Ruijie(config)# interface gi 2/2
Ruijie(config-if)# flow-sampler my_sampler
Ruijie(config-if)# exit
```

flow-sampler-map	
mode random one-out-of	

31.1.7 flow-sampler-map

flow-sampler-map *sampler-map-name*

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

sampler-map-name

egress **ip flow ingress ip flow**

ip flow ingress egress

flow-sampler

service-policy

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

```
Ruijie(config-if)# flow-sampler my_sampler  
Ruijie(config-if)# exit
```

flow-sampler	
mode random one-out-of	

31.1.8 ip flow egress

ip flow egress

ip flow egress

no ip flow egress

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

ip flow-aggregation cache	
cache	
export destination aggregation cache	

mask IPv4	
-----------	--

ip flow ingress

ip flow ingress

no ip flow ingress

ip flow egress ip flow ingress

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

ip flow-aggregation cache	
cache	
export destination aggregation cache	
mask IPv4	

31.1.10 ip flow-aggregation cache

ip flow-aggregation cache

no

no enabled

ip flow-aggregation cache as | as-tos | destination-prefix
destination-prefix-tos prefix prefix-port prefix-tos
protocol-port protocol-port-tos source-prefix
source-prefix-tos

no ip flow-aggregation cache as | as-tos | destination-prefix
destination-prefix-tos prefix prefix-port prefix-tos
protocol-port protocol-port-tos source-prefix
source-prefix-tos

as

as-tos

destination-prefix destination-prefix

destination-prefix-tos destination-prefix-tos

prefix prefix

**prefix prefix-port prefix-tos source-prefix
source-prefix-tos**

**prefix prefix-port prefix-tos destination-prefix
destination-prefix-tos**

prefix

enabled

no enabled

destination-prefix

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

destination-prefix

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

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

source-prefix

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

source-prefix

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

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

protocol-port

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

protocol-port

Ruijie(config-flow-cache)# **export destination**

172.17.24.65 9991

Ruijie(config-flow-cache)# **export destination**

172.16.10.2 9991

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

export destination aggregation cache	
enabled aggregation cache	
mask IPv4	

31.1.11 ip flow-cache entries

```
ip flow-cache entries
no
ip flow-cache entries number
no ip flow-cache entries
```

Number

```
no ip flow-cache entries
ip flow ingress ip
flow egress
no ip flow ingress no ip flow egress
ip flow ingress
```

```
Ruijie(config)# ip flow-cache entries 131072
```

ip flow ingress	

ip flow egress	
-----------------------	--

ip flow-cache timeout	
------------------------------	--



ip flow ingress

refresh-rate *packets*

timeout-rate *minutes*

ip flow-export destination

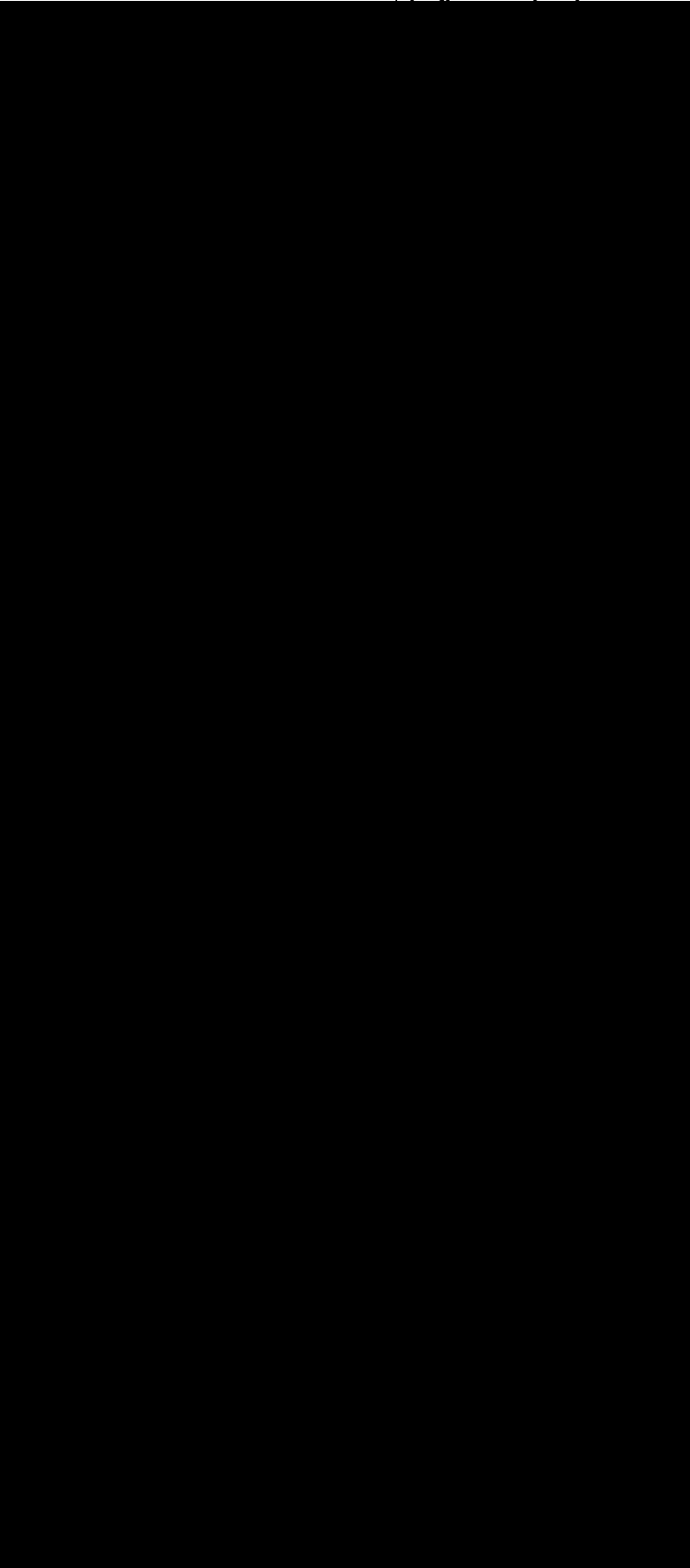
```
Ruijie(config)# ip flow-export destination  
10.42.42.1 9991
```

```
Ruijie(config)# ip flow-export destination  
10.42.42.1 9991  
Ruijie(config)# ip flow-export destination  
10.0.101.254 9991
```

```
Ruijie(config)# ip flow-export destination  
10.42.42.1 9991  
Ruijie(config)# ip flow-export destination  
10.42.42.2 9992
```

```
Ruijie(config)# ip flow-export template refresh-rate  
100  
Ruijie(config)# ip flow-export template timeout-rate 60
```

ip flow ingress	
ip flow egress	



source
minimum
value

,
,
,
,
,
,
,

source-prefix

```
Ruijie(config)# ip flow-aggregation cache  
source-prefix  
Ruijie(config-flow-cache)# mask source minimum 8
```

destination-prefix

```
Ruijie(config)# ip flow-aggregation cache  
destination-prefix  
Ruijie(config-flow-cache)# mask destination  
minimum 32
```

ip flow ingress	
ip flow egress	
ip flow-cache timeout	
show ip flow cache	
show ip flow interface	

ip-address

mask

/nn

destination as

as-number

destination port

max-port-number

min-port-number

max *max-port-number*

min *min-port-number*

direction egress

direction ingress

input-interface *interface-type interface-number*

nexthop-address

ip-address

mask

/nn

output-interface *interface-type interface-number*

packet-range

max-packets

min-packets

max *max-packets*

min *min-packets*

protocol

protocol-number

tcp

udp

source address

ip-address

mask

/nn

source as

as-number
source port
max-port-number
min-port-number

max *max-port-number*
min *min-port-number*
tos
tos-byte
dscp *dscp*
precedence *precedence*

sort-by

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

31.1.17 mode(Flow Sampler Configuration)

mode random one-out-of *packet-interval*

packet-interval *packet-interval*

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

flow-sampler	

31.1.18 sort-by

sort-by bytes | packets

no sort-by bytes | packets

bytes

packets

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

31.1.19 top

top *number*

no top

number

```
Ruijie(config-flow-top-talks)#top 150
```

31.2 IPFIX

31.2.1 show flow-sampler

show flow-sampler *sampler-map-name*

sampler-map-name

```
Ruijie# show flow-sampler my_sampler
Sampler : my_sampler, id : 1, packets matched : 10, mode :
random sampling mode
sampling interval is : 666
```

31.2.2 show ip flow cache

show ip flow cache

show ip flow cache

```
Ruijie(config)# show ip flow cache
IP Flow Switching Cache, 4456448 bytes
3 active, 65533 inactive, 820628747 added
0 flow alloc failures
Exporting flows to 1.1.15.1 (2057)
820563238 flows exported in 34485239 udp datagrams, 0
failed
Last clearing of statistics 00:00:03
```

Protocol	Total	Flows	Packets	Bytes	Packets
Active(Sec)	Idle(Sec)				
-----	Flows	/Sec	/Flow	/Pkt	/Sec
/Flow	/Flow				
TCP-BGP	71	0.0	1	49	0.0
2.5	15.8				
UDP-other	17	0.0	1	328	0.0
15.7					
ICMP	18966	6.7	10	28	72.9
					0.1

22.9
 Total: 19054 6.7 10 28 72.9 0.1
 22.9

SrcIf	SrcIPAddress	DstIf	DstIPAddress			
Pr	TOS	Flgs	Pkts			
Port	Msk	AS	Port	Msk	AS	NextHop
B/Pk	Active					
Et1/1	52.52.52.1	Fd4/0	42.42.42.1			
01	55	10	3748			
	0000	/8	50		0000	/8 40 202.120.130.2
	28		17.8			
Et1/2	52.52.52.1	Fd4/0	42.42.42.1			
01	CC	10	3568			
	0000	/8	50		0000	/8 40 202.120.130.2
	28		17.8			
Et1/2	10.1.3.2	Et1/2	202.120.130.2			
Et1/1	1124	55	10	3748	0	() 5.8 () 5.8 () 5.8 (30) 102.9

destination-prefix-tos

prefix

prefix-port

prefix-tos

protocol-port

protocol-port-tos

source-prefix

source-prefix-tos

```
Ruijie# sh ip flow cache aggregation protocol-port
IP Flow Switching Cache, 278544 bytes
2 active, 4094 inactive, 102 added
0 flow alloc failures
```

Prot	SrcPort	DstPort	Flows	Pkts	B/Pk	Active
0x01	0000	0000	15	17K	28	17.8
0x01	0000	0000	1	3568	28	17.8

31.2.4 show ip flow export

show ip flow export

show ip flow export

Ruijie# **show ip flow export**

Main Cache

Exporting flows to 10.51.12.4 (9991)

Exporting using source IP address 10.1.97.17

Version 9 flow records

Option Template Flag = 1

Template ID = 256

Template timeout = 90

Template refresh rate = 15

Option Template ID = 257

Option Template timeout = 30

Option Template refresh rate = 10

40 flows exported in 20 udp datagrams

0 flows failed to export

0 messages failed to export

Exporting flows to 10.1.97.50(9111)

Exporting using source IP address 10.1.97.17

Version 10 flow records

Option Template Flag = 1

Template ID = 258

Template timeout = 90

Template refresh rate = 15

Option Template ID = 259

Option Template timeout = 30

Option Template refresh rate = 10

40 flows exported in 20 udp datagrams

0 flows failed to export

0 messages failed to export

Cache for protocol-port aggregation:

Exporting flows to 172.16.20.4 (991) 172.30.0.1 (991)

```
Exporting using source IP address 172.16.6.2
Version 9 flow records
Template ID = 260
Template timeout = 120
Template refresh rate = 25
40 flows exported in 20 udp datagrams
0 flows failed to export
0 messages failed to export

Cache for source-prefix aggregation:
Exporting flows to 172.16.20.4 (991) 172.30.0.1 (991)
Exporting using source IP address 172.16.6.2
Version 9 flow records
Template ID = 261
Template timeout = 120
Template refresh rate = 25
40 flows exported in 20 udp datagrams
0 flows failed to export
0 messages failed to export

Total:
160 flows exported in 80 udp datagrams
0 flows failed to export
0 messages failed to export
6 Templates added
6 Templates active
2 Option templates added
2 Option templates active
```

31.2.5 show ip flow interface

show ip flow interface

show ip flow interface

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

31.2.6 show ip flow top-talkers

show ip flow top-talkers

```
Ruijie# show ip flow top-talkers
SrcIf SrcIPAddress      DstIf  DstIPAddress  Pr SrcP
DstP Bytes
Gi1/1  10.10.18.1           Gi1/2  172.16.10.232  11 00A1
00A1 144K
Gi1/1  10.10.19.1           Gi1/2  172.16.10.2    11 00A2
00A2 144K
Gi1/1  172.30.216.196      Gi1/2  172.16.10.2    06 0077
0077 135K
Gi1/1  10.162.37.71        Gi1/2  172.16.10.2    06 0050
0050 125K
Gi1/1  10.92.231.235       Gi1/2  172.16.10.2    06 0041
0041 115K
5 of 5 top talkers shown. 11 flows processed
```

32 VRF

32.1 VRF

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

32.1.1 show 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

32.1.3 ip vrf

ip vrf *vrf-name*

no ip vrf *vrf-name*

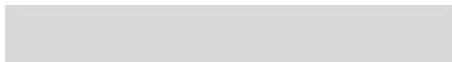
vrf-name

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

32.1.4 rd

`rd rd_value`

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



32.1.5 route-target

no route-target *import export both* *rt_value*

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	

32.1.6 ip vrf forwarding

```
ip vrf forwarding vrf-name  
no ip vrf forwarding vrf-name  
  
vrf-name
```

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

32.1.7 show ip vrf

```
show ip vrf brief detail interfaces vrf-name  
  
brief  
detail  
interfaces  
  
vrf-name
```

```
Ruijie# show ip vrf redvrf
```

33 RIP

33.1

33.1.1 address-family RIP

address-family

no

address-family ipv4 vrf *vrf-name*

no address-family ipv4 vrf *vrf-name*

vrf <i>vrf-name</i>	

address-family

exit-address-family exit

```
Ruijie(config)# -2f771 -1.44 D-0.0001 T(Ruijie(co-ipr-af)#
```

```
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	

33.1.4 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
```

```
route-map
```

```
ip default-network
default-information originate
```

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

```

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

```

33.1.6 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	

33.1.7 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	

33.1.8 exit-address-family

exit-address-family

exit-address-family

no

exit

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

address-family	

33.1.9 ip rip authentication key-chain

authentication key-chain **no** **ip rip**

ip rip authentication key-chain *name-of-keychain*

no ip rip authentication key-chain

<i>name-of-keychain</i>	

key chain

```
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	

33.1.10 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	

33.1.11 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	

33.1.12 ip rip default-information

default-information **no** **ip rip**

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

default-information originate	

33.1.13 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	

33.1.14 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	

33.1.15 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	

33.1.16 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	

33.1.18 ip split-horizon (RIP)

ip split-horizon

ip split-horizon

no ip split-horizon

auto-summary	

33.1.20 network (RIP)

network **no**

network *network-number wildcard*

no network *network-number wildcard*

<i>network-number</i>	

[

neighbor

no

neighbor *ip-address*

no neighbor

<i>ip-address</i>	

passive-interface

33.1.22 offset-list(RIP)

offset-list **no**

offset-list *access-list-number in out offset interface-type*
interface-number]

no offset-list *access-list-number in out offset interface-type*
interface-number

<i>access-list-number</i>	
in	
out	
<i>offset</i>	
<i>interface-type</i>	

<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
```

33.1.23 output-delay

```
output-delay no
```

```
output-delay delay
```

```
no output-delay
```

<i>delay</i>	

output-delay

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

33.1.24 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	

33.1.25 redistribute RIP

redistribute

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
```

```
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>	

async default routing

Ruijie(config)# **router rip**

network (RIP)	

33.1.27 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 .

```
A111$d •= 'DRW "/_μ )2°R< %t "<0x Ã 1 ,X Áñ—q!1öÐ WÍPž „,5"Y úiî@ÎQđ`" Uđ 1 ž b _ Öp1
```




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	
show ip rip	rip

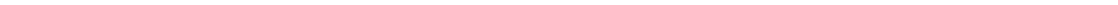
33.2

33.2.1 show ip rip

show ip rip **show ip rip**

show ip rip vrf *vrf-name*

vrf <i>vrf-name</i>	



33.2.2 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	
-------------	--

33.2.3 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	

33.2.4 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 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	

34 OSPF

34.1

34.1.1 area

no

area

no area

' UfYU!]X	' CGD: ID

no

area authentication area default-cost area filter-list

area nssa

network area

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

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

'	'
' bYhkcf_ UfYU	' CGD: CGD:

34.1.2 area authentication

area authentication

no

area *area-id* authentication message-digest

no area *area-id* authentication

'	'
' UfYU!]X	' CGD: I D
' aYggU[Y! X] [Ygh	' A8) aYggU[Y X] [Ygh)

message-digest
message-digest

ip

ospf authentication-key
message-digest-key

ip ospf

Ruijie(config)# **interface FastEthernet 0/.OSPF**

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

```

stub area nssa area default-cost          area
area stub                                area
nssa 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
Ruijie(config-router)# area 1 default-cost 50

```

'	'
' UfYU ghi V	' CGD.
' UfYU bggU	' CGD. BGG5

34.1.4 area filter-list

area *area-id* filter-list access

area nssa

no

area *area-id* nssa no-redistribution default-information-originate
metric 0-16777214 metric-type 1-2 no-summary

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

'	'
' UfYU] X	' BGG5
' bc! fYX] ghf] Vi h] cb	' bggU 56F bggU
' XYZU ` h!] bZcf aUh] cb! cf] [] bUhY	' + @G5 bggU BGG5 56F 5G6F
' bc! gi aaUf m	' bggU f156FŁ @G5 bggU

default-information-originate

no-redistribution

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	

34.1.6 area range

```
range          no          no          area
              cost

area area-id range ip-address net-mask advertise not-advertise
cost cost

no area area-id range ip-address net-mask cost
```

--	--

area-id

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

```
Ruijie(config)# router ospf 1  
Ruijie(config-router)# network 172.16.0.0 0.0.15.255  
area 0  
Ruijie(config-router)# network 172.16.17.0 0.0.15.255  
area 1  
Ruijie(config-router)# area 1 range 172.16.16.0 255.2  
55.240.0
```

34.1.7 area stub

Ruijie(config-router)# **area 1 stub**

area default-cost	

34.1.8 area virtual-link

area virtual-link

no

area *area-id* **virtual-link** *router-id* **authentication message-digest**
t null dead-interval *seconds* **hello-interval** *seconds* **retransmit-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	
message-digest	
null	

dead-interval

hello-interval

retransmit-interval

transmit-delay

router-id

show ip ospf neighbor

area virtual-link

area authentication

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 172.16.0.0 0.0.15.255 area 0
Ruijie(config-router)# network 172.16.17.0 0.0.15.255area 1
Ruijie(config-router)# area 1 virtual-link 2.2.2.2
```

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 172.16.17.0 0.0.15.255area 1
Ruijie(config-router)# network 172.16.252.0 0.0.0.255area 10
Ruijie(config-router)# area 0 authentication message-digest
Ruijie(config-router)# area 1 virtual-link 1.1.1.1
message-digest-key 1 md5 hello
```



auto-cost **default auto-cost** **no**

ip ospf cost

```
Ruijie(config)# router ospf 1  
Ruijie(config-router)# network 172.16.10.0 0.0.0.255 area 0  
Ruijie(config-router)# auto-cost reference-bandwidth  
10
```

show ip ospf	

34.1.10 clear ip ospf process

clear ip ospf *process-id* **process**

<i>process-id</i>	

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

34.1.11 compatible rfc1583

Ruijie(config-router)# **no compatible rfc1583**

show ip ospf	

34.1.12 default-information originate OSPF

default-information originate no

**default-information originate always metric *metric* metric-type
type route-map *map-name***

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

--	--

always

redistribute **default-information**

ASBR

default-metric *metric*

no default-metric

<i>metric</i>	

default-metric

redistribute

default-metric

default-information originate

```
Ruijie(config)# router rip
Ruijie(config-router)# network 192Tr8.12.0
Ruijie(config-router)# version 2
Ruijie(config-router)# exit
Ruijie(config)# router ospf
Ruijie(config-router)# network 172Tr.10.0 0.0.0.255
area 0
Ruijie(config-router)# default-metric 50
Ruijie(config-router)#redistribute rip subnets
```

redistribute	
show ip ospf	

34.1.14 distance ospf

f02c8350e2cd5040e001 Tc (OSPF)T14 /TT3 1 Tfinterface-typeOSPF0.7204001715.340numOSPf0.720400 749.66- 0 9311c-1.7(

<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
```

34.1.16 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
area-tag | ospf
process-id rip static**

enable mib-binding
no
enable mib-binding
no enable mib-binding

Ruijie(config)# **router ospf 100**
Ruijie(config-router)# **enable mib-binding**

show ip ospf	
enable traps	

34.1.18 enable traps

no

enable traps error IfAuthFailure | IfConfigError | IfRxBadPacket |
VirtIfAuthFailure | VirtIfConfigError | VirtIfRxBadPacket Isa
LsdbApproachOverflow | LsdbOverflow | MaxAgeLsa |
OriginateLsa retransmit IfTxRetransmit | VirtIfTxRetransmit
state-change IfStateChange | NbrRestartHelperStatusChange |
NbrStateChange | RestartStatusChange | VirtIfStateChange |
VirtNbrRestartHelperStatusChange | VirtNbrStateChange

no enable traps error IfAuthFailure | IfConfigError |
IfRxBadPacket | VirtIfAuthFailure | VirtIfConfigError |
VirtIfRxBadPacket Isa LsdbApproachOverflow | LsdbOverflow |
MaxAgeLsa | OriginateLsa retransmit IfTxRetransmit |
VirtIfTxRetransmit state-change IfStateChange |
NbrRestartHelperStatusChange | NbrStateChange |
RestartStatusChange | VirtIfStateChange |
VirtNbrRestartHelperStatusChange | VirtNbrStateChange

graceful-restart **graceful-restart** **grace-period**

graceful-restart **grace-period** *grace-period*

no graceful-restart **grace-period**

graceful-restart helper	

34.1.20 graceful-restart helper

graceful-restart

helper

graceful-restart helper disable

no graceful-restart helper disable

graceful-restart helper {strict-lsa-checking | internal-lsa-checking}

no graceful-restart helper {strict-lsa-checking | internal-lsa-checking}

--	--

```

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	

34.1.21 RGOS10.3(5b1), 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	

34.1.22 ip ospf authentication-key

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

ip ospf authentication-key *key*

no ip ospf authentication-key

<i>Key</i>	

ip ospf authentication-key

ip ospf cost **no**

ip ospf cost *cost*

no ip ospf cost

<i>cost</i>	

,
,
,
,

ip ospf cost

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

Ruijie(config-if)# **ip ospf cost 100**

bandwidth	
show ip ospf	

34.1.24 ip ospf database-filter all out

no

ip ospf database-filter all out

no ip ospf database-filter



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
```

34.1.27 ip ospf hello-interval

ip ospf

hello-interval no
ip ospf hello-interval seconds
no ip ospf hello-interval

seconds	

,
,
,

```
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	

34.1.28 ip ospf message-digest-key

ip ospf

message-digest-key

ip ospf message-digest-key *key-id md5 key*

no ip ospf message-digest-key



ip ospf message-digest-key

authentication

ip ospf authentication

area

```
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	

34.1.29 ip ospf mtu-ignore

no

mtu

ip ospf mtu-ignore
no ip ospf mtu-ignore

34.1.30 ip ospf network

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	

,

,

,

,

,

,

,

,

frame-relay map

X.25 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	

34.1.31 ip ospf priority

no

ip ospf priority

broadcast non-broadcast

r . . .

```
Ruijie(config)# interface fastethernet 0/0  
Ruijie(config-if)# ip ospf priority 0
```

ip ospf network	

34.1.32 ip ospf retransmit-interval

ip ospf retransmit-interval

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

area virtual-link	

34.1.33 ip ospf transmit delay

ip ospf

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

Seconds	

ip ospf transmit delay

virtual-link **retransmit-interval** **area**

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

area virtual-link	

34.1.34 log-adj-changes

no default

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

show ip ospf	

34.1.35 max-concurrent-dd

```
max-concurrent-dd 1-65535
```

<i>1-65535</i>	

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

34.1.36 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	

34.1.37 network area

network area no

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

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

<i>ip-address</i>	
<i>wildcard</i>	
<i>area-id</i>	

ip-address *wildcard*

area

network

network

max-dbsize

wait-time

```
Ruijie# config terminal
```

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

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

34.1.40 overflow memory-lack

overflow memory-lack

no overflow memory-lack

```
Ruijie(config)# router ospf 30
Ruijie(config-router)# passive-interface serial1/0
```

show ip ospf interface	

34.1.42 redistribute

```
redistribute bgp isis area-tag ospf process-id rip connected
static level-1 level-1-2 level-2 metric value match internal
external | external external nssa-external | nssa-external
nssa-external metric-type 1/2 route-map map-tag tag
0-4294967295 subnets
```

```
no redistribute bgp isis area-tag ospf process-id rip connected
static level-1 level-1-2 level-2 metric value match internal
external external nssa-external nssa-external
metric-type 1/2 route-map map-tag tag 0-4294967295 subnets
```

bgp <i>isis</i> <i>area-tag</i> ospf <i>process-id</i> rip connected static	
metric	
Level-1/ level-1-2/ level-2	
match	
metric-typ	
route-map	
tag	
subnets	

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
```

34.1.43 router ospf

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

<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	

34.1.44 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	

34.1.45 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	

34.1.46 timers lsa-group-pacing

no

timers lsa-group-pacing *seconds*

no timers lsa-group-pacing

<i>seconds</i>	

```
Ruijie(config)#router ospf 20  
Ruijie(config-router)#timers
```

timers throttle spf

spf-delay *spf-holdtime*

r . . .

