



RG-S5750

RGOS 10.3(5b1)

'
'
'

1.

Courier New

2.

3.

r

/

/

1 CLI

1.1 alias

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

mode

al-comTc0.0024 Tw(ho a)Tj/TT14 1 Tf-20.0057 -1.44 TD-0.0u-5. Tf-20.0057 -64 TD-0.0002 T

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

**command-alias=original-command*

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

show version

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

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

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

ip address

show aliases

Ruijie# **configure terminal**
Ruijie(config)# **alias config** def-route ip route 0.0.0.0
0.0.0.0 192.168.1.1
Ruijie(config)# **def-route?**
*def-route="ip route 0.0.0.0 0.0.0.0 192.168.1.1"

```
Ruijie(config)# def-route?
% Unrecognized command.
Ruijie(config)# end
Ruijie# show aliases config
globe configure mode alias:
def-route                ip route 0.0.0.0 0.0.0.0
192.168.1.1
```

show aliases	

1.2 privilege

privilege **no**

privilege *mode* **all** **level** *level* / **reset**

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

reload

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

reload

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

all

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

reload

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

enable secret	

1.3 show aliases

show aliases

show aliases mode

```
Ruijie# show aliases exec
exec mode alias:
h          help
p          ping
s          show
u          undebug
un        undebug
```

alias	

/

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

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

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

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

no username *name*

name

password

0|7

encrypted-password

privilege-level

r

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

login local	

2.1.11 lock

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

no lockable

lock

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

lock	

2.1.13 telnet

telnet

telnet *host port keyword*

Host

Port

Keyword

--	--

/source-interface	
/vrf	

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

Show session	
exit	

2.1.14 ip telnet source-interface

ip telnet source-interface

ip telnet source-interface *interface-name*

interface-name

source-interface

no ip telnet

ip telnet source-interface *Loopback 1*



- ' **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*

hh:mm:ss

day

month

year

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

show clock	

2.2.2 clock update-calendar

```
update-calendar clock
clock update-calendar
```

```
Ruijie# clock update-calendar
```

clock read-calendar	

2.2.3 exec-timeout

```
no exec-timeout exec-timeout
```

exec-timeout *minutes seconds*

no exec-timeout

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

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

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

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

2.2.10 show reload

```
reload show  
show reload
```

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

2.2.11 prompt

prompt

no prompt

prompt *string*

string

EXEC

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

2.2.12 banner motd

banner motd

no banner motd

banner motd *c message c*

c

message

```
Ruijie(config)
Ruijie(config)# banner motd $ hello,world $
```

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

2.2.16 write

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>	

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

3.1.2 line vty

no

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

show running

r

default transport input no transport inp
ut transpo
rt input none

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

show running	

3.1.4 access-class

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

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

access-class
show running

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

show running	

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

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

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>	

```
Ruijie# ping 192.168.5.1
Sending 5, 100-byte ICMP Echoes to 192.168.5.1, timeout
is 2 seconds:
 < press Ctrl+C to break >
!!!!
Success rate is 100 percent (5/5), round-trip
min/avg/max = 1/2/10 ms
```

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

5.1.2 traceroute

```
traceroute vrf vrf-name ip ip-address ip-address probe number
source source-address timeout seconds ttl
```

<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

```

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
```

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

show interfaces

no

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**

shutdown
no shutdown

show interfaces

```
Ruijie(config)# interface aggregateport 1  
Ruijie(config-if)# shutdown
```

```
Ruijie(config)# interface aggregateport 1  
Ruijie(config-if)# no shutdown
```

clear interface	
show interfaces	

/

no shutdown

6.1.7 speed

no

10
100
1000
10G

auto

show interfaces

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

show interfaces	

6.1.8 duplex

no

duplex auto full half

no duplex

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	

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

6.1.12 clear counters

```
clear counters interface-id
```

```
interface-id        d
```

clear interface *interface-id*

interface-id

shutdown no shutdown

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



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>	

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

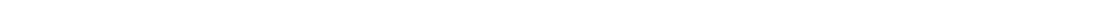
7

†

no aggregateport load-balance



dst-mac



8 LACP

8.1

8.1.1 lacp port-priority

lacp port-priority *port-priority*

no lacp port-priority

	<i>port-priority</i>	

8.1.2 port-group mode

port-group *key* mode active passive

no port-group

<i>Key</i>	
active	
passive	

|

|

|

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

lacp port-priority	

|

8.1.3 lacp port-priority

lacp port-priority *port-priority*

no lacp port-priority

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

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

8.2

> .

8.2.1 show lacp summary

show lacp summary

```
Ruijie# show LACP summary
```

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

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

Aggregate port 3:

vlan-idn
vlan-id

Ruijie(config)#**n**vlan 1n
Ruijie(config-vlan)#n

show vlan	

vlan-name

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



Native VLAN

VLAN 0

show vlan id *vlan-id*

<i>vlan-id</i>	

end

Ctrl+C

exit

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

name	
switchport access	

10 Super-vlan

10.1

10.1.1 supervlan

supervlan

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*

	3pervlan
--	-----------------

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-range
```

show supervlan	
----------------	--

10.1.4 proxy-arp

proxy-arp
no proxy-arp

end Ctrl+C
exit

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

show supervlan	

10.2

10.2.1 show supervlan

show supervlan
show supervlan id *vlan-id*

<i>vlan-id</i>	

Ruijie# **show supervlan**

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

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

11 Protocol VLAN

11.1

- ' **protocol-vlan 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

addr

id