```
Ruijie(config)# router ospf 20
Ruijie(config-router)# timers spf 3 9
```

show ip ospf	
timers throttle spf	

34.1.48 timers throttle spf

spf

timers throttle

timers throttle 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

no SPF

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 Adjency Changes : Enabled
Graceful-restart disabled
Graceful-restart helper support enabled
Number of areas attached to this router: 1
Area 0 (BACKBONE)
Number of interfaces in this area is 1(1)
Number of fully adjacent neighbors in this area is 1
Area has no authentication
SPF algorithm last executed 00:01:26.640 ago
SPF algorithm executed 4 times
Number of LSA 3. Checksum 0x0204bf
```

Area 1 (NSSA)
Number of interfaces in this area is 1(1)
Number of fully adjacent neighbors in this area is 0
Number of fully adjacent virtual neighbors through this
area is 0
Area has no authentication
SPF algorithm last executed 02:09:23.040 ago
SPF algorithm executed 4 times
Number of LSA 6. Checksum 0x028638
NSSA Translator State is elected

Ruijie# **show ip ospf**
Routing Process "ospf 1" with ID 1.1.1.1
Process uptime is 4 minutes
Process bound to VRF default
Conforms to RFC2328, and RFC1583Compatibility flag
is enabled
Supports only single TOS(TOS0) routes
Supports opaque LSA
This router is an ASBR (injecting external routing
information)
SPF schedule delay 5 secs, Hold time between two SPFs 10 secs
LsaGroupPacing: 240 secs
Number of incoming current DD exchange neighbors 0/5
Number of outgoing current DD exchange neighbors 0/5
Number of external LSA 4. Checksum 0x0278E0
Number of opaque AS LSA 0. Checksum 0x000000
Number of non-default external LSA 4
External LSA database is unlimited.
Number of LSA originated 6
Number of LSA received 2
Log Neighbor Adjacency Changes : Enabled
Graceful-restart disabled
Graceful-restart helper support enabled
Number of areas attached to this router: 1
BFD is enabled
Area 0 (BACKBONE)
Number of interfaces in this area is 1(1)
Number of fully adjacent neighbors in this area is 1

Area has no authentication
SPF algorithm last executed 00:01:26.640 ago
SPF algorithm executed 4 times
Number of LSA 3. Checksum 0x0204bf
Area 1 (NSSA)
Number of interfaces in this area is 1(1)
Number of fully adjacent neighbors in this area is 0
Number of fully adjacent virtual neighbors through this area
is 0
Area has no authentication
SPF algorithm last executed 02:09:23.040 ago
SPF algorithm executed 4 times
Number of LSA 6. Checksum 0x028638

34.2.2 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

34.2.3 show ip ospf database

show ip

ospf database

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

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

show ip ospf *process-id area-id database self-originate max-age*

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

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

show ip ospf *process-id area-id database router self-originate*

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

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

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

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

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

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

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**

<i>Area-id</i>	
adv-router	
<i>link-state-id</i>	
self-originate	

maxage	
router	
network	
summary	
asbr-summary	
external	
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])

Link ID	ADV Router	Age	Seq#	CkSum
Link count				
1.1.1.1	1.1.1.1	2	0x80000001	0x91a2 1

Summary Link States (Area 0.0.0.1 [NSSA])

Link ID	ADV Router	Age	Seq#	CkSum
Route				
100.0.0.0	1.1.1.1	2	0x80000001	0x52a4
100.0.0.0/16				
192.88.88.0	1.1.1.1	2	0x80000001	0xbb2d
192.88.88.0/24				

NSSA-external Link States (Area 0.0.0.1 [NSSA])

Link ID	ADV Router	Age	Seq#	CkSum
Route	Tag			
20.0.0.0	1.1.1.1	1	0x80000001	0x033c E2
20.0.0.0/24	0			
100.0.0.0	1.1.1.1	1	0x80000001	0x9469 E2
100.0.0.0/28	0			

AS External Link States

Link ID	ADV Router	Age	Seq#	CkSum
Route	Tag			
20.0.0.0	1.1.1.1	380	0x8000000a	0x7627
E2 20.0.0.0/24	0			
100.0.0.0	1.1.1.1	620	0x8000000a	0x0854
E2 100.0.0.0/28	0			

show ip ospf database

LS Seq Number: 80000001
Checksum: 0x5366
Length: 32
Network Mask: /24
Attached Router: 1.1.1.1
Attached Router: 3.3.3.3

show ip ospf database network

show ip ospf database router

Ruijie# **show ip ospf database router**
OSPF Router with ID (1.1.1.1) (Process ID 1)
Router Link States (Area 0.0.0.0)
LS age: 322
Options: 0x2 (*|---|E|)
Flags: 0x3 : ABR ASBR
LS Type: router-LSA
Link State ID: 1.1.1.1
Advertising Router: 1.1.1.1
LS Seq Number: 80000012
Checksum: 0x6d3a
Length: 48
Number of Links: 2

Link connected to: Stub Network
(Link ID) Network/subnet number: 100.0.1.1
(Link Data) Network Mask: 255.255.255.255
Number of TOS metrics: 0
TOS 0 Metric: 0

show ip ospf database router

--	--

```
LS Type: summary-LSA
Link State ID: 10.0.0.0 (summary Network Number)
Advertising Router: 1.1.1.1
LS Seq Number: 80000004
Checksum: 0x330e
Length: 28
Network Mask: /24
TOS: 0 Metric: 11
```

show ip ospf database summary

show ip ospf database nssa-external

```
Ruijie# show ip ospf database nssa-external
OSPF Router with ID (1.1.1.1) (Process ID 1)
  NSSA-external Link States (Area 0.0.0.1 [NSSA])
LS age: 1
Options: 0x0 (*|-|-|-|-|-|-)
LS Type: AS-NSSA-LSA
Link State ID: 20.0.0.0 (External Network Number For
NSSA)
```

show ip ospf database database-summary

```
Ruijie# show ip ospf database database-summary
OSPF process 1:
Router Link States      : 4
Network Link States    : 2
Summary Link States    : 4
ASBR-Summary Link States : 0
AS External Link States : 4
NSSA-external Link States: 2
```

show ip ospf database database-summary

Router Link	

34.2.4 show ip ospf interface

show ip

ospf interface

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

--	--

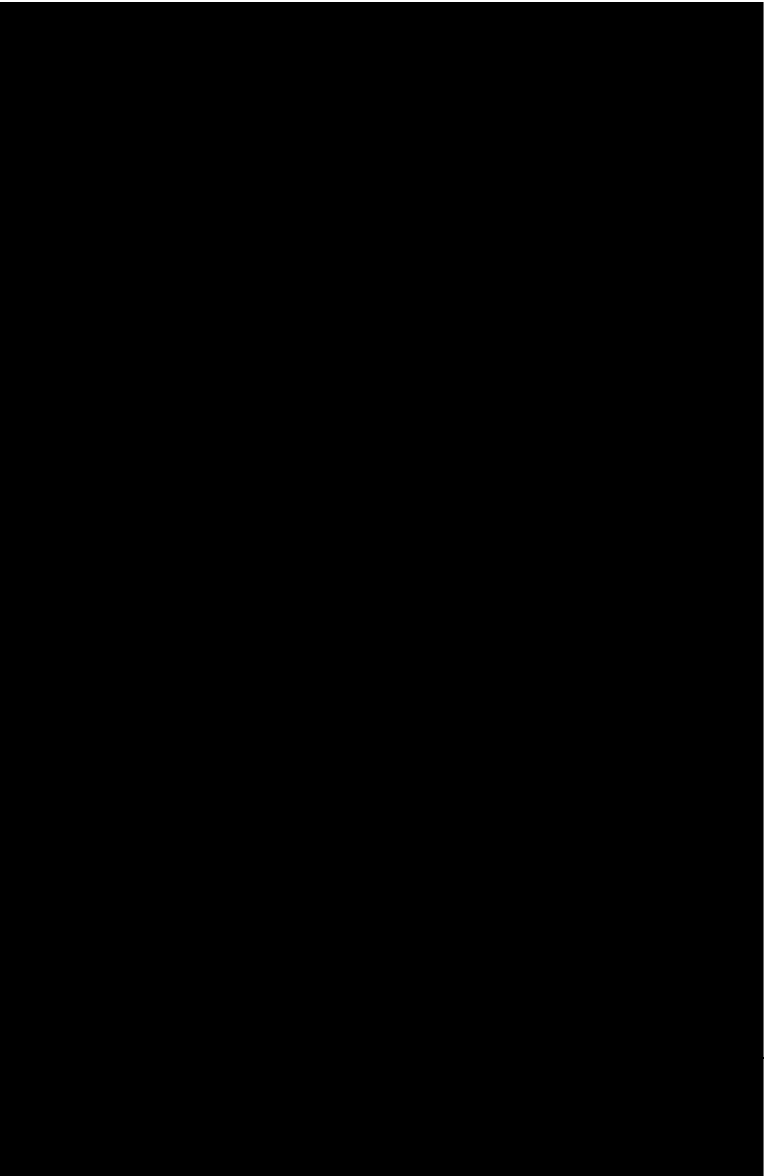
LS-Ack received 46 sent 23, Discarded 1

BFD :

```
Ruijie# show ip ospf interface fa 1/0
FastEthernet 1/0 is up, line protocol is up
Internet Address 192.88.88.27/24, Ifindex 4, Area 0.0.0.0,
MTU 1500
Matching network config: 192.88.88.0/24
Process ID 1, Router ID 1.1.1.1, Network Type BROADCAST, Cost:
1
Transmit Delay is 1 sec, State DR, Priority 1, BFD enabled
Designated Router (ID) 1.1.1.1, Interface Address
192.88.88.27
Backup Designated Router (ID) 3.3.3.3, Interface Address
192.88.88.72
Timer intervals configured,Hello 10,Dead 40,Wait
40,Retransmit 5
Hello due in 00:00:03
Neighbor Count is 1, Adjacent neighbor count is 1
Crypt Sequence Number is 70784
Hello received 1786 sent 1787, DD received 13 sent 8
LS-Req received 2 sent 2, LS-Upd received 29 sent 53
```

show ip ospf interface serial 1/0

|



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

show ip ospf neighbor

```
Ruijie# show ip ospf neighbor
OSPF process 1, 1 Neighbors, 1 is Full:
Neighbor ID    Pri  State                BFD State  Dead
Time  Address          Interface
3.3.3.3        1    Full/BDR              Up
00:00:32    192.88.88.72    FastEthernet 1/0
```

```
Ruijie# show ip ospf neighbor detail
Neighbor 3.3.3.3, interface address 192.88.88.72
In the area 0.0.0.0 via interface FastEthernet 1/0
Neighbor priority is 1, State is Full, 11 state changes
DR is 192.88.88.27, BDR is 192.88.88.72
Options is 0x52 (*|O|-|EA|-|-|E|-)
Dead timer due in 00:00:32
Neighbor is up for 05:11:27
Database Summary List 0
Link State Request List 0
Link State Retransmission List 0
Crypt Sequence Number is 0
Thread Inactivity Timer on
Thread Database Description Retransmission off
Thread Link State Request Retransmission off
Thread Link State Update Retransmission off
```

Thread Poll Timer on
Graceful-restart helper disabled
BFD session state up

show ip ospf neighbor

```
OSPF 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

34.2.7 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
Summary Address Summary Mask   Advertise   Status
Aggregated subnets
-----
202.101.0.0           255.255.0.0           advertise
Inactive 0
Ruijie#
```


34.2.8 show ip ospf virtual-link

```
virtual-link (ABCE) (B) (E) (m) (Auf) (S) (G)
fl " IG 2" ¼ Ð†
show ip ospf
```

show ip ospf neighbor

show ip ospf neighbor

35 BGP CLI

35.1

35.1.1 address-family ipv4

```
address-family IPv4
exit-address-family
address-family ipv4 unicast]
no address-family ipv4 unicast
```

unicast	

exit-address-family

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family ipv4
```

exit-address-family	

35.1.2 address-family ipv4 vrf

```
address-family IPv4 VRF
no
```

exit-address-family

address-family ipv4 vrf *vrf-name*

no address-family ipv4 vrf *vrf-name*

<i>vrf-name</i>	

exit-address-family

Ruijie(config)# **router bgp 65000**

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

exit-address-family	

35.1.3 address-family vpnv4

address-family VPN

address-family VPN

address-family vpnv4 unicast]

no address-family vpnv4 unicast

exit-address-family

ì %X†KÁ S†3m Ä

exit-address-family

Ruijie(config)# **router bgp 65000**

Ruijie(config-router)# **address-family vpnv4**
S*üA½ Q!õ% Äx



exit-address-family

aggregate-address summary-only

```
Ruijie(config)# router bgp 65000  
Ruijie(config-router)# aggregate-address 10.0.0.0  
255.0.0.0 as-set
```

router bgp	

35.1.5 auto-summary

no

auto-summary
no auto-summary

```
Ruijie(config)# router bgp 65000  
Ruijie(config-router)# auto-summary
```

router bgp	

35.1.6 bgp always-compare-med

```
no  
Tw[ntways-compare-med  
no Tw[ntways-compare-med
```

```
Ruijie(config)# router W 65000  
Ruijie(config-router)# Wntways-compare-med
```

show ip Tw[
Tw[bestpath med confed	
Tw[bestpath med missing-as-worst	
Tw[deterministic-med	

35.1.7 Tw[bestpath as-path ignore

no
bgp bestpath as-path ignore
no bgp bestpath as-path ignore

Ruijie(config)# **router bgp 65000**
Ruijie(config-router)# **bgp bestpath as-path ignore**

show ip bgp	

35.1.8 bgp bestpath compare-confed-aspash

no

bgp bestpath compare-confed-aspash
no bgp bestpath compare-confed-aspash

```
Ruijie(config)# router bgp 65000  
Ruijie(config-router)# bgp bestpath  
compare-confed-aspath
```

show ip bgp	

bgp router-id

```
Ruijie(config)# router bgp 65000  
Ruijie(config-router)# bgp bestpath compare-routerid
```

show ip bgp	
bgp router-id	

35.1.10 bgp bestpath med confed

show ip bgp	
bgp bestpath always-compare-med	
bgp bestpath med missing-as-worst	
bgp deterministic-med	

35.1.11 bgp bestpath med missing-as-worst

bgp bestpath med missing-as-worst

no bgp bestpath med missing-as-worst

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp bestpath med
missing-as-worst
```

show ip bgp	
bgp bestpath	

always-compare-med

35.1.13 bgp cluster-id

no

bgp cluster-id *cluster-id*

no bgp cluster-id *cluster-id*

<i>cluster-id</i>	

Ruijie(config)# **router bgp** 65000

Ruijie(config-router)# **bgp cluster-id** 10.0.0.1

bgp client-to-client reflection	
neighbor route-reflector-client	

35.1.14 bgp confederation identifier

no

bgp confederation identifier *as-number*

no bgp confederation identifier

<i>as-number</i>	

Ruijie(config-router)# **bgp confederation identifier**
65000

--	--

bgp confederation peers

<i>as-number</i>	

r . . .

Ruijie(config-router)#

bgp default ipv4-unicast

no bgp default ipv4-unicast

```
Ruijie(config-router)# bgp default local-preference  
200
```

show ip bgp	
bgp bestpath always-compare-med	
bgp bestpath med confed	
bgp bestpath med missing-as-worst	

35.1.18 bgp deterministic-med

Ruijie(config-router)# **bgp deterministic med**

show ip bgp	
bgp bestpath always-compare-med	
bgp bestpath med confed	
bgp bestpath med missing-as-worst	

35.1.19 **bgp enforce-first-as**

bgp enforce-first-as

no bgp enforce-first-as

Ruijie(config-router)# **bgp enforce-first-as**

show ip bgp	

35.1.20 **bgp fast-external-fallover**

no

bgp fast-external-falover

no bgp fast-external-falover

Ruijie(config-router)# **bgp faster-external-falover**

bgp graceful-restart

r

```
Ruijie(config)# router bgp 500
Ruijie(config-router)# bgp graceful-restart
```



|
|_____

|
|_____

r

<i>time</i>	
-------------	--

┌

┌

┌

```
Ruijie(config)# router bgp 500
Ruijie(config-router)# bgp graceful-restart
Ruijie(config-router)# bgp graceful-restart stalepath-time 240
Ruijie(config-router)# no bgp graceful-restart stalepath-time
```

bgp graceful-restart	

┌

--	--

35.1.24 bgp log-neighbor-changes

no

bgp log-neighbor-changes

no bgp log-neighbor-changes

debug
debug

Ruijie(config-router)#**no bgp log-neighbor-changes**

router bgp	

--	--

bgp update-delay

out	
soft	
soft in	
soft out	

r

35.1.28 clear bgp ipv4 unicast dampening

clear bgp ipv4 unicast dampening *address mask*

<i>address</i>	
<i>mask</i>	

```
Ruijie# clear bgp ipv4 unicast dampening 192.168.0.0  
255.255.0.0
```


**show ip bgp dampening
dampened-paths**

Eè=rJ"•bD α• Aò/ >• U ` ,2°P[Qd



in

?

clear ip bgp dampening

Ruijie# **clear bgp ipv4 unicast flap-statistics**

bgp dampening	
show ip bgp	

35.1.31 clear bgp ipv4 unicast peer-group

clear bgp ipv4 unicast peer-group *peer-group-name* **soft in out**

<i>peer-group-name</i>	
in	
out	
soft	
soft in	
soft out	

Ruijie# **clear bgp ipv4 unicast peer-group my-group in**

clear ip bgp	
show ip bgp	

35.1.32 clear ip bgp

clear ip bgp * ipv4 unicast *address as number* soft in out

*	
ipv4	
<i>address</i>	

as number

r

soft-reconfiguration inbound

neighbor

show ip bgp neighbors

neighbor soft-reconfiguration inbound

Ruijie# **clear ip bgp ***

neighbor soft-reconfiguration inbound	
show ip bgp	

35.1.33 clear ip bgp dampening

clear ip bgp ipv4 unicast dampening

<i>mask</i>	
-------------	--

Ruijie# **clear ip bgp dampening 192.168.0.0 255.255.0.0**

show ip bgp dampening dampened-paths	
bgp dampening	

35.1.34 clear ip bgp external

clear ip bgp external ipv4 unicast soft in out

ipv4 unicast	
in	
out	
soft in	
soft out	

Ruijie# **clear ip bgp external in**

clear ip bgp	
show ip bgp neighbors	

35.1.35 clear ip bgp flap-statistics

clear ip bgp flap-statistics *address mask*

<i>address</i>	
<i>mask</i>	

clear ip bgp dampening

Ruijie# **clear ip bgp flap-statistics**

bgp dampening	

show ip bgp	
-------------	--

35.1.36 clear ip bgp peer-group

clear ip bgp peer-group *peer-group-name* **ipv4 unicast soft in out**

<i>peer-group-name</i>	
ipv4 unicast	
in	soft
out	soft
soft	
soft in	
soft out	

Ruijie# **clear ip bgp peer-group my-group in**

clear ip bgp	
show ip bgp	

35.1.37 clear ip bgp vrf

clear ip bgp vrf *vrf-name* * *address* soft in out]

<i>vrf-name</i>	
*	
<i>address</i>	
ipv4 unicast	
in	soft
out	soft
soft	
soft in	
soft out	

Ruijie# **clear ip bgp vrf my-vrf in**

clear ip bgp	
show ip bgp	

35.1.38 default-information originate

no default-information originate

network **default-information**
originate

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



network

no

r metr-ic

metric

	network backdoor
--	-------------------------

external-distance 20

internal-distance 200

local-distance 200

Ruijie(config-router)# **distance bgp 20 20 200**



Ruijie(config-router-af)# **exit-address-family**

address-family ipv4	address-family ipv4

35.1.42 ip as-path access-list

ip as-path access-list *path-list-num* **permit deny**

regular-expression

no ip as-path access-list *path-list-num*

<i>path-list-num</i>	
permit	
deny	
<i>regular-expression</i>	

Ruijie(config-router)# **ip as-path access-list hsd deny**
^123\$

neighbor filter-list	
neighbor distribute-list	

35.1.43 maximum-prefix

maximum

<i>maximum</i>	

clear bgp <i>addressfamily</i> all *	
show bgp <i>addressfamily</i> all summary	

35.1.44 neighbor activate

neighbor *peer-address* *peer-group-name* **activate**
no neighbor *peer-address* *peer-group-name* **activate**