```
Ruijie(config)# protocol-vlan ipv4 192.168.100.3 mask  
255. 255.255.0 vlan 100
```

```
show protocol-vlan ipv4
```

```
no protocol-vlan ipv4 addr mask addr
```

```
no protocol-vlan ipv4
```

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

type

num

type

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

show protocol-vlan profile

show protocol-vlan profile *num*

no protocol-vlan profile

no protocol-vlan profile *num*

11.1.3 protocol-vlan profile num vlan id

num

id

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

show protocol-vlan profile

show protocol-vlan profile *num*

no protocol-vlan profile

no protocol-vlan profile *num*

11.2

show protocol-vlan

11.2.1 show protocol-vlan

show vlan protocol-vlan

Ruijie# **show protocol-vlan**

12 PrivateVLAN

12.1

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

12.1.1 private-vlan type

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

```
community  
isolated  
primary  
no
```

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

```
show vlan private-vlan
```

12.1.2 private-vlan association

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

svlist

no

show vlan private-vlan

12.1.4 switchport mode private-vlan

switchport mode private-vlan host promiscuous
no switchport mode

host
promiscuous

```
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 association trunk 22 23
```

```
show vlan private-vlan
```

12.1.7 switchport private-vlan mapping

```
switchport private-vlan mapping p_vid svlist add sv 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
```

```
primary
```

```
community
```

```
Ruijie# show vlan private-vlan
```

12.3 Hybrid

```
' switchport mode hybrid  
'
```

```
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 *acl* outer-vlan**
- ' **traffic-redirect access-group *acl* inner-vlan**
- ' **traffic-redirect access-group *acl* nested-vlan**
- ' **frame-tag tpid *tpid***
- ' **inner-priority-trust enable**
- ' **l2protocol-tunnel**
- ' **l2protocol-tunnel *proto-type* 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
```

no

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

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport mode access
Ruijie(config-if)# dot1q relay-vid 100 translate
local-vid 10-20
Ruijie(config-if)# end
```

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

13.1.7 traffic-redirect access-group acl/outer-vlan

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

```
acl
```

```
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)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# traffic-redirect access-group 2
outer-vlan 3 in
```

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

```
show traffic-redirect
```

13.1.8 traffic-redirect access-group *acl* inner-vlan

```
traffic-redirect access-group acl inner-vlan vid out  
no traffic-redirect access-group acl inner-vlan
```

```
acl
```

```
vid
```

```
no
```

```
Ruijie#configure  
Ruijie(config)#ip access-list standard to_6  
Ruijie(config-acl-std)#permit host 1.1.1.2  
Ruijie(config-acl-std)#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-acl-std)#permit host 1.1.1.3  
Ruijie(config-acl-std)#exit  
Ruijie(config)# interface gigabitEthernet 0/1  
Ruijie(config-if)# switchport mode dot1q-tunnel  
Ruijie(config-if)# traffic-redirect access-group 20  
nested-vlan 10 in  
Ruijie(config-if)# end
```

```
show traffic-redirect
```

13.1.10 frame-tag *tpid* *tpid*

```
frame-tag tpid tpid>  
no frame-tag tpid
```

```
no
```

gvrp

no

Ruijie#**configure**

Ruijie(config)# **l2protocol-tunnel stp**

Ruijie(config)# **l2protocol-tunnel gvrp**

Ruijie(config)#**end**

show l2protocol-tunnel gvrp|stp

13.1.13 l2protocol-tunnel

```
' show dot1q-tunnel interface intf-id
' show interface intf-id dot1q-tunnel
' show frame-tag tpid
' show inner-priority-trust
' show registrationmndlet
' show translrationmndles
'
```

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

13.2.3 show frame-tag tpid

```
show frame-tag tpid interface intf-id
```

intf-id

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

13.2.4 show inner-priority-trust

```
show inner-priority-trust
```

```
Ruijie# show inner-priority-trust
Ports inner-priority-trust
```

13.2.7 show traffic-redirect

show traffic-redirect interface *intf-id*

intf-id

Ruijie# **show traffic-redirect**

L2protocol-tunnel: gvrp Disable

14 MAC

14.1

14.1.1 mac-address-table aging-time

mac-address-table aging-time *seconds*

no mac-address-table aging-time

seconds

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

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

14.1.5 mac-address-table static

no

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

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

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

ss-table static
ble static

show mac-addre
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	

14.1.6 mac-address-table filtering

no

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

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

<i>mac-address</i>	

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

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	
show mac-address-table notification	
snmp trap mac-notification	

14.1.8 snmp trap mac-notification

no

snmp trap mac-notification added removed

no snmp trap mac-notification added removed

added	
removed	

show mac-address-table notification *interface*

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

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

14.1.9 address-bind

address-bind *ip-address mac-address*

no address-bind *ip-address*

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

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

show address-bind	

14.1.10 address-bind uplink

address-bind uplink *intf-id*

no address-bind uplink *intf-id*

--	--

intf-id

	Ipv 4	IPV 6

--	--	--

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

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

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

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

--	--

show mac-address-table static

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

14.2.2 show mac-address-table aging-time

show mac-address-table aging-time

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	
show mac-address-table vlan	

14.2.4 show mac-address-table dynamic

show mac-address-table dynamic address *mac-addr*

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.63c40	DYNAMIC	gigabitethernet	1/1

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

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

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

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

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

show mac-address-table address

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

```

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

14.2.9 show mac-address-table vlan

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

<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
'
```

```
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	

15.1.2 Ip dhcp snooping vlan