<i>peer-address</i>	
<i>peer-group-name</i>	

```
Ruijie(config)# router bgp
```

```
Ruijie(config-router)# neighbor 10.0.0.1
advertisement-interval 10
```

router bgp	
neighbor remote-as	

35.1.46 neighbor allowas-in

no

```
neighbor peer-address peer-group-name allowas-in number
no neighbor peer-address peer-group-name allowas-in
```

peer-address	
peer-group-name	
number	

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 100
Ruijie(config-router)# address-family ipv4 vrf vpn1
```

Ruijie(config-router-af)# **neighbor 10.0.0.1 allows-in**

router bgp	
neighbor remote-as	

35.1.47 neighbor as-override

no

neighbor peer-address peer-group-name as-override

no neighbor peer-address peer-group-name as-override

<i>peer-address</i>	

peer-group-name

```
Ruijie(config-router-af)# neighbor 10.0.0.1  
as-override
```

router bgp	
neighbor remote-as	

35.1.48 neighbor default-originate

no

```
neighbor peer-address
```

```
Ruijie(config-router)# neighbor 10.1.1.1  
default-originate
```



```
router bgp
```

router bgp	
neighbor remote-as	

35.1.50 neighbor distribute-list

neighbor *peer-address peer-group-name* **distribute-list**
access-list-number in out

no neighbor *peer-address peer-group-name* **distribute-list**
access-list-number in out

<i>peer-address</i>	
<i>peer-group-name</i>	
<i>access-list-number</i>	
in	
out	

neighbor distribute-list

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.1.1.1 remote-as 80
```

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 remote-as
65100
Ruijie(config-router)# neighbor 10.0.0.1 ebgp-multihop
```

router bgp	
neighbor remote-as	

35.1.52 neighbor filter-list

```
neighbor peer-address peer-group-name filter-list access-list-number in out
```

```
no neighbor peer-address peer-group-name filter-list access-list-number in out
```

<i>peer-address</i>	
<i>peer-group-name</i>	
<i>access-list-number</i>	
in	
out	

neighbor filter-list

```
Ruijie(config)# ip as-path access-list 1 deny _123_  
Ruijie(config)# router bgp 65000  
Ruijie(config-router)# neighbor 10.0.0.1 remote-as  
65100  
Ruijie(config-router)# neighbor 10.0.0.1 filter-list 1  
out
```

router bgp	
neighbor remote-as	
ip as-path access-list	
match as-path	

35.1.53 neighbor maximum-prefix

no

```
neighbor peer-address peer-group-name maximum-prefix  
maximum threshold warning-only
```

```
no neighbor peer-address peer-group-name maximum-prefix
```

```
Ruijie(config)# router bgp 65000  
Ruijie(config-router)# neighbor 10.0.0.1 next-hop-self
```

router bgp	
neighbor remote-as	

35.1.55 neighbor password

no

```
neighbor peer-address peer-group-name password 0 7 string  
no neighbor peer-address peer-group-name password
```

<i>peer-address</i>	
<i>peer-group-name</i>	
0	
7	
<i>string</i>	

--	--

remote-as update-source local-as reconnect-interval times
 advertisement-interval default-originate next-hop-self remove-p
 rivate-as send-community distribute-list out filter-list out p
 refix-list out route-map out unsuppress-map route-reflector-c
 lient

r

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor Red-Giant peer-group
Ruijie(config-router)# neighbor 10.0.0.1 peer-group
Red-Giant
```

router bgp	
neighbor remote-as	
neighbor peer-group (creating)	
show ip bgp peer-group	

35.1.57 neighbor peer-group (creating)

<i>peer-address</i>	
<i>peer-group-name</i>	

prefix-list-name

“

35.1.59 neighbor remote-as

no

neighbor *peer-address peer-group-name remote-as as-number*

no neighbor *peer-address peer-group-name remote-as as-number*



peer-address

no neighbor *peer-address* *peer-group-name* **remove-private-as**

--	--

peer-address

B

<i>peer-address</i>	
<i>peer-group-name</i>	
<i>map-tag</i>	
in	
out	

Ruijie(config-router)# **neighbor ip-address route-map map-tag in**

neighbor soft-reconfiguration inbound	
show ip bgp	

35.1.62 neighbor route-reflector-client

no

neighbor ip address peer-group-name route-reflector-client
no neighbor ip address peer-group-name route-reflector-client

<i>peer-address</i>	
<i>peer-group-name</i>	
both	
standard	
extended	

```
Ruijie(config-router)# neighbor 10.1.1.1
send-community both
```

router bgp	
neighbor remote-as	
ip community-list	

35.1.64 neighbor shutdown

no

```
neighbor peer-address peer-group-name shutdown
no neighbor peer-address peer-group-name shutdown
```

<i>peer-address</i>	
<i>peer-group-name</i>	

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.0.0.1 shutdown
```

router bgp	
neighbor remote-as	
show ip bgp summary	

35.1.65 neighbor soft-reconfiguration inbound

no

```
neighbor peer-address peer-group-name soft-reconfiguration
inbound
no neighbor peer-address peer-group-name soft-reconfiguration
inbound
```

--	--

<i>peer-address</i>	
<i>peer-group-name</i>	

show ip bgp neighbors

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1
soft-reconfiguration inbound
```

router bgp	
neighbor remote-as	
show ip bgp neighbors	
clear ip bgp	

35.1.66 neighbor soo

no

```
neighbor peer-address peer-group-name soo soo-value
no neighbor peer-address peer-group-name soo
```

<i>peer-address</i>	
<i>peer-group-name</i>	
<i>soo-value</i>	:

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 100
Ruijie(config-router)# address-family ipv4 vrf vpn1
Ruijie(config-router-af)# neighbor 10.0.0.1 soo
100:100
```

router bgp	
timers bgp	<i>keepalive holdtime</i>

35.1.67 neighbor timers

```
neighbor peer-address peer-group-name timers keepalive holdtime
no neighbor peer-address peer-group-name timers keepalive
holdtime
```

<i>peer-address</i>	
<i>peer-group-name</i>	
<i>keepalive</i>	
<i>holdtime</i>	

keepalive:

holdtime

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 80 240
```

router bgp	
timers bgp	<i>keepalive holdtime</i>

35.1.68 neighbor unsuppress-map

aggregate-address

no

```
neighbor peer-address peer-group-name unsuppress-map
map-tag
```

```
no neighbor peer-address peer-group-name unsuppress-map
```

<i>peer-address</i>	
<i>peer-group-name</i>	
<i>map-tag</i>	

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1
unsuppress-map unspress-route
```

router bgp	
neighbor remote-as	
aggregate-address	
route-map	

35.1.69 neighbor update-source

no

```
neighbor peer-address peer-group-name update-source
interface-type interface-index
```

no neighbor *peer-address peer-group-name update-source*
interface-type interface-index

<i>peer-address</i>	
<i>peer-group-name</i>	
<i>interface-type</i>	
<i>interface-index</i>	

Ruijie(config)# **router bgp** 65000
Ruijie(config-router)# **neighbor** 10.0.0.1 **update-source**
lookback 1

router bgp	
neighbor remote-as	

35.1.70 neighbor version

no
neighbor *ip-address peer-group-name version number*

no neighbor *ip-address peer-group-name version number*

<i>peer-address</i>	
<i>peer-group-name</i>	
<i>number</i>	

Ruijie(config-router)# **neighbor 10.1.1.1 version 4**

router bgp	
neighbor remote-as	

35.1.71 neighbor weight

no

neighbor *ip-address peer-group-name weight number*

no neighbor *ip-address peer-group-name weight*

<i>ip-address</i>	
<i>peer-group-name</i>	
<i>number</i>	

```
Ruijie(config)# router bgp 65000  
Ruijie(config-router)# network 10.0.0.1 mask  
255.255.0.0
```

router bgp	
redistribute	

Network synchronization

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# no memory-lack overflow
```

clear bgp <i>addressfamily all *</i>	
show bgp <i>addressfamily all summary</i>	

35.1.75 redistribute

no

redistribute *protocol-type route-map map-tag metric metric-value*
no redistribute *protocol-type route-map map-tag metric metric-value*

<i>protocol-type</i>	
route-map <i>map-tag</i>	route-map route-map
metric <i>metric-value</i>	

```
no
```

```
r
```

```
Ruijie(config-router)# redistribute static route-map  
static-rmap  
Ruijie(config-router)# no redistribute static  
route-map static-rmap  
Ruijie(config-router)# no redistribute static
```

show ip protocols	

35.1.76 redistribute OSPF

```
no
```

```
redistribute ospf process-id route-map map-tag metric metric-value
```

```
match internal external
```

```
no redistribute ospf process-id
```

```
metric-value match internal external
```

--	--

<i>process-id</i>	
route-map <i>map-tag</i>	route-map route-map
metric <i>metric-value</i>	
match	
internal	
external 1 2	
nssa-external 1 2	

/ .
no

```
Ruijie(config-router)# redistribute ospf 2 route-map
static-rmap
Ruijie(config-router)# no redistribute ospf 4 match
external route-map ospf-rmap
Ruijie(config-router)# no redistribute ospf 78
```

show ip protocols	

35.1.77 redistribute ISIS

no

```
redistribute isis isis-tag route-map map-tag metricmetric
```

/

no

r

```
Ruijie(config-router)# redistribute isis route-map  
static-rmap
```

```
Ruijie(config-router)# no redistribute isis test  
route-map isis-rmap
```

```
Ruijie(config-router)# no redistribute isis
```

show ip protocols	

35.1.78 router bgp

no

router bgp *as-number*

no router bgp *as-number*

<i>as-number</i>	

Ruijie(config)# **router bgp** 65000

ip routing	
bgp router-id	
network	

35.1.79 synchronization

no

synchronization
no synchronization

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# timers bgp 80 240
```

neighbor timers	<i>keepalive holdtime</i>

35.2

35.2.1 show ip bgp

```
show ip bgp network network-mask longer-prefixes
```

<i>network</i>	
<i>network-mask</i>	
longer-prefixes	

```
Ruijie# show ip bgp
Status codes: s suppressed, d damped, h history, * valid,
> best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete
Status Network      Next Hop      Metric  LocPrf  Path
-----
*> 211.21.21.0/24  110.110.110.10  0        1000    200
300
```

```
*> 211.21.23.0/24 110.110.110.10 0 1000 200
300
*> 211.21.25.0/24 110.110.110.10 0 1000 300
*> 211.21.26.0/24 110.110.110.10 0 1000 300
*> 211.21.27.0/24 110.110.110.10 0 1000 200
```

35.2.2 show ip bgp cidr-only

show ip bgp cidr-only

Ruijie# **show ip bgp cidr-only**

exact-match	

```

Ruijie# show ip bgp community local-as 111:12345
Status codes: s suppressed, d damped, h history, * valid,
> best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete
Status Network      Next Hop      Metric  LocPrf  Path
-----
*> 211.21.21.0/24  110.110.110.10  0      1000   200
300
*> 211.21.23.0/24  110.110.110.10  0      1000   200
300
*> 211.21.25.0/24  110.110.110.10  0      1000   300
*> 211.21.26.0/24  110.110.110.10  0      1000   300
*> 211.21.27.0/24  110.110.110.10  0      1000   200

```

35.2.4 show ip bgp community-list

show ip bgp community-list *community-name* **exact-match**

<i>community-name</i>	
exact-match	

```
Ruijie# show ip bgp community-list my_comm
Status codes: s suppressed, d damped, h history, * valid,
> best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete
Status Network      Next Hop      Metric  LocPrf  Path
-----
*> 211.21.21.0/24  110.110.110.10  0      1000    200
300
*> 211.21.23.0/24  110.110.110.10  0      1000    200
300
*> 211.21.25.0/24  110.110.110.10  0      1000    300
*> 211.21.26.0/24  110.110.110.10  0      1000    300
*> 211.21.27.0/24  110.110.110.10  0      1000    200
```



```

Ruijie# show ip bgp dampening dampened-paths
Status codes: s suppressed, d damped, h history, * valid,
> best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete
status Network          From          Reuse      Path
-----
*d      192.168.64.0/24      110.110.110.10  00:21:41 1000
i
*d      202.117.121.0/24      110.110.110.10  00:21:43
1000 ?
*d      202.117.122.0/23      110.110.110.10  00:21:43
1000 ?
*d      202.117.122.0/23      110.110.110.10  00:21:43
1000 ?
*d      202.117.122.0/23      110.110.110.10  00:21:43
1000 ?
*d      202.117.122.0/23      110.110.110.10  00:21:43
1000 ?
*d      202.117.122.0/23      110.110.110.10  00:21:43
1000 ?
*d      202.117.122.0/23      110.110.110.10  00:21:43
1000 ?
*d      202.117.122.0/23      110.110.110.10  00:21:43
1000 ?

```

35.2.6 show ip bgp dampening flap-statistics

```
show ip bgp dampening flap-statistics
```

```
Ruijie# show ip bgp dampening flap-statistics
```

```
Status codes: s suppressed, d damped, h history, * valid,
> best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete
Status Network          From          Flaps  Duration
Reuse   Path
-----  -
h       192.168.64.0/24    110.110.110.10    2
00:19:17          1000 i
h       201.234.1.0/24     110.110.110.10    2
00:19:17          1000 ?
h       201.234.2.0/23     110.110.110.10    2
00:19:17          1000 ?
h       201.234.2.0/23     110.110.110.10    2
00:19:17          1000 ?
h       201.234.2.0/23     110.110.110.10    2
00:19:17          1000 ?
h       201.234.2.0/23     110.110.110.10    2
00:19:17          1000 ?
```

35.2.7 show ip bgp dampening parameters

Max suppress time	:	200 min
Max penalty (ceil)	:	29800000
Min penalty (floor)	:	5000

35.2.8 show ip bgp filter-list

show ip bgp filter-list *path-list-number*



path-list-number

Ruijie# **show ip bgp inconsistent-as**

35.2.10 **show ip bgp neighbors**

show ip bgp neighbors *neighbor-address* **received-routes routes**
advertised-routes

<i>neighbor-address</i>	
received-routes	
routes	
advertised-routes	

```
Neighbor capabilities:
  Route refresh: advertised and received (old and new)
  Address family IPv4 Unicast: advertised and received
  Graceful restart: advertised and received
    Remote Restart timer is 120 seconds
  Address families preserved by peer:
    none
Received 14 messages, 0 notifications, 0 in queue
  open message:1 update message:4 keepalive message:9
  refresh message:0 dynamic cap:0 notifications:0
Sent 12 messages, 0 notifications, 0 in queue
  open message:1 update message:3 keepalive message:8
  refresh message:0 dynamic cap:0 notifications:0
Route refresh request: received 0, sent 0
Minimum time between advertisement runs is 0 seconds
For address family: IPv4 Unicast
  BGP table version 2, neighbor version 1
  Index 2, Offset 0, Mask 0x4
  Inbound soft reconfiguration allowed
  8 accepted prefixes
  0 announced prefixes
Connections established 2; dropped 1
Local host: 192.168.195.239, Local port: 1074
Foreign host: 192.168.195.183, Foreign port: 179
Nexthop: 192.168.195.239
Nexthop global: ::
Nexthop local: ::
BGP connection: non shared network
Last Reset: 00:06:43, due to BGP Notification sent
```

35.2.11 show ip bgp paths

```
show ip bgp paths
```

Ruijie# **show ip bgp paths**

35.2.12 show ip bgp quote-regexp

show ip bgp quote-regexp *regexp*

<i>regexp</i>	

r

```
Ruijie# show ip bgp quote-regexp "_300_"
Status codes: s suppressed, d damped, h history, * valid,
> best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete
Network      Next Hop      Metric  LocPrf  Path
*> 211.21.21.0/24 110.110.110.10 0        1000    200
300
```

```
*> 211.21.23.0/24 110.110.110.10 0 1000 200
300
*> 211.21.25.0/24 110.110.110.10 0 1000 300
*> 211.21.26.0/24 110.110.110.10 0 1000 300
```

35.2.13 show ip bgp regexp

show ip bgp regexp *regexp*

<i>regexp</i>	

```

Ruijie # show ip bgp summary
BGP router identifier 192.168.88.200, local AS number
500
BGP table version is 1
1 BGP AS-PATH entries
0 BGP community entries
Neighbor      V    AS MsgRcvd MsgSent  TblVer  InQ
OutQ Up/Down  State/PfxRcd
1.1.1.1      4    200     0      0      0     0  0
never Active
Total number of neighbors 1

```

router bgp	

35.2.15 show ip bgp vpnv4

```

show ip bgp vpnv4 all network neighbor address summary
label

```

```

show ip bgp vpnv4 vrf vrf_name network summary label

```

```

show ip bgp vpnv4 rd rd_value network neighbor address
summary label

```

network	
neighbor	

summary	
label	
<i>vrf_name</i>	
<i>rd_value</i>	

```
Ruijie# show ip bgp vpnv4 all
Network          Nexthop          Metric          Localprf
      Weight          Path
Route Distinguisher 100 2
*>i 192.168.0.1/32 192.168.0.2    0          100
0          10 ?
*>i 192.168.1.0/32 192.168.0.2    0          100
0          ?
Route Distinguisher : 100:30
*>i 192.168.0.1/32 192.168.0.2    0          100
0          10 ?
*> 192.168.4.0 192.168.4.1    0
0          20 ?
* 192.168.4.0 0.0.0.0          0
32768          ?
```

```
Ruijie# show ip bgp vpnv4 vrf vpn1 summary
BGP router identifier 192.168.0.4 , local AS num 100
BGP VRF vrf1 Route Distinguisher 100 30
BGP table version is 1
3 BGP AS PATH entries
0 BGP community entries
Neighbor V AS MsgRcvd Msgsend TblVer IntQ
OutQ Up/Down State/PfxRcd
192.168.4.1 4 20 15 16 1 0 0
00:10:36 3
Total number of neighbors 1
```

vrf
bgp vpnv4 all

show ip bgp vpnv4
show ip

35.2.16 show ip as-path-access-list

show ip as-path-access-list *num*

<i>num</i>	

```
Ruijie# show ip as-path-access-list  
AS path access list 30  
permit ^30$
```

35.2.17 show ip community-list

show ip community-list *community-list-number community-list-name*

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

```
Ruijie# show ip community-list
Community-list standard local
permit local-AS
Community-list standard Red-Giant
permit 0:10
deny 0:20
```

36

36.1

36.1.1 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

```

access-list	
prefix-list	

36.1.2 distribute-list out

```

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

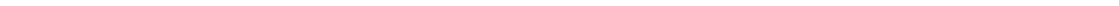
```

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

community-number



network



<i>prefix-lis-name</i>	
<i>seq-number</i>	
deny	
permit	
<i>ip-prefix</i>	
<i>minimum-prefix-length</i>	ge
<i>maximum-prefix-length</i>	le

ip prefix-list

ip prefix-list description

no

ip prefix-list sequence-number

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

36.1.8 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

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

route-limit

ip static

show running config

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

36.1.11 ipv6 prefix-list

prefix-list

no

ipv6

```
Ipv6 prefix-list prefix-lis-name seq seq-number deny permit  
ipv6-prefix ge minimum-prefix-length le maximum-prefix-length
```

```
no ipv6 prefix-list prefix-lis-name seq seq-number deny permit  
ipv6-prefix ge minimum-prefix-length le
```

permit	
<i>ipv6-prefix</i>	
<i>minimum-prefix-length</i>	ge
<i>maximum-prefix-length</i>	le

ipv6 prefix-list

```
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
```

36.1.12 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>	

```
Ruijie# configure terminal  
Ruijie(config)# ipv6 prefix-list pre description Deny  
routes from Net-A
```

36.1.13 ipv6 prefix-list sequence-number

ipv6 prefix-list description

no

Ipv6 prefix-list sequence-number

```
Ruijie# configure terminal
Ruijie(config)# ipv6 prefix-list pre description Deny
routes from Net-A
```

36.1.14 match as-path

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

36.1.15 match community

match community **no**

match community *standard-list-number expanded-list-number
community-list-name* **exact-match** *standard-list-number
expanded-list-number community-list-name* **exact-match**

no match community *standard-list-number expanded-list-number
community-list-name* **exact-match** *standard-list-number
expanded-list-number community-list-name* **exact-match**

<i>standard-list-number</i>	
<i>expanded-list-number r</i>	
<i>communitys-list-name</i>	
exact-match	

match community

exact-match

match

set match set

```
ip community-list 1 permit 100:2 100:30
route-map set_lopref
match community 1 exact-match
set local-preference 20
```

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

36.1.16 match interface

match

interface no

match interface *interface-type interface-number ...interface-type interface-number*

no match interface *interface-type interface-number ...interface-type interface-number*

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

36.1.17 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...*

access-list-number (1-9999) | access-list-name (1-31 characters, alphanumeric and hyphen only) | prefix-list-name (1-31 characters, alphanumeric and hyphen only)

```

router ospf
redistribute rip subnets route-map redrip
network 192.168.12.0 0.0.0.255 area 0
access-list 10 permit 200.168.23.0
route-map redrip permit 10
match ip address 10
set metric 40
set metric-type type-1

```

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

36.1.18 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	

36.1.19 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-number...]
access-list-name | prefix-list prefix-list-name [prefix-list-name...*

no match ip route-source *access-list-number access-list-number... |
access-list-name... access-list-name access-list-number...]
access-list-name **prefix-list** prefix-list-name prefix-list-name...*

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

match ip route-source

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 5 permit 192.168.100.1
route-map redrip permit 10
match ip route-source 5
```

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

36.1.20 match ipv6 address

match ipv6 address **no**

match ipv6 address *access-list-name* **prefix-list** *prefix-list-name*
no match ipv6 address

<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 2620::/64 any
route-map redrip permit 10
match ipv6 address v6acl
set metric 30
```



set

match

match

set

```
ipv6 router ospf
redistribute rip subnets route-map redrip
ipv6 access-list v6acl
10 permit ipv6 2720::/64 any
route-map redrip permit 10
match ipv6 next-hop v6acl
set metric 40
```



ipv6 access-list

36.1.22 match ipv6 route-source

match ipv6 address **no**

match ipv6 route-source *access-list-name* **prefix-list**
prefix-list-name

no match ipv6 route-source

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

set

match

match

set

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

36.1.25 match origin

origin no match
match origin

match origin incomplete
set community no-export

match as-path	
match metric	
match origin	

set as-path prepend

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	

36.1.27 match tag

match tag **no**

match tag *tag ...tag*
no match tag *tag ...tag*

<i>tag</i>	

match tag

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

```
router rip
redistribute ospf 100 route-map redrip
network 192.168.12.0

route-map redrip permit 10
match tag 50 80
```

access-list	
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	

36.1.28 maximum-paths

maximum-paths

maximum-paths *number*

no maximum-paths *number*

<i>number</i>	

maximum-paths

show running

config

maximum-paths 10

no maximum-paths

36.1.29 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>	

Redistribute	

36.1.30 set aggregator as

set community	
----------------------	--

set metric-type

```
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	

36.1.34 set dampening

```
dampening no set
```

```
set dampening half-life reuse suppress max-suppress-time
no set dampening
```

<i>half-life</i>	

reuse

```
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	

36.1.35 set extcommunity

```
set extcommunity no
```

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

```
no set extcommunity rt soo
```

rt	
soo	

<i>extend-community-value</i>	
-------------------------------	--

```
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	

36.1.36 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

set ip next-hop set ip default next-hop
set ip next-hop
default next-hop

set ip

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

```
rface async 1
olicy route-map equal-access
```

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

te-map	
ch ip address	
default interface	
default interface	
interface	
ip next-hop	
ip precedence	

dscp

```
no
set ip
no dscp dscp_value
set ip dscp
```

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

36.1.38 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

set

```
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	

36.1.39 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

```
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

```
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

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 40
```

match tag	
set metric-type	
set tag	

36.1.43 set metric-type

set metric-type **no**

set metric-type *type*

no set metric-type

<i>type</i>	

```
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	

36.1.44 set next-hop

```
set next-hop no
```

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

<i>ip-address</i>	

set

match

match

set

```
route-map redrip permit 10  
match ip address 1  
set next-hop 192.168.1.2
```

match interface	
match ip address	
match ip next-hop	

<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	

36.1.47 set tag

```

no
set tag tag
no set tag
set tag

```

set tag

<i>tag</i>	

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

show route-map

show route-map *route-map-name*

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

```
Ruijie# show ip community-list
Community-list standard local
permit local-AS
Community-list standard Red-Giant
permit 0:10
deny 0:20
```

36.2.3 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
```

36.2.4 show ip route

show ip route

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

vrf vrf_name	
network	
mask	
count	
protocol	static connected bgp isis ospf rip
process-id	
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 network

```
Ruijie# show ip route 30.0.0.0  
Routing entry for 30.0.0.0/8  
Distance 110, metric 20  
Routing Descriptor Blocks:  
*192.1.1.1, 00:01:11 ago, ago, ago, ago, ago, ago, ago,
```

37

37.1

37.1.1 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

```

access-list	
route-map	
set ip next-hop	
set ip default next-hop	
set ip dscp	
match ip address	
match length	

37.1.2 ip policy

```

set ip next-hop
ip policy no

```

```

ip policy load-balance|redundance
no ip policy

```

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
```

38 IPv6

38.1

- ' 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
- ' clear ipv6 neighbors
- ' tunnel destination
- ' tunnel mode ipv6ip
- ' tunnel source
- ' tunnel ttl

38.1.1 ping ipv6

r . . .

eui-64

no ipv6 address

no ipv6 address ipv6 prefix prefix-length eui-64
ipv6 address ipv6-prefix prefix-length eui-64

```
Ruijie(config-if)# ipv6 address 2001:1::1/64  
Ruijie(config-if)# no ipv6 address 2001:1::1/64  
Ruijie(config-if)# ipv6 address 2002:1::1/64 eui-64  
Ruijie(config-if)# no ipv6 address 2002:1::1/64 eui-64
```

38.1.3 ipv6 enable

ipv6 enable

no ipv6 enable

ipv6 enable

no ipv6 enable

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

show ipv6 interface	

38.1.4 ipv6 hop-limit

ipv6 hop-limit value

no ipv6 hop-limit

Ruijie(config)# **ipv6 hop-limit 100**

38.1.5 ipv6 neighbor

ipv6 neighbor *ipv6-address interface-id hardware-address*

no ipv6 neighbor *ipv6-address interface-id*

ipv6-address

interface-id

hardware-address

clear ipv6 neighbors

clear ipv6 neighbors show ipv6 neighbors Ti/T3 1 Tf 62.06861314171 TD 0 Tc 0 Tw a23d94c3d087c15d5113

Ruijie(config)# **ipv6 neighbor 2001::1 vlan 1**
00d0.f811.1111

--	--

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

38.1.7 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
```

```
r . . . . .
```

```
ipv6-address
```

```
interface-id
```

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

show ipv6 route	

38.1.8 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
```

38.1.9 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	

38.1.10 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	

38.1.11 ipv6 nd prefix

ipv6 nd prefix *ipv6-prefix prefix-length* **default** *valid-lifetime*
preferred-lifetime **at** *valid-date preferred-date* **infinite**
no-advertise **off-link** **no-autoconfig**

no ipv6 nd prefix *ipv6-prefix/prefix-length* **default** **off-link**
no-autoconfig **no-advertise**

ipv6-prefix

prefix-length

valid-lifetime

preferred-lifetime

at *valid-date preferred-date*

infinite

default

no-advertise

38.1.13 ipv6 nd ra-interval

ipv6 nd ra-interval *seconds min-max min_value max_value*

no ipv6 nd ra-interval

seconds

min-max:

min_value:

max_value:

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	

38.1.14 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-mtu	

38.1.15 ipv6 nd ra-mtu

ipv6 nd ra-mtu *value*

no ipv6 nd ra-mtu

value

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

show ipv6 interface	
ipv6 nd other-config-flag	

38.1.17 ipv6 nd dad attempts

```
ipv6 nd dad attempts value
no ipv6 nd dad attempts
```

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

show ipv6 interface	

38.1.18 ipv6 nd suppress-ra

ipv6 nd suppress-ra

no ipv6 nd suppress-ra

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

show ipv6 interface	

38.1.19 ipv6 redirects

ipv6 redirects

no ipv6 redirects

[REDACTED]

```
Ruijie(config)# interface vlan 1
Ruijie(config-if)# ipv6 redirects
```

show ipv6 interface	

38.1.20 clear ipv6 neighbors

```
clear ipv6 neighbors
```

```
Ruijie# clear ipv6 neighbors
```

[REDACTED]

```
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	

38.1.23 tunnel source

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

no tunnel source

ipv4-address

interface-type interface-number

ruijie

```
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 mode	
tunnel destination	
tunnel ttl	

38.1.24 tunnel ttl

tunnel ttl *value*

no tunnel ttl

value

```
Ruijie(config)# interface tunnel 1  
Ruijie(config-if)# tunnel ttl 64
```

tunnel mode	
tunnel source	
tunnel destination	

38.2

38.2.1 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	

38.2.2 show ipv6 neighbors

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

verbose

interface-id

ipv6-address

Ruijie# **show ipv6 neighbors**

ipv6 neighbor	

38.2.3 show ipv6 interface

show ipv6 interface *interface-id* ra-info

interface-id

ra-info

```
INET6: 2001::1 , subnet is 2001::/64 [TENTATIVE]
Joined group address(es):
ff01:1::1
ff02:1::1
ff02:1::2
ff02:1::1:ff00:1
MTU is 1500 bytes
ICMP error messages limited to one every 10 milliseconds
ICMP redirects are enabled
ND DAD is enabled, number of DAD attempts: 1
ND reachable time is 30000 milliseconds
ND advertised reachable time is 0 milliseconds
ND retransmit interval is 1000 milliseconds
ND advertised retransmit interval is 0 milliseconds
ND router advertisements are sent every 200
seconds<240--160>
ND router advertisements live for 1800 seconds
```



```
Ruijie# show ipv6 interface vlan 1 ra-info
vlan 1: DOWN
RA timer is stopped
waits: 0, initcount: 3
statistics: RA(out/in/inconsistent): 4/0/0, RS(input):
0
Link-layer address: 00:00:00:00:00:01
Physical MTU: 1500
ND router advertisements live for 1800 seconds
ND router advertisements are sent every 200
seconds<240--160>
```

ND advertised reachable time is 0 milliseconds
ND advertised retransmit time is 0 milliseconds
ND advertised CurHopLimit is 64
Prefixes: (total: 1)
fec0:1:1:1::/64(Def,Auto,vltime: 2592000, pltime:
604800, flags: LA)

39 OSPFv3

39.1

39.1.1 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

```
ipv6 router ospf 1
area 50 stub
area 50 default-cost 100
```

area stub	
show ipv6 ospf area	

no

area *area-id* stub no-summary

no area *area-id* stub no-summary

<i>area-id</i>	
<i>no-summary</i>	

no area *area-id* stub

no area *area-id*

no-su

mmary

```
ipv6 router ospf 1
area 10 stub
area 10 stub no-summary
```

area default-cost	
show ipv6 ospf area	

39.1.4 area virtual-link

no

area *area-id* **virtual-link** *router-id* **hello-interval** *seconds*

dead-interval *seconds* **retransmit-interval** *seconds*

transmit-delay *seconds* **instance** *instance-id*

no area *area-id* **virtual-link** *router-id* **hello-interval**

dead-interval **retransmit-interval** **transmit-delay** **instance**

<i>area-id</i>	
<i>router-id</i>	
hello-interval <i>seconds</i>	
dead-interval <i>seconds</i>	
retransmit-interval <i>seconds</i>	
transmit-delay <i>seconds</i>	
instance <i>instance-id</i>	

r .

ipv6 ospf cost

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

ipv6 ospf cost	
show ipv6 ospf	

39.1.6 clear ipv6 ospf process

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

process-id	

```
en  
clear ipv6 ospf process
```

39.1.7 default-information originate

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

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

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

redistribute default-information

default-information originate always

redistribute	
show ipv6 ospf	
show ipv6 ospf database	

39.1.8 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	

39.1.9 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	

39.1.11 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

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>	

39.1.13 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>	

39.1.14 ipv6 ospf network

no

**ipv6 ospf network broadcast | non-broadcast point-to-point |
point-to-multipoint non-broadcast instance *instance-id***

**no ipv6 ospf network broadcast | non-broadcast point-to-point |
point-to-multipoint non-broadcast instance *instance-id***

broadcast	
non-broadcast	
point-to-point	
point-to-multipoint	
point-to-multipoint non-broadcast	
instance <i>instance-id</i>	

ipv6 ospf network point-to-point

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

39.1.15 ipv6 ospf priority

no

ipv6 ospf priority *number-value* **instance** *instance-id*

no ipv6 ospf priority **instance** *instance-id*

<i>number-value</i>	
instance <i>instance-id</i>	

ipv6 ospf priority 0

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

39.1.16 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
```

show ipv6 ospf interface	

39.1.18 ipv6 router ospf

no

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

<i>process-id</i>	

ipv6 router ospf 1

ipv6 ospf area	
show ipv6 ospf	

39.1.19 log-adj-changes

log-adj-changes detai

no log-adj-changes detail

detail	

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

show ipv6 ospf	

39.1.20 max-concurrent-dd

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

39.1.22 redistribute

no

redistribute *protocol* **metric** *metric-value* **metric-type**
type-value **route-map** *map-tag* **match** **internal** **external**
nssa-external

no redistribute *protocol* **metric** **metric-type** **route-map** **match**
internal **external** **nssa-external**

match

route-map *set*

match
 metric *metric-type*

redistribute connect metric 10 route-map test

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

39.1.23 router-id

no

router-id *router-id*
no router-id

--	--

Router-id

router-id 1.1.1.1

ipv6 ospf priority	
show ipv6 ospf	

39.1.24 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	

39.2

39.2.1 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 Adjacency Changes : Enabled
Number of areas in this router is 2
Area BACKBONE(0)
Number of interfaces in this area is 1(1)
SPF algorithm executed 4 times
Number of LSA 3. Checksum Sum 0x1DDF1
Number of Unknown LSA 0

default-metric	
-----------------------	--

```

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	

39.2.3 show ipv6 ospf interface

show ipv6 ospf interface *interface type interface-number*

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

```
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
smit Delay i74-TD
```

ipv6 router ospf	
ipv6 ospf area	

39.2.4 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	

39.2.5 show ipv6 ospf route

```

show ipv6 ospf process-id route

```

<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	

39.2.6 show ipv6 ospf topology

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

process-id	
area-id	

```

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 virtual-link	

40 IGMP

40.1 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-responese-time
' ip igmp querier-timeout
' ip igmp robustness-variable
' ip igmp version
' ip igmp limit (          )
' ip igmp proxy-service
' ip igmp mroute-proxy
' ip igmp ssm-map enable
' ip igmp ssm-map static
' show ip igmp groups
' show ip igmp interface
' show ip igmp ssm-mapping
```

40.1.1 clear ip igmp group

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

40.1.2 clear ip igmp interface

clear ip igmp interface *ifname*

<i>ifname</i>	

```
Ruijie# clear ip igmp interface gigabitEthernet 4/1
```

40.1.3 ip igmp access-group

ip igmp access-group *access-list*

no ip igmp access-group

<i>access-list</i>	

40.1.4 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
```

40.1.5 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
```

40.1.6 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

ip igmp

last-member-query-count

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

40.1.8 ip igmp last-member-query-interval

ip igmp last-member-query-interval *interval*

no ip igmp last-member-query-interval

ip igmp immediate-leave

40.1.9 ip igmp limit ()

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

no ip igmp limit

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

Ruijie(config-if)# **ip igmp limit 300**

40.1.10 ip igmp query-interval

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**

40.1.11 ip igmp query-max-response-time

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

no ip igmp query-max-response-time

<i>seconds</i>	



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

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

40.1.15 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
```

40.1.16 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
```

40.1.17 ip igmp mroute-proxy

ip igmp mroute-proxy *interfname*

no ip igmp mroute-proxy

<i>interfname</i>	

Ruijie(config-if)# **ip igmp mroute-proxy fa 0/1**

40.1.18 ip igmp ssm-map enable

igmp ssm-map

ip igmp ssm-map enable

no ip igmp ssm-map enable

ip igmp ssm-map static

igmp ssm-map

Ruijie(config)# **ip igmp ssm-map enable**

40.1.19 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.**

40.1.20 show ip igmp groups

show ip igmp groups *group-address*

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

```
Ruijie# show ip igmp groups
IGMP Connected Group Membership
Group Address Interface Uptime Expires Last Reporter
224.0.1.1      eth2  00:00:09  00:04:17  10.10.0.82
224.0.1.24     eth2  00:00:06  00:04:14  10.10.0.84
224.0.1.40     eth2  00:00:09  00:04:15  10.10.0.91
224.0.1.60     eth2  00:00:05  00:04:15  10.10.0.7
239.255.255.250 eth2  00:00:12  00:04:15  10.10.0.228
239.255.255.254 eth2  00:00:08  00:04:13  10.10.0.84
```

```
Ruijie# show ip igmp groups 224.1.1.1 detail
Interface: eth1
Group: 224.1.1.1
Uptime: 00:00:42
Group mode: Include
Last reporter: 192.168.50.111
TIB-A Count: 2
TIB-B Count: 0
Group source list: (R - Remote, M - SSM Mapping)
Source Address Uptime v3 Exp Fwd Flags
192.168.55.55 00:00:42 00:03:38 Yes R
192.168.55.66 00:00:42 00:03:38 Yes R
```

40.1.21 show ip igmp interface

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
```

40.1.22 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
```

41 PIM-DM

41.1 PIM-DM

```
' ip pim dense-mode
' ip pim neighbor ip pimquery-in6 0vale
' ip pimstate-refresh disable
' ip pimstate-refresh origination-in6se0vale
'
```

...

41.1.2 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
```

41.1.4 ip pim state-refresh disable

ip pim

state-refresh disable

ip pim state-refresh disable

no ip pim state-refresh disable

```
Ruijie# configure terminal
Ruijie(config)# ip pim state-refresh disable
```

```
ruijie#
```

```
ip pim state-refresh disable
```

41.1.5 ip pim state-refresh origination-interval

ip pim

state-refresh origination-interval

ip pim state-refresh origination-interval

50.50.50.50 VLAN 4 2 v2/D 1

show ip pim dense-mode mroute

show ip pim dense-mode mroute *A.B.C.D A.B.C.D summary*

<i>A.B.C.D A.B.C.D</i>	
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 nexthop**
 - ' **show ip pim sparse-mode rp mapping**
 - ' **show ip pim sparse-mode rp-hash**

42.1.1 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
```

42.1.2 clear ip mroute statistics

clear ip mroute statistics *group_address source_address*

<i>group_address</i>	
<i>group_address</i> <i>source_address</i>	

```
Ruijie# clear ip mroute statistics *  
Ruijie# clear ip mroute statistics 224.2.2.2  
Ruijie# clear ip mroute statistics 224.2.2.2 2.2.2.2
```

42.1.3 clear ip pim sparse-mode bsr rp-set

clear ip pim sparse-mode bsr rp-set *

*	

```
Ruijie# clear ip pim sparse-mode bsr rp-set *
```

42.1.4 ip multicast-routing

ip multicast-routing

ip pim sparse-mode

```
Ruijie(config)# ip multicast-routing
```

42.1.5 ip pim accept-register list

ip pim accept-register list *access-list*

<i>access-list</i>	

```
Ruijie(config)# ip pim accept-register list 100  
Ruijie(config)# access-list 100 permit ip 192.168.195.0  
0.0.0.255 225.1.1.1 0.0.0.255
```

access-list

42.1.6 ip pim bsr-candidate

ip pim bsr-candidate *interface-type interface-number*
hash-mask-length priority-value

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

```
Ruijie# configure terminal  
Ruijie(config)#ip pim cisco-register-checksum  
Ruijie(config)#ip pim cisco-register-checksum  
group-list 99  
Ruijie(config)# access-list 99 permit 225.1.1.1  
0.0.0.255
```

access-list

42.1.8 ip pim dr-priority

ip pim dr-priority *priority-value*

<i>priority-value</i>	

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim dr-priority 10000
```

42.1.9 ip pim ignore-rp-set-priority

ip pim ignore-rp-set-priority

```
Ruijie# configure terminal
Ruijie(config)# ip pim ignore-rp-set-priority
```

42.1.10 ip pim jp-timer

ip pim jp-timer *interval-seconds*

Ð

```
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

42.1.13 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
```

42.1.14 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
```

42.1.15 ip pim register-rp-reachability

ip pim register-rp-reachability

ip pim register-suppression *seconds*

<i>seconds</i>	

```
Ruijie# configure terminal  
Ruijie(config)# ip pim register-suppression 100
```

42.1.18 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

42.1.19 ip pim rp-candidate

ip pim rp-candidate *interface-type interface-number* [**priority** *priority-value*][**interval** *interval-seconds*][**group-list** *access_list*]

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

42.1.20 ip pim rp-register-kat

ip pim rp-register-kat *seconds*

<i>seconds</i>	

42.1.22 ip pim spt-threshold

ip pim spt-threshold group-list *access-list*

<i>access-list</i>	

```
Ruijie# configure terminal  
Ruijie(config)# ip pim spt-threshold  
Ruijie(config)# ip pim spt-threshold group-list 12  
Ruijie(config)# access-list 12 permit 225.1.1.1  
0.0.0.255
```

access-list

42.1.23 ip pim ssm

ip pim ssm default / range *access_list*}

<i>default</i>	
<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
```

42.1.24 show debugging

```
show debugging
```

```
Ruijie #show debugging  
PIM-SM Debugging status:  
PIM packet debugging is on
```

```
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
```

42.1.27 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:
```

42.1.28 show ip pim sparse-mode mroute

```
show ip pim sparse-mode mroute group_address | source_address
```

<i>group_address</i>	
<i>source_address</i>	

1äe rp.38 510.138 0 0 13.56()Tj/TT33542>1 Tf13.98 0 0 []8057 Tc21101c

```
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
```

43

43.1

- ' clear ip mroute
- ' clear ip mroute statistics
- ' ip mroute
- ' ip multicast route-limit
- ' ip multicast ttl-threshold
- ' ip multicast-routing
- ' ip multicast boundary
- ' show ip mroute
- ' show ip rpf
- ' show ip mvif

43.1.1 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	

43.1.2 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

43.1.3 ip mroute

*

<i>rpf-address</i>	
--------------------	--

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

distance

Ruijie(config)# **ip multicast route-limit 500**

43.1.5 ip multicast ttl-threshold

no

ip multicast ttl-threshold *ttl value*

no ip multicast ttl-threshold

<i>ttl-value</i>	

ttl-value

```
Ruijie(config-if)# ip multicast ttl-threshold 5
```

43.1.6 ip multicast-routing

```
no
```

```
ip multicast-routing
```

```
no ip multicast-routing
```

```
ruijie>
```

```
Ruijie(config)# ip multicast-routing
```

```
/ ...
```

43.1.7 ip multicast boundary

no

ip multicast boundary *access-list*

no ip multicast boundary *access-list*

<i>access-list</i>	

ruijie

```
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
```

43.1.8 show ip mroute

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:
```

ip multicast-routing	
ip pim dense-mode	
ip pim sparse-mode	

43.1.9 show ip rpf

show ip rpf *source-address*

<i>source-address</i>	

```
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
```

Ruijie# `debug nsm mcast all`

43.2.2 debug nsm mcast fib-msg

no

`debug nsm mcast fib-msg`

Ruijie# `debug nsm mcast fib-msg`

43.2.3 debug nsm mcast vif

no

`debug nsm mcast vif`

Ruijie# `debug nsm mcast vif`

43.2.4 debug nsm mcast register

`no`

`debug nsm mcast register`

Ruijie# `debug nsm mcast register`

43.2.5 debug nsm mcast stats

`no`

`debug nsm mcast statr`

```
Ruijie# debug nsm mcast stats
```

44 MPLS

44.1 advertise-labels for

advertised-labels for **bgp-routes** **host-routes**

no advertised-labels for **bgp-routes** **host-routes**

bgp-routes	
host-routes	

config-mpls-router

advertise-labels for bgp-routes

Ruijie(config-mpls-router)#

```
Ruijie(config)# mpls router ldp  
Ruijie(config-mpls-router)#label-retention-mode  
liberal
```

show mpls ldp parameters	

44.5 label-switching

no label-switching

```
Ruijie(config)# interface Gi4/1  
Ruijie(config-if)# label-switching
```

show mpls label-pool	

no

Ruijie(config-mpls-router)# **loop-detection**

show mpls ldp parameters	
mpls ldp max-path-vector	
mpls ldp max-hop-count	

44.8 lsp-control-mode

lsp-control-mode independent ordered
no lsp-control-mode

independent	
ordered	

config-mpls-router

Ruijie(config)# **mpls router ldp**
Ruijie(config-mpls-router)# **lsp-control-mode ordered**

show mpls ldp parameters	

44.9 mpls ip

`no mpls ip`

Ruijie(config)# `mpls ip`

<code>mpls ip</code>	

44.10 mpls ip

```
Ruijie(config)# interface Gi4/1  
Ruijie(config-if)# mpls ip
```

no mpls ip ttl expiration

Ruijie(config)# no mpls ip ttl expiration

mpls ip	

44.14 mpls ip ttl propagate

mpls ip ttl propagate public vpn

no mpls ip ttl propagate

public	
vpn	

,

,

Ruijie(config)# no mpls ip ttl propagate public

mpls ip	

44.15 mpls ldp distribution-mode

= à U V p 0 ? "

mpls ldp hello-holdtime 1-65535
no mpls ldp hello-holdtime

1-65535	

lo **discovery targeted-hel**

Ruijie(config)# **interface vlan 10**
Ruijie(config-if)# **mpls ldp hello-holdtime 30**

mpls ldp hello-interval	
discovery targeted-hello	

44.17 mpls ldp hello-interval

mpls ldp hello-interval 1-65535
no mpls ldp hello-interval

--	--

<1-65535>	
-----------	--

discovery targeted-hello

```
Ruijie(config) # interface vlan 10  
Ruijie(config-if)# mpls ldp hello-interval 10
```

mpls ldp hello-holdtime	
discovery targeted-hello	

44.18 mpls ldp keepalive-holdtime

```
mpls ldp keepalive-holdtime 15-65535  
no mpls ldp keepalive-holdtime
```