```
no ip dhcp snooping vlan vlan-rng | vlan-min vlan-max
```

vlan-rng

vlan-min

vlan-max

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping vlan 1000
Ruijie(config)# end
```

ip dhcp snooping	

15.1.3 ip dhcp snooping bootp-bind

no ip dhcp snooping bootp-bind

```

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

```

show ip dhcp snooping	

15.1.4 ip dhcp snooping verify mac-address

no ip dhcp snooping verify mac-address

```

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
Verification of hwaddr field status  DISABLE
DHCP snooping database write-delay time: 3600seconds
DHCP snooping option 82 status: ENABLE
DHCP snooping Support Bootp bind status: ENABLE
Interface                Trusted    Rate limit (pps)
-----                -

```

show ip dhcp snooping	

15.1.7 ip dhcp snooping database write-to-flash

ip dhcp snooping database write-to-flash

```
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	

15.2.3 ip dhcp snooping limit rate

no ip dhcp snooping limit rate *rate-value*

rate-value

show ip dhcp snooping

```
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip dhcp snooping limit rate 100
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  DHCP snooping  Trusted  Rate limit (pps)0001 Tcef2T( )
```

```
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)
-----
```

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

show ip dhcp snooping binding	

15.4.2 debug ip dhcp snooping

```
debug ip dhcp snooping event packet
```

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

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
- ' ip igmp snooping vlan mrouter learn pim-dvmrp
- ' ip igmp snooping vlan mrouter interface
- ' ip igmp snooping vlan static interface
- ' ip igmp snooping fast-leave enable
- ' ip igmp snooping suppression enable
- ' ip igmp snooping source-check port
- ' ip igmp snooping source-check default-server
- ' ip igmp snooping limit-ipmc vlan server
- ' ip igmp snooping filter
- ' ip igmp snooping max-groups

16.1.1 ip igmp profile

ip igmp profile *profile-number*

no ip igmp profile *profile-number*

<i>profile-number</i>	

“ ” “ ” “ ”

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

range	

16.1.2 range

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

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

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

ip igmp profile	
deny	
permit	

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

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

>Q0;#CHQFgr30At5R\$(RgC@jWxgC8(p7CW\$ZQ0/A\$W%2W%5W0W\$Y



16.1.7 ip igmp snooping svgl profile

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	

ip igmp snooping ivgl-svgl

ip igmp snooping ivgl-svgl

no ip igmp snooping

/

"

"

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

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

ip igmp snooping ivgl	
-----------------------	--

16.1.9 ip igmp snooping vlan

ip igmp snooping vlan

ip igmp snooping vlan *num*

no ip igmp snooping vlan *num*

<i>num</i>	

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

<i>num</i>	

İ Q , °A Ÿð @ĐÄ1ñ—q!m0sÁ!Dr T!=ôÓj ÂðàŸ\$ì/ A

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

ip igmp snooping vlan mrouter interface	

16.1.13 ip igmp snooping vlan mrouter interface

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

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

ip igmp snooping vlan mrouter interface	

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

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)# 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:

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip igmp snooping max-group 100
```

ip igmp snooping filter	

16.2

1 233.4.4.4 Ag2(S)

16.2.2 show ip igmp profile

show ip igmp profile

show ip igmp profile *profile-number*

<i>profile-number</i>	

```
Ruijie(config-if)#show ip igmp profile
Profile      1
    Permit
    range 224.0.1.0, 239.255.255.255
```

16.2.3 clear ip igmp snooping gda-table

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
- ' show ip pim snooping
- ' show ip pim snooping vlan

17.1.1 ip pim snooping

ip pim snooping

ip pim snooping
no ip pim snooping

```
Ruijie# configure terminal  
Ruijie(config)# ip pim snooping
```

/

17.1.2 ip 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
```

show ip pim snooping

vlan interface-number

show ip pim snooping vlan *interface-number*

<i>interface-number</i>	

```
Ruijie#show ip pim snooping vlan 7
PIM Snooping table:
Interface VLAN 7(4103), PC:2
Port GigabitEthernet 0/7(7), NC:1
Neighbour 4.4.4.1, GenID 0X2f853a91, Holdtime 105s, NLT
75s
Port GigabitEthernet 0/8(8), NC:1
Neighbour 4.4.4.2, GenID 0X38545b24, Holdtime 105s, NLT
77s
```

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**

Reija (03f0) Tc30f (

show spanning-tree

spanning-tree mst cost

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

no spanning-tree max-hops

hop-count

hop-count

Ruijie(config)# **spanning-tree max-hops 10**

show spanning-tree mst

show spanning-tree

18.1.6 spanning-tree mode

spanning-tree mode stp rstp mstp

no spanning-tree mode

stp

rstp

mstp

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 instance 1
```

show spanning-tree mst

instance instance-id vlan vlan-range

name

revision

show

18.1.8 spanning-tree mst cost

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*

priority

instance-id

priority

Ruijie(config-if)# **spanning-tree mst 20 priority 8192**

show spanning-tree mst instance interface interface-id

show spanning-tree mst

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

18.1.15 spanning-tree portfast bpduguard default

spanning-tree portfast bpduguard default

no spanning-tree portfast bpduguard default

show spanning-tree

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

show spanning-tree interface

18.1.16 spanning-tree portfast bpdudfilter default

```
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

ΕΥΝΜ GKÁ€

ΕΥΝΜ GKÁ€

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

18.1.23 spanning-tree guard loop

spanning-tree guard loop

no spanning-tree guard loop

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

18.1.24 spanning-tree guard none

spanning-tree guard none

no spanning-tree guard none

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

18.1.25 spanning-tree autoedge

spanning-tree autoedge disabled

disabled

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

show spanning-tree interface

18.1.26 bpdu src-mac-check

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

no bpdu src-mac-check

H.H.H

no

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

18.1.27 clear spanning-tree detected-protocols

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

interface-id

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

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
```