15-65535	

targeted-session holdtime

```
Ruijie(config) # interface vlan 10  
Ruijie(config-if)#
```

```
(config) # in
(config-if)#
```

```
an 10
ax-hop
```

etection

max-label-reque

mpls ldp max-path-vector 0-254
no mpls ldp max-path-vector

0-254	

Ruijie(config)# **interface vlan 10**
Ruijie(config-if)# **mpls ldp max-path-vector 10**

loop-detection	

44.22 mpls ldp max-pdu

mpls ldp max-pdu 256-4096
[no] mpls ldp max-pdu

--	--

256-4096	
----------	--

```
Ruijie(config)# interface vlan 10
Ruijie(config-if)# mpls ldp max-pdu 256
```

44.23 transport-address

no transport-address interface

show mpls ldp parameters	

44.24 mpls mtu

mpls mtu 64-6535

no mpls mtu

64-65535	

mtu

```
Ruijie(config)# interface Gi4/1  
Ruijie(config-if)# mpls mtu 1510
```

mpls ip	

44.25 mpls router ldp

```
Ruijie(config)# mpls static ftn 192.168.0.0/16
out-label 100 nexthop gi4/1 10.10.10.1
```

show mpls forwarding-table	

44.27 mpls static l3vpn-ftn

```
mpls static l3vpn-ftn vrf-name A.B.C.D/Mask out-label label remote-pe ip-addr
```

```
mpls static l3vpn-ftn vrf-name A.B.C.D/Mask local-forward nexthop interface-name nexthop-ip
```

```
no mpls static l3vpn-ftn vrf A.B.C.D/Mask
```

vrf-name	
A.B.C.D/Mask	
out-label label	
remote-pe ip-addr	
local-forward nexthop interface-name nexthop-ip	

```
Ruijie(config)# mpls static l3vpn-ftn 192.168.0.0/16  
out-label 100 remote-pe 10.10.10.1
```

show mpls forwarding-table	

44.28 mpls static l2vc-ftn

```
mpls static l2vc-ftn vc_id vc_peer_ip out_label label  
no mpls static l2vc-ftn vc_id vc_peer_ip
```

<i>vc_id</i>	
<i>vc_peer_ip</i>	
out_label <i>label</i>	

**mpls static ilm in-label *in_label* forward-action swap-label *label*
nexthop *interface-name* *nexthop-ip* fec**

mpls static ilm in-label *in_lab* / forwc8.690.5Tj585T13 1813 1-intea50.5Tj58cn-nal3V

```
Ruijie(config)# mpls static ilm in-label 20
forward-action swap-label 30 nexthop gi4/2 10.10.10.1
fec 172.16.0.0/26
```

show mpls forwarding-table	

44.30 neighbor

```
no neighbor A.B.C.D
```

A.B.C.D	

```
config-mpls-router
```

```
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# neighbor 10.10.10.1
```

show mpls ldp discovery	

show mpls ldp neighbor	
------------------------	--

44.31 propagate-release

no propagate-release

config-mpls-router

```
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# propagate-release
```

show mpls ldp parameters	

44.32 show mpls forwarding-table

```
Show mpls forwarding-table A.B.C.D MASK label label interf
ace interface-name next-hop A.B.C.D ftn ip vc detail
ilm ip | vc detail detail vrf vrf-name summary
```

label

interface interface-name

next-hop A.B.C.D

ftn
ilm
vc
ip
detail
vrf
summary

```
Ruijie# Show mpls forwarding-table
Local  Outgoing  Prefix  Outgoing  Next Hop
tag    tag or VC   or Tunnel Id  interface
--IP forward  120.1.1.0/24  GigabitEthernet 3/19
0.0.0.0
--IP forward  167.168.195.0/24  GigabitEthernet 3/19
120.1.1.10
```

Local tag:

Outgoing tag or VC

PUSH:

POP:

SWAP:

POP IP:

POP L2PORT:

POP VC:

IP forward:

DROP:

```
Ruijie# show mpls label-pool
label space: 0
label pool bucket size 512
min label 16, max label 1048575
label block used 2, free 2046
CLI: 0, 1 (Include label [16,1023], reserved)
LDP: 3, 4
```

label-switching	

44.34 show mpls ldp bindings

show mpls ldp bindings

```
Ruijie# show mpls ldp bindings
169.254.0.0/16 remote binding: no outlabel lsr:
192.168.0.2:0
192.168.0.1/32 remote binding: label: gen 640 lsr:
192.168.0.2:0 ingress
192.168.0.2/32 remote binding: label: gen impl-null
lsr: 192.168.0.2:0 ingress
192.168.3.0/24 remote binding: label: gen impl-null
lsr: 192.168.0.3:0 ingress
```

```
192.168.4.0/24 remote binding: no outlabel lsr:
192.168.0.3:0
192.168.0.100/32 local binding: label: gen impl-null
192.168.4.0/24 local binding: label: gen impl-null
```

show mpls ldp neighbor	

44.35 show mpls ldp discovery

show mpls ldp discovery

```
Ruijie# show mpls ldp discovery
Local LDP Identifier:
  8.8.8.8:0
Discovery Sources:
Interfaces:
  GigabitEthernet 2/1 (ldp): xmit/recv
    LDP Ident: 10.30.10.10:0
  GigabitEthernet 2/2 (ldp): xmit
Targeted Hellos:
  8.8.8.8 -> 10.5.0.1 (ldp): active, xmit
  8.8.8.8 -> 10.30.10.10 (ldp): active/passive,
xmit
  2.2.2.2 -> 10.30.10.10 (ldp): passive, xmit/recv
    LDP Ident: 10.30.10.10:0
```

Addresses bound to peer LDP Ident:
10.20.10.10 192.168.201.220 192.168.198.1
10.5.0.1

show mpls ldp discovery	

44.37 show mpls ldp parameters

show mpls ldp parameters

```
Ruijie#show mpls ldp parameters
Protocol version: 1
Ldp Router ID: 8.8.8.8
Control Mode: INDEPENDENT
Propogate Release: FALSE
Label Merge: TRUE
Label Retention Mode: LIBERAL
Loop Detection Mode: off
```

Targeted Session Keepalive HoldTime/Interval:
180/60 sec
Targeted Hello HoldTime/Interval: 90/10 sec

ldp router-id	
lsp-control-mode	
ldp-label-retention-mode	
propagate-release	
label-merge	
loop-detection	

44.38 show mpls ldp session

show mpls ldp session

```
Ruijie# show mpls ldp session
Session-5-UP:LDP Identifier 192.168.0.2:0 State
OPERATIONAL
session not backup msg data
session hold msg count:0,write thread(nil),historymax
1
Remote dest 192.168.4.1:646 , Our is ACTIVE
Keepalive rcv timer is on , Hold time is 30 sec
Keepalive send timer is on , Interval is 10 sec
Max PDU is 4096
Path vector limit is 0
Distribution mode is UNSOLICITED
Loop detection mode is NONE
Backoff timer is off
```

```
Session attach socket FD[2572], read thread is 0xc6019c0,  
write thread is (nil)  
LDP Peer Address:  
192.168.4.1  
192.168.0.2  
192.168.3.2
```

44.39 show mpls summary

show mpls summary

```
Ruijie# show mpls summary  
Per label-space information: //  
0  
Label-space 0 is using minimum label: 16 and maximum  
label: 1048575 //  
Label-switching Interface: //  
Interface Label space  
GigabitEthernet 4/1 0  
GigabitEthernet 4/2 0  
Total number of mpls interface is 2
```

label-switching	

44.40 targeted-session holdtime

targeted-session holdtime <15-65535>

15-65535	

config-mpls-router

LDP

90

```
Ruijie(config)# mpls router ldp  
Router(config-mpls-router)# targeted-session holdtime  
90
```

show mpls ldp parameters	

45 BGP/MPLS L3 VPN

45.1 address-family ipv4 vrf

`no address-family ipv4 vrf vrf_name`

vrf_name

exit-address-family

```
Ruijie(config)# router bgp 100
Ruijie(config-router)# address-family ipv4 vrf vrf1
```

neighbor activate	
exit-address-family	

45.2 address-family vpnv4

`no address-family vpnv4 unicast`

unicast

family VPN
s-family VPN

exit-address-family

address-
address

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

Ruijie(config-router)# **address-family vpnv4**

d

```
Ruijie# clear ip bgp vrf my-vrf in
```

45.4 exit address-family

```
exit address-family
```

```
Ruijie(config)# router bgp 100  
Ruijie(config-router)# address-family vpnv4 unicast  
Ruijie(config-router-af)# exit address-family
```

45.5 ip route static inter-vrf

```
no ip route static inter-vrf
```

```
no ip route static inter-vrf
```

Un-installing r

oute *x.x.x.x/8* **from global routing table with outgoing interface** *x/x*.

Ruijie(config)# **no ip route static inter-vrf**

45.6 ip route vrf

no ip route vrf *vrf_name ip_addr mask interface next-hop-address*
s global



```
Ruijie(config)# ip route vrf vrf1 10.10.10.0 255.255.255.0 gi3/1 192.168.18.1
```

45.7 ip vrf

```
no ip vrf vrf_name
```

vrf_name

```
Ruijie(config)# ip vrf vrf1
```

ip vrf forwarding	
show ip vrf	
rd	
route-target	

45.8 ip vrf forwarding

```
no ip vrf forwarding vrf_name
```

vrf_name

neighbor *peer-address* *peer-group-name* **activate**
no neighbor *peer-address* *peer-group-name* **activate**

<i>peer-address</i>	
<i>peer-group-name</i>	

```
Ruijie(config)# router bgp 60  
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 100  
Ruijie(config-router)# address-family vpn4  
Ruijie(config-router-af)# neighbor 10.0.0.1 activate
```

router bgp	
neighbor remote-as	

45.11 neighbor allowas-in

neighbor *peer-address peer-group-name* **allows-in** *number*
no neighbor *peer-address peer-group-name* **allows-in**

<i>peer-address</i>	
<i>peer-group-name</i>	
<i>number</i>	

```
Ruijie(config)# router bgp 60  
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 100  
Ruijie(config-router)# address-family ipv4 vrf vpn1  
Ruijie(config-router-af)# neighbor 10.0.0.1 allows-in
```

router bgp	
neighbor remote-as	

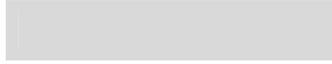
45.12 neighbor as-override

neighbor *peer-address peer-group-name as-override*

no neighbor *peer-address peer-group-name as-override*

<i>peer-address</i>	
<i>peer-group-name</i>	

neighbor *peer-address peer-group-name* **description** *text*
no neighbor *peer-address peer-group-name* **description**



neighbor *peer-address peer-group-name remote-as as-number*
no neighbor *peer-address peer-group-name remote-as as-number*

<i>peer-address</i>	
<i>peer-group-name</i>	
<i>as-number</i>	

Ruijie(config)# **router bgp 65000**
Ruijie(config-router)# **neighbor 10.0.0.1 remote-as 80**

router bgp	

45.15 neighbor shutdown

neighbor *peer-address peer-group-name shutdown*
no neighbor *peer-address peer-group-name shutdown*

<i>peer-address</i>	
<i>peer-group-name</i>	

```
Ruijie(config)# router bgp 60  
Ruijie(config-router)# neighbor 10.0.0.1 shutdown
```

router bgp	
neighbor remote-as	
show ip bgp summary	

45.16 neighbor soo

```
neighbor peer-address peer-group-name soo soo-value
```

no neighbor *peer-address* *peer-group-name* **soo**



rd *rd_value*

rd_value

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

ip vrf	
show ip vrf	

45.18 redistribute

redistribute *protocol-type* **route-map** *map-tag* **metric** *metric-value*
no redistribute *protocol-type* **route-map** *map-tag* **metric**
metric-value

<i>protocol-type</i>	
route-map <i>map-tag</i>	route-map route-map

metric <i>metric-value</i>	
-----------------------------------	--

```
Ruijie(config-router)# redistribute static route-map  
static-rmap  
Ruijie(config-router)# no redistribute static  
route-map static-rmap  
Ruijie(config-router)# no redistribute static
```

--	--

show ip prot

G

7

redistribute ospf *process-id* **route-map** *map-tag* **metric** *metric-value*
match **internal** **external** **1** **2** **nssa-external** **1** **2**

no redistribute ospf *process-id* **route-map** *map-tag* **metric**
metric-value **match** **internal** **external** **1** **2** **nssa-external** **1** **2**



no

r .

```
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	

45.21 show ip bgp vpnv4

```
show ip bgp vpnv4 all network neighbor address summary
label
show ip bgp vpnv4 vrf
```

```

Ruijie# show ip bgp vpnv4 all
Network          Nexthop          Metric      Localprf
      Path
Route Distinguisher 100 2
*>i 192.168.0.1/32 192.168.0.2    0          100      10 ?
*>i 192.168.1.0/32 192.168.0.2    0          100      ?
Route Distinguisher : 100:30
*>i 192.168.0.1/32 192.168.0.2    0          100      10 ?
*> 192.168.4.0 192.168.4.1    0          20 ?
* 192.168.4.0 0.0.0.0    0          32768    ?

```

```

Ruijie# show ip bgp vpnv4 vrf vpn1 summary
BGP router identifier 192.168.0.4 , local AS num 100
BGP VRF vrfl Route Distinguisher 100 30
BGP table version is 1
3 BGP AS PATH entries
0 BGP community entries
Neighbor V AS MsgRcvd Msgsend TblVer IntQ
OutQ Up/Down State/PfxRcd
192.168.4.1 4 20 15 16 1 0 0
00:10:36 3
Total number of neighbors 1

```

i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2 ia
- IS-IS inter area
* - candidate default
B 192.168.0.1/32 , [200/0] via 192.168.0.2, 01:02:33
B 192.168.0.3/32 , [200/0] via 192.168.4.1 , 01:02:33

ip vrf forwarding	
--------------------------	--

46

46.1

- ' **storm-control**
- ' **switchport protected**
- ' **switchport port-security**
- ' **switchport port-security aging**
- ' **switchport port-security mac-address**
- ' **port-security arp-check**

46.1.1 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

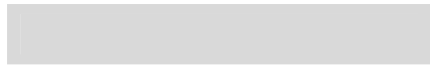
64k-2M

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 interfaces

```
Ruijie(config)# interface gigabitethernet 1/1  
Ruijie(config-if)# switchport protected
```

show interfaces	

46.1.3 switchport port-security

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	

46.1.5 switchport port-security mac-address

switchport port-security mac-address *mac-address* **ip-address**
ip-address ipv6-address maximum value

no switchport port-security mac-address *mac-address ip-address*
ip-address ipv6-address maximum

	'
mac-address <i>mac-address</i>	'
ip-address <i>ip-address</i>	' ID
ip-address <i>ipv6-address</i>	' ID*
maximum <i>value</i>	'

Ruijie(config-if)# **arp-check**

show port-security	

46.2

- ' **show storm-control**
- ' **show port-security**

46.2.1 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  
-----  
Gi1/1 Disabled Disabled Disabled
```

'	'
storm-control	'

46.2.2 show port-security

show port-security address interface *interface-id*

--	--

47 802.1X

47.1 dot1x

```
' dot1x auto-req  
' dot1x auto-req packet-num  
' dot1x auto-req req-interval  
' dot1x auto-req user-detect
```

47.1.1 dot1x auto-req

```
no dot1x auto-req  
no dot1x auto-req
```

```
show dot1x auto-req
```

```
Ruijie# configure terminal  
Ruijie(config)# dot1x auto-req  
Ruijie(config)# end  
Ruijie(config)# show dot1x auto-req  
Auto-Req: Enabled  
User-Detect : Enabled  
Packet-Num : 0  
Req-Interval: 30 Second
```



show dot1x auto-req	
---------------------	--

47.1.2 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	

47.1.3 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 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	

47.2 dot1x

- ' **dot1x timeout quiet-period**
- ' **dot1x timeout re-authperiod**
- ' **dot1x timeout server-timeout**
- ' **dot1x timeout supp-timeout**
- ' **dot1x timeout tx-period**

47.2.1 dot1x timeout quiet-period

no

dot1x timeout quiet-period *seconds*
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	

47.2.2 dot1x timeout re-authperiod

EY 1 Q ,rÃPà H d0dot1x timeout re

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	

seconds

show dot1x

Ruijie# **configure terminal**

Ruijie(config)# **dot1x timeout server-timeout 10**

Ruijie(config)# **end**

Ruijie# **show dot1x**

802.1X Status: Enabled

Authentication Mode: EAP-MD5

Authentic24enStatus: Eapol-5.7(5)]Tag-5.7(5)].44 TD()-5.8(E)-

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	

show dot1x	

47.3 dot1x

- ' **dot1x re-authentication**
- ' **dot1x reauth-max**

47.3.1 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
```

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	

47.3.2 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	

47.4 dot1x

- ' dot1x probe-timer
- ' dot1x client-probe enable

47.4.1 dot1x probe-timer

dot1x probe-timer interval *alive interval*
no dot1x probe-timer

no

interval

alive

interval

show dot1x

```
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	

47.5 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**

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	

47.5.3

<i>num</i>	

show dot1x interface	

-	

47.5.5 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	

47.5.6 dot1x default

dot1x default

show dot1x

```
Ruijie# configure terminal  
Ruijie(config)# dot1x default  
Ruijie(config)# end  
Ruijie# end
```

show dot1x	

47.5.7 dot1x dynamic-vlan enable

no

dot1x dynamic-vlan enable
no dot1x dynamic-vlan enable

show dot1x dynamic-vlan

```
Ruijie# configure terminal
Ruijie(config)# interface gigabitEthernet 4/5
Ruijie(config-if)# dot1x dynamic-vlan enable
Ruijie(config)# end
Ruijie#
```

show dot1x	

47.5.8 dot1x guest-vlan

guest vlan

no

dot1x guest-vlan *vid*

no dot1x guest-vlan

dot1x dynamic-vlan enable

show running-config

```
Ruijie# configure terminal
Ruijie(config)# interface gigabitEthernet 4/5
Ruijie(config-if)# dot1x guest-vlan 10
```

└───┘

└───┘

└───┘

show dot1x port-control interface

└───┘

```
Ruijie# configure terminal  
Ruijie(config)# interface fa 0/1  
Ruijie(config-if)# dot1x mac-auth-bypass  
Ruijie(config-if)# end  
Ruijie#write
```

show dot1x port-control interface	

└───┘

-	

47.5.11 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	

-	

```
Ruijie(config-if)# dot1x mac-auth-bypass violation
Ruijie(config-if)# end
Ruijie#write
```

```
show dot1x port-control interface
```

```
-
```

47.5.13 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

show dot1x port-control

port-control

dot1x port-control-mode port-based single-host

show dot1x

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	

dot1x stationarity enable
no dot1x stationarity enable

```
Ruijie# configure terminal  
Ruijie(config)# dot1x stationarity enable  
Ruijie(config)# end  
Ruijie#
```

47.5.18 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	

-	

47.5.19 dot1x redirect for special tcp-destination port

```
no dot1x redirect for special tcp-destination port port num ] p
```

<i>port num</i>	<i>p</i>

Ruijie(config)#**dot1x redirect for special tcp-destination port**
8443

dot1x redirect url	
dot1x redirect time-out	

dot1x redirect url	
dot1x redirect for special tcp-destination port	
dot1x redirect num for special source-ip	
show dot1x	

-	

47.5.21 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	

	dot1x redirect time-out	
	show dot1x	
	-	

47.6 dot1x

- ' **show dot1x**
- ' **show dot1x auth-address-table**
- ' **show dot1x auto-req**
- ' **show dot1x private-supPLICANT-only**
- ' **show dot1x max-req**
- ' **show dot1x port-control**
- ' **show dot1x probe-timer**
- ' **show dot1x re-authentication**
- ' **show dot1x reauth-max**
- ' **show dot1x summary**
- ' **show dot1x timeout**
- ' **show dot1x user id**

47.6.1 show dot1x

show dot1x

Ruijie# **show dot1x**

802.1X Status: Enabled

Authentication Mode: EAP-MD5

47.6.2 show dot1x auth-address-table

```
show dot1x auth-address-table address mac-addr interface
interface-id
```

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	

47.6.3 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 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	

47.6.5 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	

47.6.6 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#
```

'		'
'	Xch% Ui h\! acXY	' , \$&" %
'	Xch% aUi ! fYe	'
'	Xch% dcfh! Wtbhfc` Ui hc	'
'	Xch% fYUi h\! aUi	'
'	Xch% fY! Ui h\Ybh] W]h] cb	'
'	Xch% h] aYci h ei] Yh! dYf] cX	'
'	Xch% h] aYci h fY! Ui h\dYf] cX	'
'	Xch% h] aYci h gYfj Yf! h] aYci h	' A

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	

47.6.8 show dot1x re-authentication

show dot1x re-authentication

```
Ruijie# show dot1x re-authentication
reauth-enabled: disabled
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	

47.6.9 show dot1x reauth-max

show dot1x reauth-max

```
Ruijie# show dot1x reauth-max
reauth-max: 2 times
Ruijie#
```

Xch% U h! acXY	, \$&"%

' Xch% aU ! fYe	'
' Xch% dcf h! Vtbf c` U hc	'
' Xch% fYU h\! aU	'
' Xch% fY! U h\Ybh] W]h] cb	'
' Xch% ei] Yh! dYf] cX	h] aYci h '
' Xch% fY! U h\ dYf] cX	h] aYci h '

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	

47.6.11 show dot1x user id

show dot1x user id *id*

id

```
Ruijie# show dot1x user id 1
User name: caikov
id: 1
Type: static
Mac address is 0013.2049.8272
Vlan id is 217
Access from port Gi0/13
User ip address is 192.168.217.64
Max user number on this port is 6000
COS on this port is 5
Up-bandwidth is 1024 kbps
Down-bandwidth is 1024 kbps
Authorization vlan is dep7
Authorization seesion time is 1000000 seconds
Authorization ip address is 192.168.217.64
Start accounting
Permit proxy user
Permit dial user
IP privilige is 2
```



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	

48 AAA

48.1

- ' **aaa authentication dot1x**
- ' **aaa authentication enable**
- ' **aaa authentication login**
- ' **aaa authentication ppp**
- ' **login authentication**

48.1.1 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	

48.1.2 aaa authentication enable

aaa authentication

enable

```
aaa authentication enable default method1 method2
```

no aaa authentication enable default

default

method

aaa authentication enable

```
Ruijie(config)# aaa authentication enable default group  
radius local
```

aaa new-model	
enable	
username	

48.1.3 aaa authentication login

aaa

authentication login

```
aaa authentication login default list-name method1 method2
```

```
no aaa authentication login default list-name
```

default

local	
none	
group	

aaa authentication login

```
Ruijie(config)# aaa authentication login list-1 group  
radius local
```

aaa new-model	
username	
login authentication	

48.1.4 aaa authentication ppp

aaa authentication ppp default *list-name method1 method2*

no aaa authentication ppp default *list-name*

default

list-name

method

48.1.5 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
```

-
- ' **aaa authorization commands**
 - ' **aaa authorization config-commands**
 - ' **aaa authorization console**
 - ' **aaa authorization exec**
 - ' **aaa authorization network**
 - ' **authorization commands**
 - ' **authorization exec**

48.2.1 aaa authorization commands

aaa authorization commands

aaa authorization commands *level* **default** *list-name* *method1*
method2

no aaa authorization commands *level* **default** *list-name*

level

default

list-name

method

none	
group	

Ruijie(config)# **aaa authorization config-commands**

aaa new-model	
aaa authorization commands	

48.2.3 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	
aaa accounting	
aaa authentication	
username	

48.2.6 authorization commands

authorization commands

authorization commands *level* **default** *list-name*

no authorization commands *level*

level

default

list-name