18.2

18.2.1 show spanning-tree

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

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

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

```
spanningtree pathcost method  
spanning-tree forward-time  
spanning-tree hello-time  
spanning-tree max-age
```

spanning-tree max-hops
spanning-tree tx-hold-count

18.2.2 show spanning-tree interface

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

interface-id

bpdufilter

portfast

bpduguard

link-type

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

spanning-tree bpdufilter

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

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**



21 IP

21.1

- ' ip address
- ' ip unnumbered

21.1.1 ip address

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

<i>ip-address</i>	
<i>network-mask</i>	
secondary	

“ ”
“ ”

```
ip address 10.10.10.1 255.255.255.0
```

show interface	

21.1.2 ip unnumbered

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

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

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

,

,

,

,

-
- ' **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



arp retry times *number*

no arp retry times

<i>number</i>	

arp retry times 1

arp retry times 2

arp retry interval <i>seconds</i>	

21.2.4 arp trusted NUM

arp trusted *number*

no arp trusted

<i>number</i>	

arp trusted 1000

service trustedarp	

21.2.5 arp trusted aging

arp trusted aging

no arp trusted aging

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

21.2.10 service trustedarp

service trustedarp

service trustedarp

no service trustedarp

no ip broadcast-address *ip-address*

<i>ip-address</i>	

" "

" "

ip broadcast-address 0.0.0.0

21.3.2 ip directed-broadcast

ip

directed-broadcast

ip directed-broadcast *access-list-number*

no ip directed-broadcast

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

" "

no ip directed-broadcast

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

21.4 IP

```
' clear arp-cache
' shoclear arp-cache
```

r

clear arp-cache

clear arp-cache 1.1.1.1

clear arp-cache interface Vlan 1

arp	

21.4.2 show arp

show arp *ip mask mac-address static complete incomplete*

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

```
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
```

```
show arp sh1025 Tw[ 1 Tf2c03>T7(1-5.70.-5.7e)5.7(457.1(-2.26)
```

```
0
```

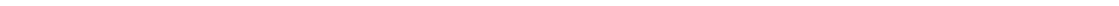
show arp detail interface-type *interface-number*

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

show arp detail trusted ip mask

--	--

ARP



VLAN 1

3600

21.4.6 clear ip route

clear ip route

clear ip route * *network netmask*

<i>network</i>	
<i>netmask</i>	

clear ip route 192.168.12.0

show ip route	

21.4.7 show ip arp

show ip arp

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

" " " "

show ip interface

```
Ruijie# show ip interface FastEthernet 0/1
IP interface state is: UP
IP interface type is: BROADCAST
IP interface metric is: 0
IP interface MTU is: 1500
IP address is:
192.168.5.133/24 (primary)
IP address negotiate is: OFF
Forward direct-boardcast is: ON
ICMP mask reply is: ON
Send ICMP redirect is: ON
Send ICMP unreachable is: ON
DHCP relay is: OFF
Fast switch is: ON
Route horizontal-split is: ON
Help address is: 0.0.0.0
Proxy ARP is: ON
Outgoing access list is not set.
Inbound access list is not set.
```

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

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

22.1.2 ip mtu

ip mtu

ip mtu *bytes*

no ip mtu

<i>bytes</i>	

```
interface fastEthernet 0/1  
ip mtu 512
```

mtu	

22.1.3 ip redirects

ip

redirects

ip redirects

no ip redirects

```
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	
hardware-address	
ip dhcp pool	

23.1.9 ip address dhcp

ip address dhcp no

ip address dhcp
no ip address dhcp

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

dns-server	
ip dhcp pool	

23.1.10 ip dhcp excluded-address

```
ip dhcp excluded-address          no
```

```
ip dhcp excluded-address low-ip-address high-ip-address
no ip dhcp excluded-address low-ip-address high-ip-address
```

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

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

clear ip dhcp conflict	

ip dhcp ping timeout

X v P N

ip dhcp ping timeout 600

clear ip dhcp conflict	
ip dhcp ping packets	
show ip dhcp conflict	

ip dhcp pool mypool0

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>	
infinite	

ip address dhcp	
ip dhcp pool	

23.1.17 netbios-node-type

netbios-node-type **no**

netbios-node-type *type*

no netbios-node-type

<i>type</i>	± ± ± ± ± ± ± ±

netbios-node-type h-node

ip dhcp pool	
netbios-name-server	

23.1.18 network DHCP

DHCP

show ip dhcp binding
show ip dhcp conflict

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

option

no

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 19 hex 1

option 33 ip 172.16.12.0 192.168.12.12 172.16.16.0
192.168.12.16

ip dhcp pool	

23.1.21 service dhcp

service

dhcp no

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
```

*	
<i>ip-address</i>	

clear ip dhcp conflict

```
clear ip dhcp conflict *
```

ip dhcp ping packets	
show ip dhcp conflict	

23.2.3 clear ip dhcp server statistics

```
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