```
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	

48.2.7 authorization exec

authorization exec

authorization exec default *list-name*

no authorization exec

default

list-name

level

default

list-name

method

none	
group	

aaa accounting exec

aaa accounting exec default *list-name* **start-stop** *method1*
method2

no aaa accounting exec default *list-name*

default

list-name

method

none	
group	

Ruijie(config)# **aaa accounting exec default start-stop**
group radius

aaa new-model	
aaa authentication	
accounting commands	

48.3.3 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	
aaa authorization network	
aaa authentication	
username	

48.3.4 aaa accounting update

aaa accounting update

aaa accounting update

no aaa accounting update

```
Ruijie(config)# aaa new-model
Ruijie(config)#
```

aaa new-model	
aaa accounting network	

48.3.5 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	

48.3.6 accounting commands

accounting commands

accounting commands *level* **default** *list-name*

no accounting commands *level*

level

default

list-name

```
Ruijie(config)# aaa accounting commands 15 cmd group  
tacacs+ none  
Ruijie(config)# line vty 0 4  
Ruijie(config-line)# accounting commands 15 cmd
```

aaa new-model	
aaa accounting commands	

48.3.7 accounting exec

accounting exec

accounting exec default *list-name*

no accounting exec

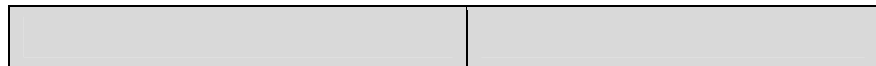
default

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
```



no aaa group server radius tacacs+ name

name

```
Ruijie(config)# aaa group server radius ss
Ruijie(config-gs-radius)# end
Ruijie# show aaa group
Group Name:  ss
Group Type:  radius
Referred:   1
Server List:
```

show aaa group	

48.4.2 ip vrf forwarding

ip vrf forwarding vrf-name

no ip vrf forwarding

vrf-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
```

Q)04EBR8g6Q.0171%



```
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
```

aaa group server	
show aaa group	

Referred: 2
Server List:
IP Address: 192.168.217.64
Authentication Port: 1812
Accounting Port: 1813
Referred: 1

aaa group server	

48.5 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**

48.5.1 aaa local authentication attempts

aaa local authentication attempts *max-attempts*

max-attempts

Ruijie#

aaa new-model

no

Ruijie#

```

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	

48.5.7

```

show aaa user lockout all user-name word

```

word

```

Ruijie# show aaa user lockout all

```

show running-config	
show aaa lockout	

49 RADIUS

49.1 RADIUS

- ' ip radiusradius source-interface
- ' radius-server attribute 31
- ' radius-server host
- ' radius-server key
- ' radius-server retransmit
- ' radius-server timeout
- ' radius-server dead-time
- ' radius attribute
- ' radius set qos cos
- ' radius vendor-specific extend

49.1.1 ip radius source-interface

```
source-interface          no          ip radius
ip radius source-interface interface
no radius source-interface
```

Interface

```
Ruijie(config)# ip radius source-interface  
fastEthernet 0/0
```

radius-server host	
ip address	

49.1.2 radius-server attribute 31

radius-server attribute 31 no

**radius-server attribute 31 mac format ietf normal unformatted
no radius-server attribute 31 mac format**

ietf:

normal:

unformatted:

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	

49.1.6 radius-server timeout

radius-server timeout

no

radius-server timeout *seconds*

no radius-server timeout

seconds

Ruijie(config)# **radius-server timeout 10**



radius-server host

```
Ruijie(config)# radius-server deadtime 10
```



Ruijie(config)# **radius attribute 16 vendor-type 211**

radius set qos cos	

49.1.9 radius set qos cos

radius set qos cos
no radius set qos cos

```
Ruijie(config)# radius set
```

49.2 RADIUS

radius-server host	
radius-server retransmit	
radius-server key	
radius-server timeout	

49.2.4 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

50 TACACS+

50.1 TACACS+

```
' aaa group server tacacs+  
' server TACACS+  
'
```

server	
ip vrf forwarding	

50.1.2 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	

50.1.3 ip vrf forwarding(TACACS+)

ip vrf forwarding *vrf-name*
no ip vrf forwarding

vrf-name

```
Ruijie(config)# aaa group server tacacs+ tacl  
Ruijie(config-gs-radius)# server 1.1.1.1  
Ruijie(config-gs-radius)# ip vrf forwarding vpn1
```

aaa group server tacacs+	
server	

50.1.4 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	

50.1.5 tacacs-server host

```
tacacs-server host ip-address port integer timeout integer 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	

50.1.6 tacas-server key

tacacs-server key 0 7 *string*

no tacacs-server key

string

0 7

Ruijie(config)#**tacacs-server key** aaa

tacacs-server host	
tacacs-server timeout	

50.1.7 tacacs-server timeout

tacacs-server timeout *seconds*

no tacacs-server timeout

seconds

```
Ruijie(config)# tacacs-server timeout 10
```

--	--

50.2.1 debug tacacs+

debug tacacs+
no debug tacacs+

50.2.2 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	

51 SSH

51.1 SSH

- ' **crypto key generate**
- ' **crypto key zeroize**
- ' **ip ssh version**
- ' **ip ssh time-out**
- ' **ip ssh authentication-retries**

51.1.1 crypto key generate

crypto key generate rsa | dsa

rsa	
dsa	

enable service ssh-server

ruijie

key zeroize no crypto key generate crypto

```
Ruijie# configure terminal  
Ruijie(config)# crypto key generate rsa
```



```
show ip ssh
```

```
Ruijie# configure terminal
Ruijie(config)# crypto key zeroize rsa
```

show ip ssh	
crypto key generate rsa dsa	

51.1.3 ip ssh version

```
ip ssh version 1 / 2
no ip ssh version
```

1	
2	

no ip ssh version

show ip ssh

```
Ruijie# configure terminal
Ruijie(config)# ip ssh version 2
```

show ip ssh	

51.1.4 ip ssh time-out

no

```
ip ssh time-out time-out 510
```

51.2 SSH

- ' **show ip ssh**
- ' **show ssh**
- ' **show crypto key mypubkey**
- ' **disconnect ssh**

51.2.1 show ip ssh

51.2.2 show ssh

show ssh

Ruijie# **show ssh**

51.2.3 show crypto key mypubkey

show crypto key mypubkey *rsa/dsa*

rsa	
dsa	

Ruijie# **show crypto key mypubkey rsa**

crypto key generate rsa dsa	

51.2.4 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>	

52 CPU

52.1

- ' **cpu-protect type** *packet-tpye* **pps** *pps_value*
- ' **cpu-protect type** *packet-tpye* **pri** *pri_value*

52.1.1 **cpu-protect type packet-type pps pps_value**

pri_num

Ruijie(config)# **cpu-protect type bpdu pri 7**
Set packet type bpdu pri 7.

cpu-protect type packet-type pps <i>pps_value</i>	

52.2

- ' **show cpu-protect mboard**
- ' **show cpu-protect slot** *slot-id*
- ' **show cpu-protect type** *packet-type*

52.2.1 show cpu-protect mboard

show cpu-protect mboard

Ruijie# **show cpu-protect mboard**
Type Pps Total Drop

```

-----
arp          500      19      0
bpdu        200      24      0
dhcp         0         0       0
gvrp         0         0       0
ipv6-mc      0         0       0
dvmrp        0         0       0
igmp         0         0       0
ospf         0         0       0
pim          0         0       0
rip          0         0       0
vrrp         0         0       0
unknow-ipmc  0         0       0
ttl1         0         0       0
...

```

show cpu-protect slot <i>slot-num</i>	

52.2.2 show cpu-protect slot

show cpu-protect slot *slot_num*

slot_num

```

Ruijie(config)# show cpu-protect slot 2
Type          Pps      Total    Drop
-----
arp           200      200     15
bpdu          200       8       0
dhcp          200       0       0

```

```

gvrp          200      0      0
ipv6-mc       200      0      0
dvmrp         200      0      0
igmp          200      0      0
ospf          200      0      0
pim           200      0      0
rip           200      0      0
vrrp          200      0      0
unknow-ipmc  200      0      0
ttl1          20       3      0

```

show cpu-protect mboard	

52.2.3 show cpu-protect type

```

show cpu-protect type arp bpdu dhcp ipv6mc igmp rip
ospf vrrp pim ttl1 unknown-ipmc dvmrp dvmrp

```

show cpu-protect type bpdu

```

Ruijie(config)# show cpu-protect type arp
Slot      Type      Pps      Total     Drop
-----
MainBoard bpdu      100      30       0
Slot-2    bpdu      100      30       0

```

show cpu-protect type <i>packet-type</i>	

53

53.1

```
' system-guard enable
' system-guard isolate-time seconds
' system-guard same-dest-ip-attack-packets number
' system-guard scan-dest-ip-attack-packets number
' system-guard detect-maxnum number
' system-guard exception-ip ip mask
' clear system-guard interface interface-id ip-address
  ip-address
```

53.1.1 system-guard enable

no

```
system-guard enable
no system-guard enable
```

```
Ruijie(config-if)# system-guard enable
```

```
Ruijie(config-if)# no system-guard enable
```

Show system-guard	

53.1.2 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 enable	

53.1.3 system-guard same-dest-ip-attack-packets number

no

system-guard same-dest-ip-attack-packets *number*

no system-guard same-dest-ip-attack-packets

--	--

number

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

```
Ruijie(config-if)# system-guard
scan-dest-ip-attack-packets 100
```

system-guard enable	

53.1.5 system-guard detect-maxnum number

no

system-guard detect-maxnum *number*

no system-guard detect-maxnum

<i>number</i>	

```
Ruijie(config)# system-guard exception-ip  
192.168.5.145/24
```

system-guard enable	

53.1.7 clear system-guard [interface interface-id [ip-address]]

```
clear system-guard interface interface-id ip-address
```

interface <i>interface-id</i>	
<i>ip-address</i>	

```
Ruijie# clear system-guard interface fastethernet 0/1
```

system-guard enable	

53.2

- ' 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
-

53.2.1 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	

53.2.2 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	

53.2.3 show system-guard detect-ip [interface interface-id]

show system-guard detect-ip interface *interface-id*

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
```

--	--

system-guard enable	
----------------------------	--

53.2.4 show system-guard exception-ip [interface interface-id]

show system-guard exception-ip interface *interface-id*

interface <i>interface-id</i>	

```
Ruijie# show system-guard exception-ip  
Exception IP Address      Exception Mask  
-----  
255.255.255.0  
192.168.4.11             255.255.255.0
```

system-guard enable	

54 DAI

54.1 VLAN DAI

ip arp inspection vlan

54.1.1 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	

54.2

55 IP Source Guard

55.1 IP Source Guard

ip source binding

55.1.1 ip source binding

no

no ip source binding *mac-address* **vlan** *vlan-id* *ip-address* **interface**
interface-id

mac-address

vlan-id

show ip source binding	

55.2 IP Source Guard

ip verify source

55.2.1 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**

Interface	Filter-type	Filter-mode	Ip-address
Mac-address	VLAN		

Interface	Filter-type	Filter-mode
Ip-address	Mac-address	VLAN

FastEthernet 0/1	ip	active
00d0.f801.0101	1	192.168.4.243

ip verify source	

ip source binding	

55.3.3 debug ip source bind

debug ip source bind

Ruijie# **debug ip source bind**

56 NFPP

56.1

- ' **cpu-protect sub-interface manage|protocol|route pps**
- ' **cpu-protect sub-interface manage|protocol|route percent**

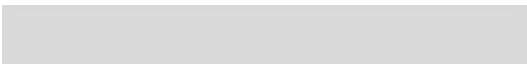
- ' **arp-guard isolate timeout**
- ' **arp-guard rate-limit**
- ' **arp-guard attack-threshold**
- ' **arp-guard scan-threshold**
- ' **clear arp-guard users**
- ' **clear arp-guard scan**

56.1.1 cpu-protect sub-interface {manage|protocol|route} pps

```
cpu-protect sub-interface manage protocol route pps  
pps_vaule
```

```
pps_vaule
```

```
Ruijie(config)# cpu-protect sub-interface manage pps  
200
```



<code>cpu-protect sub-interface manage protocol route percent</code>	
--	--

56.1.2 cpu-protect sub-interface {manage|protocol|route} percent

`cpu-protect sub-interface manage protocol route percent
percent_vaule`

percent_vaule

```
Ruijie(config)# cpu-protect sub-interface manage  
percent 60
```

<code>cpu-protect sub-interface manage pro tocol / route pps</code>	

56.1.3 arp-guard isolate timeout

`arp-guard isolate timeout seconds permanent`

seconds

permanent

```
Ruijie(config)# arp-guard isolate timeout 180  
Ruijie(config)# interface g 0/1  
Ruijie(config-if)# arp-guard isolate timeout permanent
```



!\$k

!\$k

```
Ruijie(config)# arp-guard rate-limit 2 per-src-ip  
Ruijie(config)# arp-guard rate-limit 3 per-src-mac  
Ruijie(config)# arp-guard rate-limit 50 per-port
```



Ruijie(config)# **arp-guard scan-threshold 20**

show arp-guard configuration	
clear arp-guard scan	
show arp-guard scan	

56.1.7 clear arp-guard users

clear arp-guard users *vlan vid interface interface-id ip-address mac-address*

vid

interface-id

ip-address

mac-address

Ruijie# **clear arp-guard users** *vlan 1 interface g 0/1*

arp-guard attack-threshold	

show arp-guard users

56.2.2 show arp-guard users

```
show arp-guard users statistics   vlan vid interface interface-id  
ip-address mac-address
```

statistics

vid

interface-id

ip-address

mac-address

```
Ruijie# show arp-guard users statistics
```

```
Success: 100
```

```
Fail:    1
```

```
-----
```

```
Total:  101
```

```
Ruijie# show arp-guard users
```

If column 1 shows '*', it means "hardware failed to isolate user".

VLAN	interface	Ip address	MAC address	remain-time(seconds)
1	Gi0/1	1.1.1.1	-	110
2	Gi0/1	1.1.2.1	-	61
*3	Gi0/1	-	0000.0000.1111	110
4	Gi0/1	-	0000.0000.2222	61
Total 4 users				

arp-guard attack-threshold	
clear arp-guard users	

56.2.3 show arp-guard scan

show arp-guard scan statistics *vlan vid interface interface-id mac-address*

statistics

vid

interface-id

mac-address

```
Ruijie# show arp-guard scan statistics
ARP scan table has 4 record(s).
```

```
Ruijie# show arp-guard scan
```

```
VLAN   interface      MAC address      timestamp
1      Gi0/1          0000.0000.0001  2008-01-23 16:23:10
2      Gi0/2          0000.0000.0002  2008-01-23 16:24:10
3      Gi0/3          0000.0000.0003  2008-01-23 16:25:10
4      Gi0/4          0000.0000.0004  2008-01-23 16:26:10
Total  4 record(s)
```

```
Ruijie# show arp-guard scan vlan 1 interface g 0/1
0000.0000.0001
```

```
VLAN   interface      MAC address      timestamp
1      Gi0/1          0000.0000.0001  2008-01-23 16:23:10
Total  1 record(s)
```

77bb6Af.0/AsusA(4RsT*CB)0

57

ACL

-
- ' ip access-group
 - ' mac access-group
 - ' expert access-group
 - ' ipv6 traffic-filter

57.1.1 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 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*

access-list *id* **deny permit** *ethernet-type|* **cos out inner in VID out inner in** *source source-wildcard* **host source any host source-mac-address any destination destination-wildcard** *host destination any host destination-mac-address any time-range* *time-range-name*

access-list *id* **deny permit protocol VID out inner in** *source source-wildcard* **host source any host source-mac-address any destination destination-wildcard** *host destination any host*

*destination-mac-address any precedence precedence tos tos
fragments time-range time-range-name*

Internet Control Message Protocol

access-list *id deny permit icmp VID out inner in source
source-wildcard host source any host source-mac-address any
destination destination-wildcard host destination any host
destination-mac-address any icmp-type icmp-type icmp-code
icmp-message precedence precedence tos tos fragments
time-range time-range-name*

Transmission Control Protocol

access-list *id deny permit tcp VIP out inner in source
source-wildcard host Source any host source-mac-address any
operator port destination destination-wildcard host
destination any host destination-mac-address any operator port
port precedence pr.8457 0.0000-1.4457 1 TTf4.8229 0 TD0.p.5r port Jjtos*

' **urg**
' **ack**
' **psh**
' **rst**
' **syn**
' **fin**

' **critical**
' **flash**
' **flash-override**
'

- ' **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**
' **gopher**
' **hostname**
' **ident**
' **irc**
' **klogin**
' **kshell**
' **login**
' **nntp**
' **pim-auto-rp**
' **pop2**
' **pop3**
' **smtp**
' **sunrpc**
' **syslog**
' **tacacs**
' **talk**
' **telnet**
' **time**
' **uucp**
' **whois**
' **www**

' **biff**
' **bootpc**
' **bootps**
' **discard**
' **dnsix**
' **domain**
' **echo**
' **isakmp**
' **mobile-ip**
' **nameserver**
' **netbios-dgm**
' **netbios-ns**
' **netbios-ss**
' **ntp**

```
' pim-auto-rp
' rip
' snmp
' snmptrap
' sunrpc
' syslog
' tacacs
' talk
' tftp
' time
' who
' xdmcp
```

```
' 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	

57.1.3 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	

57.1.4 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	

57.1.5 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 v6-acl  
Ruijie(config-ipv6-nacl)#
```

show access-lists	

57.1.6 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	

57.1.7 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 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 deny ethernet-type cos out inner in VID out inner in source source-wildcard host source any host source-mac-address any destination destination-wildcard host destination any host destination-mac-address any time-range time-range-name

sn deny protocol VID out inner in source source-wildcard host source any host source-mac-address any destination destination-wildcard host destination any host destination-mac-address any precedence precedence tos tos fragments time-range time-range-name

Internet Control Message Protocol

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

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)# ip access-list extended ip-ext-acl
Ruijie(config-ext-nacl)# deny tcp host 192.168.4.12 eq
100 any
Ruijie(config-ext-nacl)# show access-lists
ip access-list extended ip-ext-acl
10 deny tcp host 192.168.4.12 eq 100 any
Ruijie(config-ext-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ip access-group ip-ext-acl in
Ruijie(config-if)#
```

```
Ruijie(config)# mac access-list extended mac1
Ruijie(config-mac-nacl)# deny host 0013.0049.8272 any
aarp
Ruijie(config-mac-nacl)# show access-lists
mac access-list extended mac1
10 deny host 0013.0049.8272 any aarp
Ruijie(config-mac-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mac access-group mac1 in
```

```
Ruijie(config)# ip access-list standard 34
Ruijie(config-ext-nacl)# deny host 192.168.4.12
Ruijie(config-ext-nacl)# show access-lists
ip access-list standard 34
10 deny host 192.168.4.12
Ruijie(config-ext-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ip access-group 34 in
```

```
Ruijie(config)# ipv6 access-list extended v6-acl
Ruijie(config-ipv6-nacl)# 11 deny ipv6 host
192.168.4.12 any
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
11 deny ipv6 host 192.168.4.12 any
Ruijie(config-ipv6-nacl)# exit
```

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ipv6 traffic-filter v6-acl in
```

show access-lists	
ipv6 traffic-filter	
ip access-group	
mac access-group	
ip access-list	
mac access-list	
expert access-list	

*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*

*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

expert access-list	
ipv6 access-list	
deny	

57.1.9 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	

ip access-list	
-----------------------	--

57.1.10 remark

no

remark *text*

Text

```
Ruijie# ip access-list extended 102
```

57.1.11 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	

57.1.12 ip access-group

ip

access-group

ip access-group *id name in out*

no ip access-group *id name in out*

id

name

in

out

ip access-group

```
Ruijie(config)# interface fastEthernet 0/0
```

```
Ruijie(config-if)#ip access-group 120 in
```

access-list	
show access-lists	
show ip access-list	

57.1.13 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	

57.1.14 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	

57.1.15 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	

57.2

- ' show access-lists
- ' show ip access-group
- ' show expert access-group
- ' show mac access-group
- ' show ipv6 traffic-filter
- ' show access-group

57.2.1 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	

57.2.2 show ip access-group

```
show ip access-group interface interface
```

interface

```
Ruijie# show ip access-group interface gigabitethernet
0/1
ip access-group aaa in
Applied On interface GigabitEthernet 0/1.
```

ip access-list	

57.2.3 show expert access-group

```
show expert access-group interface interface
```

interface

```
Ruijie# show expert access-group interface
gigabitethernet 0/2
expert access-group ee in
Applied On interface GigabitEthernet 0/2.
```

<u>expert access-list</u>	

57.2.4 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	

57.2.5 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	

57.2.6 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.
```



show secu-acl	

57.3.2 security access-group

security access-group *id name*

no security access-group

id

name

Ruijie(config-if)#**security access-group** 1

show secu-acl	

57.3.3 security uplink enable

security uplink enable

no security uplink enable

Ruijie(config-if)#**security uplink enable**

show secu-acl	

58 VACL

58.1

```
Vlan access map                               map_name
      map_sn

      vlan access map
      map_sn
      map_sn      10
      map_sn      vlan access map      map_name
      Map_nam

      vlan access map
```

58.1.1 vlan access-map

```
vlan access-map map_name map_sn
no vlan access-map map_name map_sn
```

```
map_name
```

```
map_sn
```

vlan access map

```
Ruijie(config)# vlan access-map ddd 20
Ruijie(config-access-map)#
```

58.1.2 match ip/mac address

<i>ip acl</i>	<i>mac acl</i>	vlan access map
<i>ip acl</i>	<i>mac acl</i>	vlan access map

match ip address *acl_name* | *acl_id*
no match ip address *acl_name* | *acl_id*
match mac address *acl_name* | *acl_id*
no match mac address *acl_name* | *acl_id*

r

acl_name

acl_id

/

```
Ruijie(config)# vlan access-map dd
Ruijie(config-access-map)# match ip address 10 20 sp1
30 sp2
Ruijie(config-access-map)# exit
Ruijie(config)# vlan access-map dd 20
Ruijie(config-access-map)# match mac address 710 720 m1
760
Ruijie(config-access-map)# exit
Ruijie(config)#
```

58.1.3 action forward/drop/redirect

```
action forward
no action forward
```

```
action drop
no action drop
```

```
action redirect GigabitEthernet
```

58.1.4 vlan filter

```
vlan filter map_name vlan-list vlan_id  
no vlan filter map_name vlan-list vlan_id
```

map_name

vlan_id

```
Ruijie(config)# vlan filter ff vlan-list 5
```

58.2

58.2.1 show vlan access-map

```
show vlan access-map
```

```
show vlan access-map map_name
```

map_name

```
show vlan access map
```

```

Ruijie(config)# show vlan access-map
Vlan access-map aa 10
match mac address: 700, 710, m1, 720,
action: forward
Vlan access-map aa 20
match ip address: 10, 20, 30, sp1, sp2, 60, 50, 80,
action: drop
Vlan access-map dd 20
match mac address: 710, 720, m1, 760,
action: forward
Ruijie(config)#

```

show vlan access map *map_name*

```

Ruijie(config)# show vlan access-map dd
Vlan access-map dd 20
match mac address: 710, 720, m1, 760,
action: forward
Ruijie(config)#

```

58.2.2 show vlan filter

show vlan filter

Show vlan filter <i>access-map</i> <i>map_name</i>	
show vlan filter vlan <i>vlan_id</i>	

Show vlan filter access-map *aa*

```

Ruijie(config)# show vlan filter
VLAN Map aa

```

Configured on VLANs: 1, 5, 6,

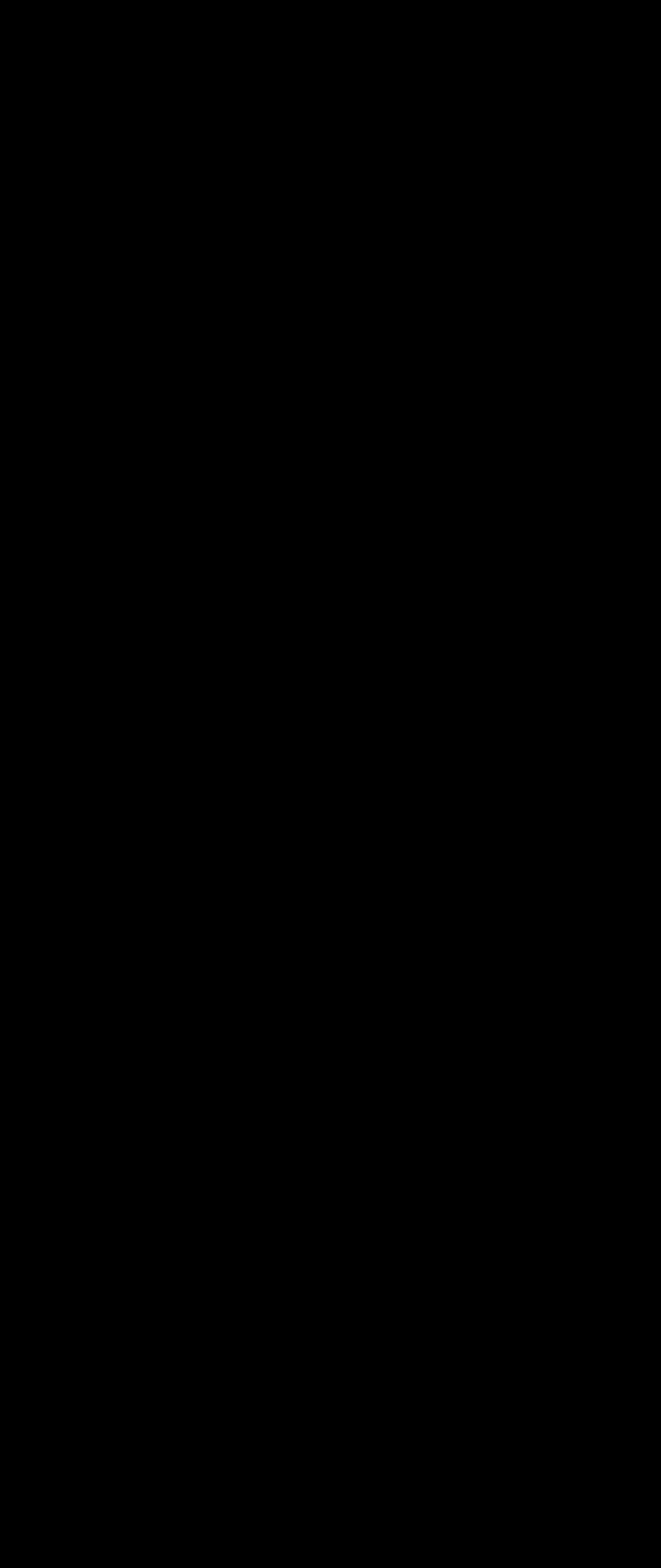
Ruijie(config)#

59

QOS

59.1

--	--	--	--	--	--	--	--	--	--



no set ip dscp

police *rate-bps burst-byte* **exceed-action drop dscp** *dscp-value*

no police

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

59.2.6 priority-queue

no priority-queue

priority-queue

no priority-queue

Ruijie(config)# **no priority-queue**

show mls qos queueing

59.2.7 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

59.2.8 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

59.2.9 mls qos map cos-dscp

mls qos map cos-dscp *dscp1...dscp8*

no mls qos map cos-dscp

dscp

no

Ruijie(config)# **mls qos map cos-dscp** 8 10 16 18 24 26 32
34

show mls qos maps

59.2.10 mls qos map dscp-cos

mls qos map dscp-cos *dscp-list* *cos*

no mls qos map dscp-cos

dscp-list

cos

no

```
Ruijie(config)# mls qos map dscp-cos 8 10 16 18 to 0
```

show mls qos maps

59.2.11 interface rate-limit

rate-limit input output *bps burst-size*

no rate-limit

input

output

bps

burst-size

no

```
Ruijie(config)# interface fastEthernet 0/1
```

```
Ruijie(config-if)# rate-limit input 1000000 4096
```

show mls qos interface

59.2.12 mls qos scheduler

mls qos scheduler sp rr wrr drr

no mls qos scheduler

sp

rr

wrr

drr

no

show mls qos queueing

59.2.14 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 qos map ip-prec -dscp 8 10 16 18 24  
26 32 34
```

show mls qos maps

wfq-queue bandwidth

wfq-queue *queue-id* bandwidth *min max*

no wfq-queue *queue-id* bandwidth

queue-id

min

max

```
Ruijie(config)# mls qos scheduler wfq
Ruijie(config)# show mls qos scheduler
```

```
Ruijie(config-if)# wfq-queue 2 bandwidth 10 10240
Ruijie(config-if)# wfq-queue 4 bandwidth 7 10240
Ruijie(config-if)# show running
```

show mls qos scheduler	

wfq-queue sp

```
wfq-queue queue-id sp
no wfq-queue queue-id sp
```

```
queue-id
sp:
```

```
Ruijie(config)# interface gigabitethernet 1/3  
Ruijie(config-if)# virtual-group 3
```

show virtual-group	

59.3

59.3.1 show class-map

```
show class-map class-name
```

class-name

```
Ruijie# show class-map
```

59.3.2 show policy-map

```
show policy-map policy-name class class-name
```

policy-name

class-name

Ruijie# **show policy-map**

59.3.3 show mls qos interface

show mls qos interface *interface-id* **policers**

interface-id

policers

Ruijie# **show mls qos interface fastEthernet 0/1**

59.3.4 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
```

59.3.5 show mls qos queueing

```
show mls qos queueing
```

```
Ruijie# show mls qos queueing
```

```
cos-to-queue map,wrr weight,drp weight
```

59.3.6 show mls qos scheduler

```
show mls qos scheduler
```

```
Ruijie# show mls qos scheduler
```

59.3.7 show mls qos maps

ip-prec-dscp

Ruijie# **show mls qos maps**

cos-dscp dscp-cos ip-prec-dscp

59.3.8 show mls qos rate-limit

show mls qos rate-limit interface *interface-id*

interface

Ruijie# **show mls qos rate-limit**

59.3.9 show virtual-group

show virtual-group *virtual-group-number* | summary

virtual-group-number

summary

60 WRED

60.1 WRED

/

60.2

- > -
 - > -
 - > -
-

> _

60.2.1 wrr-queue random-detect max-threshold

wrr-queue random-detect max-threshold *queue_id thr1 thr2 thr3*

no wrr-queue random-detect max-threshold *queue_id*

<i>queue_id</i>	
<i>thr1</i>	
<i>thr2</i>	
<i>thr3</i>	

wrr-queue random-detect min-threshold *queue_id* *thr1* [*thr2* *thr3*]

no wrr-queue random-detect min-threshold *queue_id*

<i>queue_id</i>	
<i>thr1</i>	
<i>thr2</i>	
<i>thr3</i>	

Ruijie(config-if)# **wrr-queue random-detect min-threshold** 1 68 69 70

```

-----
qid max_1 min_1 prob_1 max_2 min_2 prob_2 max_3 min_3 prob_3
-----
1 0 0 90 0 0 91 0 0 92
2 88 66 90 87 55 91 86 66 92
3 0 0 0 0 0 0 0 0 0
4 0 0 0 0 0 0 0 0 0
5 88 66 0 89 67 0 90 68 0
6 0 0 0 0 0 0 0 0 0
7 0 0 0 0 0 0 0 0 0
8 0 0 0 0 0 0 0 0 0

```

```

cos qid threshold_id

```

```

--- --- -----
0 1 1
1 2 1
2 3 1
3 4 2
4 5 1
5 6 3
6 7 2
7 8 1

```



61 VRRP

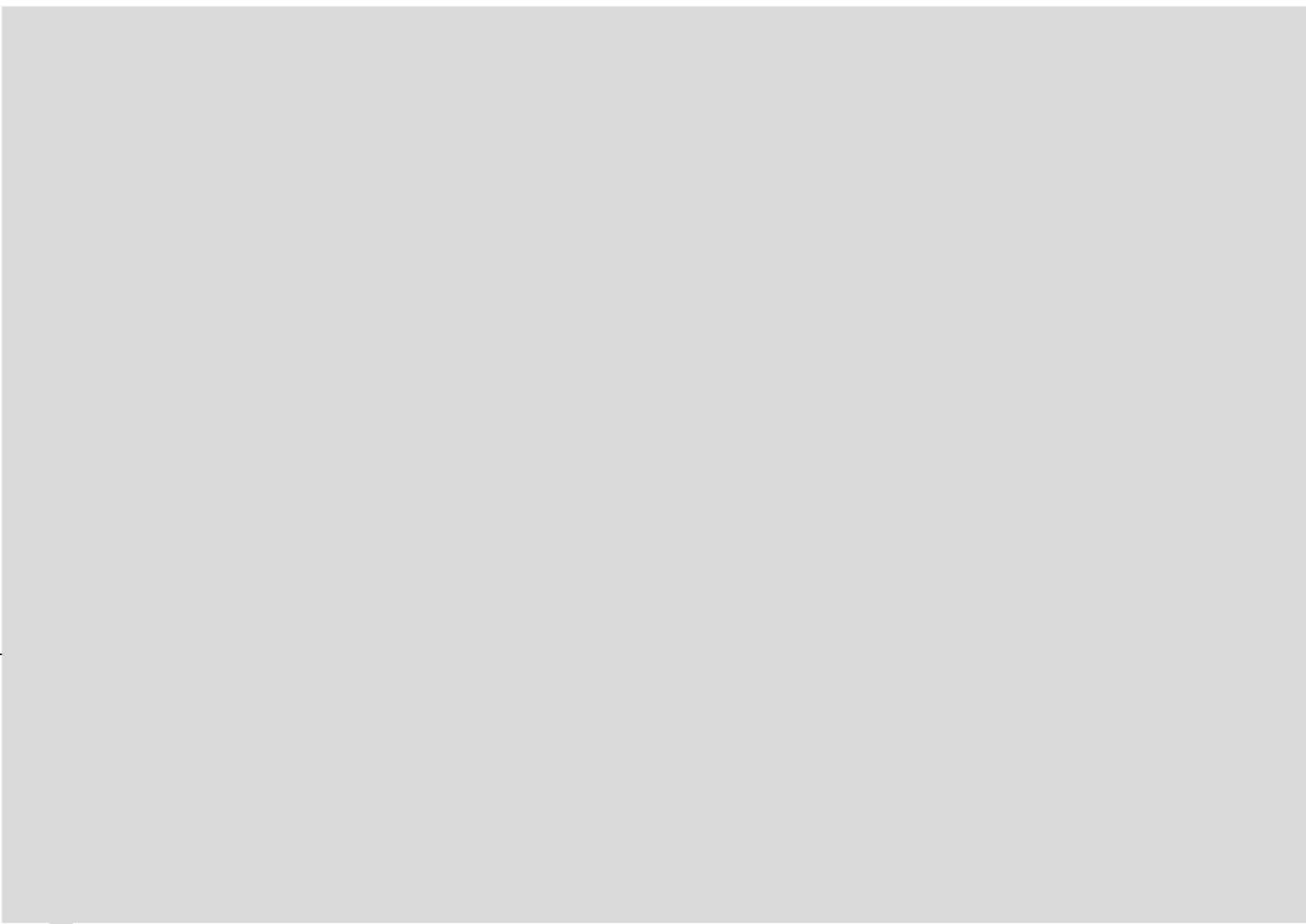
61.1

- ' vrrp authentication
- ' vrrp delay
- ' vrrp description
- ' vrrp ip
- '

vrrp 1 authentication x30dn78k



vrrp group ip
ipaddress **secondary**



61.1.4 vrrp ip

no

```
vrrp group ip ipaddress secondary  
no vrrp group ip ipaddress secondary
```

group

ipaddress

secondary

```
interface FastEthernet 0/0  
no switchport  
ip address 10.0.1.1 255.255.255.0  
ip address 10.0.2.1 255.255.255.0 secondary  
vrrp 1 ip 10.0.1.20  
vrrp 1 ip 10.0.2.20 secondary
```

show vrrp brief group	

61.1.5 vrrp preempt

vrrp group preempt delay seconds
no vrrp group preempt delay

group

delay seconds

vrrp 1 preempt delay 15
vrrp 1 priority 200

<i>ipaddress</i> vrrp group ip secondary	
<i>level</i> vrrp group priority	

61.1.6 vrrp priority

no

vrrp group priority level
no vrrp group priority



```
vrrp 1 track FastEthernet 1/1 30
```

```
Ruijie#configure terminal
```

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

```
Ruijie(config)#interface FastEthernet 0/1
```

```
Ruijie(config-if)#no switchport
```

```
Ruijie(config-if)#ip address 192.168.1.1 255.255.255.0
```

```
Ruijie(config-if)#bfd interval 50 min_rx 50 multiplier 3
```

```
Ruijie(config)#interface FastEthernet 0/2
```

```
Ruijie(config-if)#no switchport
```

```
Ruijie(config-if)#ip address 192.168.201.17
```

```
255.255.255.0
```

```
Ruijie(config-if)#vrrp 1 priority 120
```

```
Ruijie(config-if)#vrrp 1 ip 192.168.201.1
```

```
Ruijie(config-if)#vrrp 1 track bfd FastEthernet
```

```
0/1 192.168.1.3 30
```

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

-
- ' **debug vrrp events**
 - ' **debug vrrp packets**
 - ' **debug vrrp state**

61.2.1 debug vrrp

no

debug vrrp

no debug vrrp

```
Ruijie# debug vrrp
Ruijie#
VRRP: Grp 1 Advertisement priority 120, ipaddr
192.168.201.213
VRRP: Grp 1 Event - Advert higher or equal priority
%VRRP-6-STATECHANGE: FastEthernet 0/0 Grp 1 state Master
-> Backup
VRRP: Grp 1 Advertisement from 192.168.201.213 has
invalid virtual address 192.168.1.1
%VRRP-6-STATECHANGE: FastEthernet 0/0 Grp 1 state Backup
-> Master
Ruijie#
```

debug vrrp errors	
debug vrrp events	
debug vrrp state	

61.2.2 debug vrrp errors

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
```

61.2.3 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
```

61.2.4 debug vrrp packets

no

debug vrrp packets
no debug vrrp packets

```
Ruijie# debug vrrp packets  
Ruijie#  
VRRP: Grp 2 sending Advertisement checksum DD4D  
VRRP: Grp 2 sending Advertisement checksum DD4D  
VRRP: Grp 2 sending Advertisement checksum DD4D
```

```
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
```

61.3

61.3.1 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
```

```

min delay is 0 sec
Priority is 100
Master Router is 192.168.201.213 , pritority is 120
Master Advertisement interval is 3 sec
Master Down interval is 9 sec
FastEthernet 0/0 - Group 2
State is Master
Virtual IP address is 192.168.201.2 configured
Virtual MAC address is 0000.5e00.0102
Advertisement interval is 3 sec
Preemption is enabled
min delay is 0 sec
Priority is 120
Master Router is 192.168.201.217 (local), priority is
120
Master Advertisement interval is 3 sec
Master Down interval is 9 sec
Ruijie#

```

```

Ruijie# show vrrp brief
Interface      Grp Pri Time  Own Pre State  Master
addr          Group addr
FastEthernet 0/0    1   100   -    -    P    Backup
192.168.201.213 192.168.201.1
FastEthernet 0/0    2   120   -    -    P    Master
192.168.201.217 192.168.201.2
Ruijie#

```

vrrp group ip	
<i>ipaddress</i> secondary	

61.3.2 show vrrp interface

```
show vrrp interface type number brief
```

type

number

brief

62

BFD

62

```
Ruijie(config-if)# bfd interval 100 min_rx 100 multiplier 3
```

bfd all-interfaces	
clear bfd	
ip ospf bfd	
ip rip bfd	

62.1.2 bfd all-interfaces

bfd all-interfaces

no

bfd all-interfaces

no bfd all-interfaces

68

no bfd all-interfaces

ip ospf bfd disable

ip rip bfd disable

```
Ruijie(config)# router ospf 123  
Ruijie(config-router)# bfd all-interface
```

bfd	
ip ospf bfd	
ip rip bfd	

62.1.3 bfd cpp

0

Ruijie(config)# **no switchport**

Ruijie(config-if)# **bfd echo**

bfd	
ip redirects	
ip deny land	
bfd slow-timer	

```
Ruijie(config)# bfd slow-timer 14000
```

bfd echo	

62.1.6 bfd up-dampening

```
bc          ž          ID
```

```
bfd up-dampening milliseconds
```

```
no bfd up-dampening
```


```
milliseconds
```

└───

	10.3(5)	

62.1.7 ip ospf bfd

```
ip ospf bfd
  disable
ip ospf bfd disable
```

bfd	
bfd all-interfaces	

62.1.8 ip rip bfd

disable **ip rip bfd**
no

bfd	
bfd all-interfaces	

62.1.9 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>	ID 6 8 ID 6 8
gci fW]d! UXXfYgg	fl Ł 6 8 ID ž ID

6 8

r 6 8

İ p- Á— ÖRP#• W WG!0W X ÚOö ä"\$U`"• ˘ > • ÖyQN0172re .0.2 d Ô •F„¼T<?&

```

Ruijie(config-if)# ip address 172.16.0.1 255.255.255.0
Ruijie(config-if)# bfd interval 50 min_rx 50 multiplier 3
Ruijie(config-if)# ip route static bfd FastEthernet 0/1 172.16.0.2

Ruijie(config-if)# ip route 10.0.0.0 255.0.0.0 FastEthernet
0/1 172.16.0.2

```

bfd	

62.1.10 neighbor fall-over bfd

**neighbor fall-over
no**

neighbor *ip-address* fall-over bfd

no neighbor *ip-address* fall-over bfd

<i>ip-address</i>	

6 D 6 8

r	ID	6 8
----------	----	-----

```

Ruijie(config)# router bgp 44000
Ruijie(config-router)# bgp log-neighbors-changes
Ruijie(config-router)# neighbor 172.16.0.2 remote-as 45000

```

```
Ruijie(config-router)# neighbor 172.16.0.2 fall-over bfd
Ruijie(config-router)# end
```

bfd	

62.1.11 set ip next-hop verify-availability

```
set ip next-hop verify-availability next-hop-address track track-name no
```

```
set ip next-hop verify-availability next-hop-address track track-name bfd vrf vrf-name interface-type interface-number gateway
```

```
no set ip next-hop verify-availability next-hop-address track track-name bfd vrf vrf-name interface-type interface-number gateway
```

<i>j fZ j fZ! bUaY</i>	fl t JF:
<i>bYI h! \cd! UXXfYgg</i>	fl t ID
hfUW	fl t HfUW
<i>bi aVYf</i>	fl t hfUW
VZX	fl t 6 8
<i>] bhYfZUM! hrøY</i> <i>] bhYfZUM! bi aVYf</i>	fl t
<i>[UhYkUm</i>	() IP BFD IP BFD

		ID	6 8
r	JFFD		ž
		ID	

```

Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#interface FastEthernet 0/1
Ruijie(config-if)#no switchport
Ruijie(config-if)#ip address 192.168.201.11 255.255.255.0
Ruijie(config-if)#bfd interval 50 min_rx 50 multiplier 3
Ruijie(config-if)#vrrp 1 priority 120
Ruijie(config-if)#vrrp 1 ip 192.168.201.1
Ruijie(config-if)#vrrp 1 bfd 192.168.201.12

Ruijie(config-if)#end

```

bfd	

62.2

> [_____](#)

62.2.1 show bfd neighbors

6 8

```

show bfd neighbors vrf vrf-name ipv4 ip-address details ipv6
ip-address details client bgp|ospf|rip|vrrp|static-route| ipv4
ip-address details ipv6 ip-address details details

```

j fZ j fZ! blaY	
W]Ybh	
V[d	
cgdZ	
f]d	
j ffd	
ghUh] Wfci hY	
dVf	
]dj (]d! UXXYgg	
]dj *]d! UXXYgg	
XYhU]`g	

show bfd neighbors

Ruijie# show bfd neighbors

OurAddr Int	NeighAddr	LD/RD	RH	Holdown(mult)	State
172.16.11.1 Ge2/1	172.16.11.2	1/2	1	532 (3)	Up

show bfd neighbors details

Ruijie# show bfd neighbors details

OurAddr Int	NeighAddr	LD/RD	RH	Holdown(mult)	State
172.16.11.1 Ge2/1	172.16.11.2	1/2	1	532 (3)	Up

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

Min Echo interval: 0





-

63

RERP

63.1

- ' rerp enable
- ' rerp hello-interval
- ' rerp fail-interval
- ' rerp region

- ' ring
- ' edge-ring
- ' major-ring

63.1.1 rerp enable

rerp enable
no rerp enable

disable

```
Ruijie(config)# rerp enable
```

Ruijie(config)# **rerp fail-interval 6**

rerp hello- interval	

63.1.4 rerp region

rerp region *num*

no rerp region *num*

num

Ruijie# **rerp region 1**

--	--

edge-ring *num* **role** **primary-edge|secondary-edge** **ctrl-vlan** *vid*
shared-port **interface** *interface-id* **sub-port** **interface**
interface-id
no ring *num*

num

primary-edge|secondary-edge

vid

interface-id

```
Ruijie(config)# rerp region 1  
Ruijie(config-rerp)# edge-ring 2 role primary-edge  
ctrl-vlan 200 shared-port interface GigabitEthernet 0/1  
sub-port interface GigabitEthernet 0/3
```

rerp region	
ring	

63.1.7 major-ring

major-ring *num* **edge-ring-vlan** *vid*

num