```

clear ip dhcp binding	

23.2.8 show ip dhcp conflict

show ip dhcp conflict

show ip dhcp conflict

show ip dhcp conflict

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

--	--

--	--

clear ip dhcp confict	

23.2.9 show ip dhcp server statistics

show ip dhcp

server statistics

show ip dhcp server statistics

show ip dhcp server statistics

Ruijie# **show ip dhcp server statistics**

```
Address pools          4
Automatic bindings    4
Manual bindings       0
Expired bindings      0
Malformed messages 2
```

```
Message                Received
BOOTREQUEST           216
DHCPDISCOVER          33
DHCPPREQUEST          25
DHCPCDECLINE          0
DHCPCRELEASE          1
DHCPCINFORM           150
```

```
Message                Sent
BOOTREPLY              16
DHCPOFFER              9
DHCPCACK               7
```

DHCPNAK

0

clear ip dhcp server statistics	

24 DHCP Relay

24.1 DHCP Relay

```
' service dhcp  
' ip helper-address  
'
```

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

24.1.2 ip helper-address

Ip dhcp relay information option dot1x

service dhcp	
ip dhcp relay information option dot1x access-group	

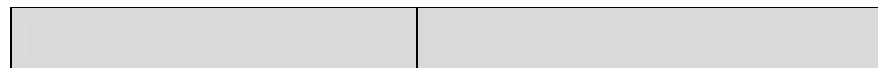
24.1.4 ip dhcp relay information option dot1x access-group

dhcp option dot1x acl
dhcp option dot1x acl

24.1.5 ip dhcp relay information option82

ip dhcp relay information option82
ip dhcp relay information option82

Ip dhcp relay information option82



service dhcp

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

ip domain-lookup

no ip domain-lookup



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



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 *seconds*

no sntp interval

seconds " "

show sntp

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

sntp enable	
show sntp	
clock update-calendar	

r

26.2

' **show sntp**

26.2.1 show sntp

show sntp

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

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

r

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

ip access-list	

27.1.3 ntp authenticate

ntp authenticate

no ntp authenticate

ntp trusted-key

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

ntp authenticate	
ntp trusted-key	
ntp server	

27.1.5 ntp disable

ntp disable

r

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

27.1.7 ntp server

```
ntp server
```

Ruijie(config)# ntp server 192.168.210.222

no ntp	

27.1.8 ntp trusted-key

ntp trusted-key *key-id*

no ntp trusted-key *key-id*

<i>key-id</i>	

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

--	--

ntp authenticate	
ntp authentication-key	
ntp server	

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

<i>address</i>	UDP 20

no ip helper-address

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

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

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

--	--

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
' show snmp
```

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**

show snmp	

29.1.3 snmp-server community

snmp-server

community

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

no snmp-server community *string*

string

view-name

ro

rw

number

ipaddr

```
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* **traps** **vrf** *vrfname*
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

queue-length

snmp-server

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 system-shutdown**

29.1.11 snmp-server trap-source

snmp-server

trap-source

snmp-server trap-source *interface*

no snmp-server trap-source

interface

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 despasstr
```

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

```
Ruijie(config)# snmp-server if-index persist
```

show run	

29.2

29.2.1 show snmp

show snmp

show snmp mib user view group

show snmp

show snmp mib

show snmp user

show snmp view

show snmp group

```
Ruijie# show snmp  
Chassis: 60FF60  
0 SNMP packets input  
0 Bad SNMP version errors  
0 Unknown community name  
0 Illegal operation for community name supplied  
0 Encoding errors
```

0 Number of requested variables
0 Number of altered variables
0 Get-request PDUs
0 Get-next PDUs
0 Set-request PDUs
0 SNMP packets output
0 Too big errors (Maximum packet size 1500)
0 No such name errors
0 Bad values errors
0 General errors
0 Response PDUs
0 Trap PDUs
SNMP global trap: disabled
SNMP logging: disabled
SNMP agent: enabled

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*

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
```



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 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 owner</i> <i>ownername</i>	
--	--

30.2

30.2.1 show rmon statistics

show rmon statistics

```
Ruijie# show rmon statistics  
Statistics : 1
```

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

30.2.2 show rmon history

show rmon history

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</i> <i>variable</i> <i>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

31 VRF

31.1 VRF

- ' **show ip route vrf**
- ' **clear ip route vrf**
- ' **ip vrf**
- ' **rd**
- ' **route-target**
- ' **ip vrf forwarding**
- ' **show ip vrf**

31.1.1 show ip route vrf

show ip route vrf *vrf-name network mask*

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

Ruijie# **show ip route vrf redvrf**

clear ip route vrf	

31.1.2 clear ip route vrf

31.1.4 rd

`rd rd_value`

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

<code>ip vrf</code>	
<code>show ip vrf</code>	

31.1.5 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	

31.1.6 ip vrf forwarding

ip vrf forwarding *vrf-name*

no ip vrf forwarding *vrf-name*

vrf-name

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

31.1.7 show ip vrf

show ip vrf brief detail interfaces *vrf-name*

brief

detail

interfaces

vrf-name

,

,

Ruijie# **show ip vrf redvrf**

32 RIP

32.1

32.1.1 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

y

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

exit-address-family	
ip vrf	

32.1.2 auto-summary (RIP)

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

```
,
,
,
```

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

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

redistribute	

32.1.4 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

```

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

```

32.1.6 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>	

<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	

32.1.8 exit-address-family

exit-address-family

exit-address-family

no

exit

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

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

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

32.1.10 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	

32.1.11 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	

32.1.12 ip rip default-information

ip rip

default-information no

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

no ip rip default-information

only	
originate	
metric	



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

default-information originate	

32.1.13 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
```

--	--

32.1.14 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	

32.1.15 ip rip send enable

send enable no

ip rip

ip rip send enable

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

version	

32.1.18 ip split-horizon (RIP)

ip split-horizon Խ 5 " €

auto-summary	

32.1.20 network (RIP)

network **no**

network *network-number wildcard*

no network *network-number wildcard*

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

neighbor

no

neighbor *ip-address*

no neighbor

--	--

ip-address

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<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
```