```
Ruijie# show rerp
rerp state : enable
rerp admin hello interval : 1(*1s)
rerp admin fail interval : 3(*1s)
rerp edge interval : 1(*300 ms)
rerp local bridge : 001a.a902.fe0b
-----
region 1
ring : 1
rerp oper hello interval : 1
rerp oper fail interval : 3
ring master : 001a.a902.fe0b
ctrl-vlan : 100
edge-vlan :
role : master
primary-port : Gi 0/4(forwarding)
secondary-port : Gi 0/21(down)
```

63.2.2 show rerp statistics

show rerp statistics region *num* ring *ring_id*

```
Ruijie# sh rerp statistics region 1 ring 1
The statistics for region 1 ring 1 GigabitEthernet 0/4
TX hello packets      23, RX hello packets      0
TX edge-hello packets 0, RX edge-hello packets 0
TX flush packets      0, RX flush packets      0
TX down packets       0, RX down packets       0
TX up packets         0, RX up packets         0
TX major fail packets 0, RX major fail packets 0
TX major resume packets 0, RX major resume packets 0
TX sub complete packets 0, RX sub complete packets 0

The statistics for region 1 ring 1 GigabitEthernet 0/5
TX hello packets      23, RX hello packets      0
TX edge-hello packets 0, RX edge-hello packets 0
TX flush packets      0, RX flush packets      0
```

TX down packets	0,	RX down packets	0
TX up packets	0,	RX up packets	0
TX major fail packets	0,	RX major fail packets	0
TX major resume packets	0,	RX major resume packets	0
TX sub complete packets	0,	RX sub complete packets	0

63.2.3 clear rerp statistics

clear rerp statistics

63.2.4 debug rerp

debug rerp packet event

undebug rerp packet event

packet

event

show interface switchport backup	

64.1.2 switchport backup interface *interface-id* preemption

switchport backup interface *interface-id* preemption mode forced bandwidth off
no switchport backup interface *interface-id* preemption mode forced bandwidth off
switchport backup interface *interface-id* preemption delay *delay-time*
no switchport backup interface *interface-id* preemption delay

interface-id

delay-time

```
Ruijie(config)# interface fa 0/1  
Ruijie(config-if)# switchport backup interface fa 0/2  
preemption mode bandwidth  
Ruijie(config-if)# switchport backup interface fa 0/2  
preemption delay 40
```

show interface switchport backup	

64.1.3 mac-address-table move update receive

mac-address-table move update receive
no mac-address-table move update receive

disable

Ruijie(config)# mac-address-table move update receive

mac-address-table move update transit	

64.1.4 mac-address-table move update transit

mac-address-table move update transit
no mac-address-table move update transit

disable

Ruijie(config)# **mac-address-table move update transit**

mac-address-table move update transit	

64.1.5 mac-address-table update group

mac-address-table update group *group-num*

no mac-address-table update group

group-num :

Ruijie(config-if)# **mac-address-table update group 2**

show mac-address-table update group detail	

64.2

- ± **show interfaces *interface-id* switchport backup detail**
- ± **show mac-address-table update group detail**

64.2.1 show mac-address-table update group [detail]

detail :

```
Ruijie# show mac-address-table update group detail
Mac-address-table Update Group:1
Received mac-address-table update message count:0
Group member  Receive Count    Last Receive Switch-ID
Receive Time
-----
Gi0/1          0                0000.0000.0000
Gi0/2          0                0000.0000.0000
```

64.2.2 show interfaces [*interface-id*] switchport backup [detail]

interface-id :

detail :

```
Ruijie # show interfaces switchport backup detail
Switch Backup Interface Pairs:
Active Interface      Backup Interface      State
-----
Gi0/23                Gi0/24                Active
Up/Backup Standby
Interface Pair : Gi0/23, Gi0/24
Preemption Mode : Off
Preemption Delay : 35 seconds
Bandwidth : Gi0/23(1000 Mbits), Gi0/24(1000 Mbits)
```

65 RLDP

65.1

└─┘

>

>

65.1.2 rldp detect-interval

rldp detect-interval *interval*

no rldp detect-interval

<i>interval</i>	

└─┘

└─┘

└─┘

×

└─┘

Ruijie(config)# **rldp detect-interval 5**

rldp detect-max	

└─┘

65.1.3 rldp detect-max

┌
└
┌
└
┌
└
┌
└

```
Ruijie(config)# rldp enable
```

rldp port	

┌
└
┌
└

65.1.5 rldp loop-detect enable

rldp loop-detect enable
no rldp loop-detect enable

┌
└
┌
└
┌
└


```
Ruijie(config)# rldp loop-detect enable
```

	rldp port	

■ |

	rldp enable	
--	--------------------	--

65.1.7 rldp reset

rldp shutdown disable

rldp reset

Ruijie# **rldp reset**

	rldp enable	

65.2

> .

> .

L

L

L

|



66 DLDP

66.1

- > _____
- > _____
- > _____

66.1.1 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
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
```


66.2

Ruijie#show dldp

Interface	Type	Ip	Next-hop	Interval	Retry	Resume	State
V12	Passive	192.168.6.3	192.168.2.2	10	5	3	Up
V13	Passive	192.168.7.3		10	5	3	Up
V14	Passive	192.168.3.3	192.168.4.2	10	5	3	Up

Ruijie#show dldp interface vlan2

Interface	Type	Ip	Next-hop	Interval	Retry	Resume	State
V12	Passive	192.168.6.3	192.168.2.2	10	5	3	Up

Ruijie#show dldp statistic

Interface	Type	Ip	record-time	Up-count	Down-count
V12	Passive	192.168.6.3	2h34m5s	10	9
V14	Passive	192.168.3.3	1d2h3m52s	10	9

4 vlan 2

Ruijie#show dldp statistic interface vlan 2

Interface	Type	Ip	record-time	Up-count	Down-count
V12	Passive	192.168.6.3	2h34m5s	10	9

66.3

66.3.1 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

67 TPP

67.1

67.1.1 topology guard

no topology guard

cpu topology-limit

```
Ruijie(config)# topology guard  
Ruijie(config)# no topology guard
```

tp-guard port enable

cpu topology-limit

67.1.2 tp-guard port enable

no tp-guard port enable

68

68.1

- ' **redundancy**

- ' **auto-sync**
- ' **auto-sync time-period**
- ' **switchover timeout**

- ' **redundancy reload**
- ' **redundancy forceswitch**

68.1.1 redundancy

redundancy

redundancy

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

auto-sync standard | running-config | startup-config
no auto-sync standard | running-config startup-config

standard

running-config

startup-config

auto-sync standard

```
Ruijie(config)# redundancy  
Ruijie(config-rdnd)# auto-sync startup-config  
Ruijie(config-rdnd)# exit  
Ruijie(config)#
```

```
Ruijie(config)# redundancy  
Ruijie(config-rdnd)# no auto-sync startup-config  
Ruijie(config-rdnd)# exit  
Ruijie(config)#
```

68.1.3 auto-sync time-period

auto-sync time-period *value*

no auto-sync time-period

value

```
Ruijie(config)# redundancy
Ruijie(config-rdnd)# auto-sync time-period 60
Redundancy auto-sync time-period: enabled (60 seconds).
Ruijie(config-rdnd)# exit
Ruijie(config)#
```

```
Ruijie(config)# redundancy
Ruijie(config-rdnd)# no auto-sync time-period
Redundancy auto-sync time-period: disabled.
Ruijie(config-rdnd)# exit
Ruijie(config)#
```

68.1.4 switchover timeout

switchover timeout

no

switchover timeout *timeout-period*

no switchover timeout

timeout-period

```
Ruijie# config terminal
Ruijie(config)# redundancy
Ruijie(config-red)# switchover timeout 4000
Ruijie(config-red)# exit
Ruijie(config)#
```

68.1.5 redundancy reload

redundancy reload

redundancy reload peer shelf

peer

shelf

```
Ruijie# redundancy reload peer
Reload peer? [confirm] y
Preparing to reload peer
```

reload	

68.1.6 redundancy forceswitch

redundancy forceswitch

```
Ruijie# redundancy forceswitch  
Proceed with switchover to standby PRE? [confirm] y
```

reload	

68.2

```
' show redundancy state | auto-sync | switchover
```

68.2.1 show redundancy state

states

```
Ruijie> enable  
Ruijie# configure terminal  
Enter configuration commands, one per line. End with  
CNTL/Z.  
Ruijie# show redundancy states  
Redundancy stats:  
my state = 19 -Active
```

```
peer state = 37 -Standby Hot
```

```
...
```

68.2.2 show redundancy auto-sync

```
Ruijie> enable
Ruijie# show redundancy auto-sync
Redundancy auto-sync mode: auto-sync standard.
...
```

68.2.3 show redundancy switchover

```
Ruijie> enable
Ruijie# show redundancy switchover
redundancy switch timeout is : 4000 ms.
...
```

69

69.1

- ' **cd**
- ' **cp**
- ' **ls**
- ' **makefs**
- ' **mkdir**
- ' **mv**
- ' **pwd**
- ' **rm**
- ' **rmdir**

69.1.1 cd

cd *DIRECTORY*

!,!R•

ls	

69.1.2 cp

cp dest *DESTINE_FILE* *DIRECTORY* **sour** *SOURCE_FILE*

cp sour *SOURCE_FILE* **dest** *DESTINE_FILE* *DIRECTORY*

DESTINE_FILE

DIRECTORY

SOURCE_FILE

```
ruijie# cp
```

```
Ruijie# cp sour log.txt dest ../log_bak.txt
```

69.1.3 ls

ls *PATHNAME*

PATHNAME

Ruijie# **ls**

Ruijie# **ls tmp**

69.1.4 makefs

makefs dev *DEVNAME* fs *FSNAME*

makefs fs *FSNAME* dev *DEVNAME*

DEVNAME

FSNAME

type file

Ruijie# **pwd**

69.1.8 rm

rm *FILE*

FILE

rm

Ruijie# **rmdir** *tmp*

Ruijie# **ls**

70

70.1 CPU-LOG

- ' show cpu
- ' cpu-log

70.1.1 show cpu

show cpu

show cpu

show cpu

```
Ruijie# show cpu
=====
      CPU Using Rate Information
CPU utilization in five seconds: 25%
CPU utilization in one minute  : 20%
CPU utilization in five minutes: 10%
NO   5Sec   1Min   5Min   Process
0    0%    0%    0%    LISR INT
1    7%    2%    1%    HISR INT
2    0%    0%    0%    ktimer
3    0%    0%    0%    atimer
```

4	0%	0%	0%	printk_task
5	0%	0%	0%	waitqueue_process
6	0%	0%	0%	tasklet_task
7	0%	0%	0%	kevents
8	0%	0%	0%	snmpd
9	0%	0%	0%	snmp_trapd
10	0%	0%	0%	mtdblock
11	0%	0%	0%	gc_task
12	0%	0%	0%	Context
13	0%	0%	0%	kswapd
14	0%	0%	0%	bdflush
15	0%	0%	0%	kupdate
16	0%	3%	1%	ll_mgc_task

50	0%	0%	0%	ospf6d
51	0%	0%	0%	bgpd
52	0%	0%	0%	pimd
53	0%	0%	0%	pim6d
54	0%	0%	0%	pdmd
55	0%	0%	0%	dvmrpd
56	0%	0%	0%	vty_connect
57	0%	0%	0%	aaa_task
58	0%	0%	0%	Tlogtrap
59	0%	0%	0%	dhcp6c
60	0%	0%	0%	sntp_rcv_task
61	0%	0%	0%	ntp_task
62	0%	0%	0%	sla_deamon
63	0%	3%	1%	track_daemon
64	0%	0%	0%	pbr_guard
65	0%	0%	0%	vrrpd
66	0%	0%	0%	psnpd
67	0%	0%	0%	igsnpd
68	0%	0%	0%	coa_rcv
69	0%	0%	0%	co_oper
70	0%	0%	0%	co_mac
71	0%	0%	0%	radius_task
72	0%	0%	0%	tac+_acct_task
73	0%	0%	0%	tac+_task
74	0%	0%	0%	dhcpd_task
75	0%	0%	0%	dhcps_task
76	0%	0%	0%	dhcpping_task
77	0%	0%	0%	dhcpc_task
78	0%	0%	0%	uart_debug_file_task
79	0%	0%	0%	ssp_init_task
80	0%	0%	0%	rl_listen
81	0%	0%	0%	ikl_msg_operate_thread
82	0%	0%	0%	bcmDPC
83	0%	0%	0%	bcmL2X.0
84	3%	3%	3%	bcmL2X.0
85	0%	0%	0%	bcmCNTR.0
86	0%	0%	0%	bcmTX
87	0%	0%	0%	bcmXGS3AsyncTX
88	0%	2%	1%	bcmLINK.0
89	0%	0%	0%	bcmRX
90	0%	0%	0%	mngpkt_rcv_thread
91	0%	0%	0%	mngpkt_recycle_thread
92	0%	0%	0%	stack_task
93	0%	0%	0%	stack_disc_task
94	0%	0%	0%	redun_sync_task
95	0%	0%	0%	conf_dispatch_task

96	0%	0%	0%	devprob_task
97	0%	0%	0%	rdp_snd_thread
98	0%	0%	0%	rdp_rcv_thread
99	0%	0%	0%	rdp_slot_change_thread
100	4%	2%	1%	datapkt_rcv_thread
101	0%	0%	0%	keepalive_link_notify
102	0%	0%	0%	rerp_msg_rcv_thread
103	0%	0%	0%	ip_scan_guard_task
104	0%	0%	0%	ssp_ipmc_hit_task
105	0%	0%	0%	ssp_ipmc_trap_task
106	0%	0%	0%	hw_err_snd_task
107	0%	0%	0%	rerp_packet_send_task
108	0%	0%	0%	idle_vlan_proc_thread
109	0%	0%	0%	cmic_pause_detect
110	1%	1%	1%	stat_get_and_send
111	0%	1%	0%	rl_con
112	75%	80%	90%	idle

,
,
,
,

70.1.2 cpu-log

cpu-log

cpu-log *log-limit low_num high_num*

log-limit

low_num

high_num

```
ruijie(config)# cpu-log log-limit 70 80
```

```
Oct 20 15:47:01 %SYSCHECK-5-CPU_USING_RATE: CPU  
utilization in one minute : 95% U5CPU
```

```
Oct[01 %SYSCHECK-5-CPU_USING_RATE: CPU
```

show memory

Ruijie#**show memory**

System Memory Statistic:

Free pages: 1079

watermarks : min 379, lower 758, low 1137, high 1516

System Total Memory : 128MB, Current Free Memory :
5283KB

Used Rate : 96%

	memory-lack exit-policy
	OVERFLOW

memory-lack exit-policy bgp ospf

show memory protocols

--	--

/

no

threshold set {cpu | memory | temperature} [M1 | M2 | slot *n* | member *n*]
warning_value critical_value

no threshold set {cpu | memory | temperature}

cpu memory temperature	cpu memory temperature
M1 M2 slot <i>n</i>	<i>n</i>
member <i>n</i>	<i>n</i>
<i>warning_value</i>	cpu memory temperature
<i>critical_value</i>	memory cpu temperature
no	

Ruijie(config)# **threshold set memory M1 70 90**

Ruijie(config)# **threshold set cpu member 2 70 90**

show threshold	

70.3.2

> [_____](#)

show threshold

show threshold {cpu | memory | temperature} [M1 | M2 | slot *n* | member *n*]

cpu memory temperature	cpu memory temperature
M1 M2 slot <i>n</i>	<i>n</i>
member <i>n</i>	<i>n</i>

71

71.1

71.1.1 logging on

logging on

no logging on

Ruijie(config)# no logging on



logging monitor	
logging trap	

71.1.2 terminal monitor

terminal monitor

terminal no monitor

/

```
Ruijie# terminal monitor
Ruijie#
```

71.1.3 logging buffered

logging buffered *buffer-size level*

no logging buffered

buffer-size

level

show logging

1



```
Ruijie(config)# logging buffered 10000 6
```

logging on	
show logging	
clear logging	

71.1.4 logging server

Syslog Sever

Syslog server

Syslog Server

```
logging server ip-address vrf vrf-name ipv6 ipv6-address
```

```
no logging server ip-address vrf vrf-name ipv6 ipv6-address
```

ip-address

vrf vrf-name

ipv6 ipv6-address

```
Ruijie(config)# logging server 202.101.11.1
```

```
Ruijie(config)# logging server ipv6 AAAA:BBBB::FFFF
```

logging on	
show logging	
logging trap	

71.1.5 logging file flash

logging file flash:*filename max-file-size level*

no logging file

filename

max-file-size



show logging

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

logging on	
show logging	

71.1.7 logging monitor

logging monitor *level*

no logging monitor

level

terminal

monitor

logging monitor

Logging monitor

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

logging on	
show logging	

71.1.8 logging trap

logging trap *level*

no logging trap

level

logging on	
logging	
show logging	

71.1.9 logging source interface

**Numerica
I
Code**

Facility

Ruijie(config)# **logging count**

show logging count	
show logging	

71.1.13 logging rate-limit

logging rate-limit *number all number console number all number except severity*

no logging rate-limit

number

all

console

except

severity

```
Ruijie(config)#logging rate-limit all 10 except  
warnings
```



Ruijie#configure terminal ----

service timestamps *message-type uptime datetime msec year*

no service timestamps *message-type*

default service timestamps *message-type*

message-type

logging on	
service sequence-numbers	

71.1.17 service sysname

service sysname

no service sysname

71.1.18 more flash

more flash:filename

Filename

```
Ruijie# more flash://f2/log.txt  
look up file in the extended flash://f2/log.txt  
00004 2004-11-17 4:1:32 Ruijie: %5:Reload requested by  
Administrator. Reload Reason :Reload command
```



logging file flash:

Ruijie# **clear logging**

logging on	
show logging	
logging buffered	

71.2

71.2.1 show logging

show logging

show logging

```
Ruijie# show logging
Syslog logging: enabled
Console logging: level debugging, 4 messages logged
Monitor logging: level informational, 0 messages logged
Buffer logging: level debugging, 6 messages logged
Timestamp debug messages: datetime
Timestamp log messages: disabled
Sequence log messages: enable
Trap logging: level debugging, 2 message lines logged,0
reserved,0 fail
logging to 202.101.11.22
logging to 192.168.200.112
Log Buffer (Total 4096 Bytes) : have written 680
```

00002 2004-11-17 10:20:59 Ruijie: %7:%LINE PROTOCOL
CHANGE: Interface FastEthernet 0/0, changed state to UP
00003 2004-11-17 10:57:18 Ruijie: %7:%LINK CHANGED:
Interface FastEthernet 0/1, changed state to
administratively down
00004 2004-11-17 10:57:21 Ruijie: %7:%LINK CHANGED:
Interface FastEthernet 0/1, changed state to down
00005 2004-11-17 10:57:41 Ruijie: %7:%LINK CHANGED:
Interface FastEthernet 0/1, changed state to
administratively down
00006 2004-11-17 10:57:43 Ruijie: %7:%LINK CHANGED:
Interface FastEthernet 0/1, changed state to down

enabled

disabled

logging count	
show logging	
clear logging	

71.2.3 show logging reverse

00003 2004-11-17 10:57:18 Ruijie: %7:%LINK CHANGED:
Interface FastEthernet 0/1, changed state to
administratively down
00002 2004-11-17 10:20:59 Ruijie: %7:%LINE PROTOCOL
CHANGE: Interface FastEthernet 0/0, changed state to UP
00001 2004-11-17 10:20:59 Ruijie: %7:%LINK CHANGED:
Interface FastEthernet 0/0, changed state to up

logging on	
clear logging	
show logging	

72

72.1

- ' **install** *slot-num moduletype*
- ' **no install** *slot-num*
- ' **remove configure module** *slot-num*
- ' **show version module detail**
- ' **show version slots**
- ' **reset module** *slot-num*

72.1.1 install slot-num moduletype

install *slot-num moduletype*

slot-num

moduletype

```
Slot      : 2
User Status : installed
Software Status: none
Online Module :
Type      :
Ports     : 0
Version   :
Configured Module :
Type      : M8606-24SFP/12GT
Ports     : 24
Version   :
Ruijie#
```

no install slot-num	
show version module detail	
show version slots	

72.1.2 no install slot-num

no install *slot-num*

lot-num

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with
CNTL/Z.
Ruijie(config)# no install 2
2006-04-22 09:26:00 @5-CONFIG:Configured from outband
Ruijie(config)# end
```

```
Ruijie# show version module detail 2
Device : 1
Slot : 2
User Status : none
Software Status: none
Online Module :
Type :
Ports : 0
Version :
Configured Module :
Type :
Ports :
Version :
Ruijie#
```

install slot-num moduletype	
show version slots	

72.1.3 remove configuration module slot-num

remove configuration module *slot-num*

slot-num

```
Ruijie(config)# remove configure module 4
```

72.1.4 reset module slot-num

slot-num

Ruijie# **reset module 4**

72.2

72.2.1 show version module detail [module-num]

show version module detail *module-num*

module-num

```
Ruijie# show version module detail 2
Device   : 1
Slot     : 2
User Status : none
Software Status: none
Online Module :
Type     :
Ports    : 0
Version  :
Configured Module :
Type     :
Ports    :
Version  :
Ruijie#
```

show version slots	

72.2.2 show version slots [slot-num]

show version slots *slot-num*

num

Ruijie# **show version slots**

Dev	Slot	Configured	Module	Online	Module	User	Status
Software	Status						

1	1	none	none				
1	2	M8606-24SFP/12GT	M8606-24SFP/12GT	installed		none	
1	3	M8606-2XFP	M8606-2XFP	uninstalled		cannot	startup
1	4	M8606-24GT/12SFP	M8606-24GT/12SFP	installed		ok	
1	M1	M8606-CM	M8606-CM			master	
1	M2					none	



73

73.1

- ' **lcd trap-number** *num*
- ' **memory-rate rising-threshold** *num*

73.1.1 lcd trap-number num

lcd trap-number *num*
no lcd trap-number

show running-config **memory-rate**
rising-threshold 80

Ruijie(config)# **memory-rate rising-threshold 60**

74 USB

74.1

show usb

usb remove

74.1.1 show usb

show usb

```
Ruijie# sh usb
Device: USB Mass Storage Device :
ID: 778
Lun 0:
ID: 0
Disk Partitions:
1: /dev/uba/disc0/part1 --> /mnt/uba
size : 131072000B(125MB)
```

¥ K€

75 POE

- ' PoE enable
- ' PoE-power lower lower
- ' PoE-power upper upper
- ' PoE disconnect-mode mode

75.1

75.1.1 poe enable

no

- poe enable**
- no poe enable**

```
Ruijie(config-if)# poe enable  
Ruijie(config-if)# no poe enable
```

75.1.2 poe-power lower lower

no

- poe-power lower lower**
- no poe-power lower**

```
Ruijie# configure  
Ruijie(config)# poe-power lower 46  
Ruijie(config)# end  
Ruijie#
```

75.1.3 poe-power upper upper

no

```
poe-power upper upper  
no poe-power upper
```

```
Ruijie# configure  
Ruijie(config)# poe-power upper 56  
Ruijie(config)# end
```

POE

```
Ruijie# show poe powersupply
PSE Total Power :1200.0 W
PSE Total Power Consumption : 0 W
PSE Available Power : 1200.0 W
PSE Peak Value : 0 W
PSE Min Allow Voltage : 45 V
PSE Max Allow Voltage : 57 V
PSE Disconnect Sense Mode : ac
```