32.1.23 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
```

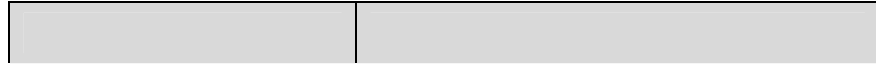
32.1.24 passive-interface

passive-interface **no**

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

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

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



```
ip rip receive enable
```

async default routing

Ruijie(config)# **router rip**

network (RIP)	

32.1.27 timers basic

timers basic

timers basic *update invalid flush*

no timers basic

--	--

<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

32.1.28 validate-update-source

validate-update-source no

validate-update-source

no validate-update-source

ip rip send version **ip rip receive version**

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

ip rip receive version	
ip rip send version	
show ip rip	rip

32.2

32.2.1 show ip rip

show ip rip

show ip rip vrf *vrf-name*

vrf <i>vrf-name</i>	

```
Ruijie# show ip rip
Routing Protocol is "rip"
Sending updates every 10 seconds, next due in 4 seconds
Invalid after 20 seconds, flushed after 10 seconds
Outgoing update filter list for all interface is: not
set
Incoming update filter list for all interface is: not
set
Default redistribution metric is 2
Redistributing: connected
Default version control: send version 2, receive version
2
Interface          Send  Recv
FastEthernet 1/1    2     2
FastEthernet 1/0    2     2
Routing for Networks:
192.168.26.0 255.255.255.0
192.168.64.0 255.255.255.0
Distance: (default is 50)
```

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

32.2.2 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	
-------------	--

32.2.3 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 <i>vrf-name</i>	
<i>process-name</i>	
<1-65535>	

```
Ruijie# show ip rip external connected
Protocol connected route:
[connected] 1.0.0.0/8 metric=0
nhop=0.0.0.0, if=2
[connected] 3.0.0.0/8 metric=0
nhop=0.0.0.0, if=16391
[connected] 4.4.0.0/16 metric=0
nhop=0.0.0.0, if=16388
[connected] 5.0.0.0/8 metric=0
nhop=0.0.0.0, if=16386
[connected] 192.168.195.0/24 metric=0
nhop=0.0.0.0, if=1
```

show ip rip	

32.2.4 show ip rip interface

show ip rip interface

show ip rip interface vrf *vrf-name*

vrf <i>vrf-name</i>	

```
Ruijie# show ip rip interface
FastEthernet 1/1 is down, line protocol is down
  RIP is not enabled on this interface
FastEthernet 1/0 is up, line protocol is up
  Routing Protocol: RIP
  Receive RIPv2 packets only
  Send RIPv2 packets only
  Passive interface: Disabled
  Split horizon: Enabled
  V2 Broadcast: Disabled
  Multicast register: Registered
  Interface Summary Rip:
    Not Configured
  Authentication mode: Text
  Authentication key-chain: ripk1
  Authentication text-password: ruijie
  Default-information: only, metric 5
  IP interface address:
    192.168.64.100/24
```

```

RIP BFD , :
Ruijie#show ip rip interface
VLAN 1 is up, line protocol is up
Routing Protocol: RIP
  Receive RIPv1 and RIPv2 packets
  Send RIPv1 packets only
  Receive RIP packet: Enabled
  Send RIP packet: Enabled
  Send RIP supernet routes: Enabled
  Passive interface: Disabled
  Split horizon: Enabled
  BFD: Enabled
  V2 Broadcast: Disabled
  Multicast registe: Registered
  Interface Summary Rip:
    Not Configured
  IP interface address:
2.2.2.111/24

```

show ip rip	

32.2.5 show ip rip peer

show ip rip peer

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

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

Ruijie# **show ip rip peer**

Peer 192.168.3.2:

Local address: 192.168.3.1

Input interface: GigabitEthernet 0/2

Peer version: RIPv1

Received bad packets: 3

Received bad routes: 0

BFD session state up

show ip rip	

33 OSPF

33.1

33.1.1 area

no

area

no area



network area	

33.1.2 area authentication

no

area authentication

area *area-id* authentication message-digest

no area *area-id* authentication

message-digest
message-digest

ospf authentication-key
message-digest-key

ip
ip ospf

```

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

```

```

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

```

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

33.1.3 area default-cost

area default-cost no

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

no area *area-id* default-cost

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

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

<i>area-id</i>	
<i>acl-name</i>	
<i>prefix-name</i>	
access prefix	
in out	

```
Ruijie# configure terminal
Ruijie(config)# access-list 1 permit 172.22.0.0/8
Ruijie(config)# router ospf 100
Ruijie(config-router)# area 1 filter-list access 1 in
```

33.1.5 area nssa

```
no
area nssa
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
```

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

default-information-originate

no-redistribution

μ

area default-cost

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

```

Ruijie(config-router)# network 172.16.0.0 0.0.255.255
area 0
Ruijie(config-router)# network 192.168.12.0 0.0.0.255
area 1
Ruijie(config-router)# area 1 nssa

```

area default-cost	

33.1.6 area range

```

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

```

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



area stub

area stub

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

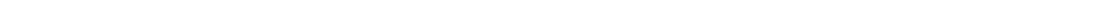
area default-cost	

33.1.8 area virtual-link

area virtual-link

no

area area-id virtual-link router-id authentication message-digest null dead-interval seconds hello-interval seconds retrans



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

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

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 0.0.15.255 area 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 0.0.15.255 area 1  
Ruijie(config-router)# network 172.16.252.0 0.0.0.255 area 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
```



area authentication	
show ip ospf	

33.1.9 auto-cost

no

auto-cost reference-bandwidth *ref-bw*

no auto-cost reference-bandwidth

<i>ref-bw</i>	

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	

33.1.10 clear ip ospf process

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

<i>process-id</i>	

```
Ruijie# clear ipip
```

commpatible rfc1583
no commpatible rfc1583

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

show ip ospf	

33.1.12 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	
metric <i>metric</i>	
metric-type <i>type</i>	
route-map <i>map-name</i>	

redistribute default-information

default-information originate

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

show ip ospf database	
show ip route	

33.1.13 default-metric

```
default-metric no
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 192.168.12.0
Ruijie(config-router)# version 2
Ruijie(config-router)# exit
Ruijie(config)# router ospf
Ruijie(config-router)# network 172.16.10.0 0.0.0.255
area 0
Ruijie(config-router)# default-metric 50
Ruijie(config-router)#redistribute rip subnets

```

redistribute	
show ip ospf	

33.1.14 distance ospf

```

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

```

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

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

33.1.15 distribute-list in

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

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

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

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

33.1.16 distribute-list out

redistribute

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

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

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

redistribute

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

33.1.17 enable mib-binding

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

```

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	

33.1.19 enable traps

no

```

enable traps error ifauthfailure | ifconfigerror | ifrxbadpacket |
virtifauthfailure | virtifconfigerror | virtifrxbadpacket lsa
lsdbapproachoverflow | lsdboverflow | maxagelsa | originatelsa
retransmit iftxretransmit | virtiftxretransmit state-change
ifstatechange | nbrstatechange | virtifstatechange |
virtnbrstatechange

```

```

no enable traps error ifauthfailure | ifconfigerror | ifrxbadpacket |
virtifauthfailure | virtifconfigerror | virtifrxbadpacket lsa
lsdbapproachoverflow | lsdboverflow | maxagelsa | originatelsa
retransmit iftxretransmit | virtiftxretransmit state-change

```

**ifstatechange | nbrstatechange | virtifstatechange |
virtnbrstatechange**



ifauthfailure
ifconfigerror

error

Isa

**Isdbapproach
overflow**

Isdboverflow

**maxagelsa
originatelsa**

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

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

snmp-server
enable traps ospf

snmp-server

```
Ruijie(config)# router ospf 100
Ruijie(config)# enable traps
```

show ip ospf	
enable mib-binding	

33.1.20 ip ospf authentication

no

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

message-digest	
null	

no

null

```
Ruijie(config)# interface fastethernet 0/0
Ruijie(config-if)# ip address 172.16.10.0
255.255.255.0
Ruijie(config-if)# ip ospf authentication
message-digest
```

```

authentication area
authentication ip ospf

```

```

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-key ospfauth

```

area authentication	
Ip ospf authentication	

33.1.22 ip ospf cost

```

ip ospf cost no
ip ospf cost cost
no ip ospf cost

```

cost	

,
,
,
,

ip ospf cost

```
Ruijie(config)# interface serial 1/0  
Ruijie(config-if)# ip ospf cost 100
```

bandwidth	
show ip ospf	

33.1.23 ip ospf database-filter all out

no

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

```
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip address 172.16.10.1
255.255.255.0
Ruijie(config-if)# encapsulation ppp
Ruijie(config-if)# ip ospf database-filter all out
```

33.1.24 ip ospf dead-interval

ip

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

<i>seconds</i>	

ip ospf hello-interval

```
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip address 172.16.10.1
255.255.255.0
Ruijie(config-if)# encapsulation ppp
Ruijie(config-if)# ip ospf dead-interval 30
```

ip ospf hello-interval	

33.1.25 ip ospf disable all

```
ip ospf disable all
no ip ospf disable all
```

network area

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

```
Ruijie(config-if)# ip address 172.16.10.1
255.255.255.0
Ruijie(config-if)# ip ospf disable all
```

33.1.26 ip ospf hello-interval

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

ip ospf

<i>seconds</i>	

'
'
'
'

```
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip address 172.16.10.1
255.255.255.0
Ruijie(config-if)# encapsulation ppp
```

```
Ruijie(config-if)# ip ospf hello-interval 15
```



```
ip ospf dead-interval
```



```
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
```

Lo10

ip ospf authentication	

```
no
mtu
ip ospf mtu-ignore
no ip
```

--	--

W

'

'

'

'

'

'

'

'

'

```
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
```

```
>J@
```

ip ospf priority *priority*

ip ospf retransmit-interval no

ip ospf retransmit-interval *seconds*

no ip ospf retransmit-interval

<i>Seconds</i>	

ip ospf retransmit-interval

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

Ruijie(config-if)# **ip ospf retransmit-interval 10**

ip ospf transmit delay *seconds*

no ip ospf transmit delay



no log-adj-changes detail

detail	

detail

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

show ip ospf	

33.1.34 max-concurrent-dd

max-concurrent-dd 1-65535

1-65535	

```
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	

33.1.36 network area

network area no

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

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



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

ip-address *wildcard*

area

network

network

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

router ospf	

33.1.37 overflow database

overflow database *0-4294967294* **hard soft**
no overflow database

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

soft **hard**

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

33.1.38 overflow database external

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

--	--

12.4171 1.440 TD-0.0018 Tc0.15730 Tw[extern]44.41 Isa()TT3 1 T

H

```
Ruijie# config terminal
Ruijie(config)# router ospf 10
Ruijie(config-router)# no overflow memory-lack
```

clear ip ospf process	
show ip protocols ospf	

33.1.40 passive-interface

no

```
passive-interface default type number
no passive-interface default type number
```

<i>type number</i>	
default	

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

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
```

33.1.42 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	

33.1.43 router-id

no

router-id router-id

no router-id

<i>router-id</i>	

router-id 0.0.0.36

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

show ip protocols	

33.1.44 summary-address

```
summary-address no
```

```
summary-address ip-address net-mask not-advertise | tag
<0-4294967295> |
```

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

```
area rang
```

```
summary-address
```

```

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

```

area range	

33.1.45 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 lsa-group-pacing 120
```

show ip ospf	

33.1.46 timers spf

timers spf

```
timers spf spf-delay spf-holdtime  
no timers spf
```

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

spf-delay

spf-holdtime

...

spf-delay *spf-holdtime*

r :

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

show ip ospf	
timers throttle spf	

33.1.47 timers throttle spf

timers throttle spf

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

no timers throttle spf

--	--

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

spf-delay

spf-holdtime

spf-max-waittime

spf-delay

spf-holdtime

spf-max-waittime

spf-holdtime

spf-delay *spf-holdtime*

spf-max-waittime

timers spf

timers throttle spf

r :

show ip ospf

```
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
```

SPF algorithm last executed 02:09:23.040 ago
SPF algorithm executed 4 times
Number of LSA 6. Checksum 0x028638

33.2.3 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

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



Advertising Router: 1.1.1.1
LS Seq Number: 80000001
Checksum: 0xbe8c
Length: 28
Network Mask: /0
TOS: 0 Metric: 1

show ip ospf database asbr-summary

show ip ospf database external

Ruijie# **show ip ospf database external**
OSPF Router with ID (1.1.1.35) (Process ID 1)
AS External Link States
LS age: 752
Options: 0x2 (*|-|-|-|-|E|-)
LS Type: AS-external-LSA
Link State ID: 20.0.0.0 (External Network Number)
Advertising Router: 1.1.1.1
LS Seq Number: 8000000a
Checksum: 0x7627

Network Link States (Area 0.0.0.0)

LS age: 572

Options: 0x2 (*|---|E|)

LS Type: network-LSA

Link State ID: 192.88.88.27 (address of Designated Router)

Advertising Router: 1.1.1.1

LS Seq Number: 80000001

Checksum: 0x5366

Length: 32

Network Mask: /24

Attached Router: 1.1.1.1

Attached Router: 3.3.3.3

show ip ospf database network

```
Ruijie# show ip ospf database summary
OSPF Router with ID (1.1.1.1) (Process ID 1)
Summary Link States (Area 0.0.0.0)
LS age: 499
Options: 0x2 (*|-|-|-|-|E|-)
```

--	--

show ip ospf database external

Ruijie# **show ip ospf database external**

show ip

ospf interface

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

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

show ip ospf interface FastEthernet 1/0

Ruijie# **show ip ospf interface fa 1/0**

```
FastEthernet 1/0 is up, line protocol is up
Internet Address 192.88.88.27/24, Ifindex 4, Area
0.0.0.0, MTU 1500
Matching network config: 192.88.88.0/24
Process ID 1, Router ID 1.1.1.1, Network Type BROADCAST,
Cost: 1
Transmit Delay is 1 sec, State DR, Priority 1
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 Number457 TD(NetTimer intervals5 lcess )Tj4.5486 0
```

33.2.5 show ip ospf neighbor

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

detail	

<i>interface-type</i>	
<i>interface-number</i>	
<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
BFD session state up
```

show ip ospf neighbor

33.2.6 show ip ospf route

show ip ospf *process-id* route count

<i>process-id</i>	
count	

```
Ruijie# show ip ospf route
OSPF process 1:
Codes: C - connected, D - Discard, O - OSPF,
IA - OSPF inter area N1 - OSPF NSSA external type 1,
N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2
E2 100.0.0.0/24 [1/20] via 192.88.88.126, FastEthernet
1/0
C    192.88.88.0/24 [1] is directly connected,
FastEthernet 1/0, Area 0.0.0.1
```

show ip ospf route

33.2.7 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#
```

--	--

33.2.8 show ip ospf virtual-link

show ip ospf

virtual-link

show ip ospf *process-id* virtual-link

show ip ospf neighbor

show ip ospf virtual-links

```
Ruijie# show ip ospf virtual-links
Virtual Link VLINK0 to router 1.1.1.1 is up
Transit area 0.0.0.1 via interface FastEthernet 0/1
Local address 10.0.0.37/32
Remote address 10.0.0.27/32
Transmit Delay is 1 sec, State Point-To-Point,
```

34 BGP CLI

34.1

34.1.1 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	

34.1.2 address-family ipv4 vrf

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

aggregate-address summary-only

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

34.1.6 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	

34.1.7 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	

34.1.8 bgp bestpath compare-confed-aspah

no

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

show ip bgp	
bgp router-id	

34.1.9 bgp bestpath compare-routerid

no

bgp bestpath compare-routerid

no bgp bestpath compare-routerid

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

show ip bgp	
bgp router-id	

34.1.10 **bgp bestpath med confed**

no

bgp bestpath med confed missing-as-worst

no bgp bestpath med confed missing-as-worst

missing-as-worst	

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

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

34.1.11 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	
bgp bestpath med confed	
bgp deterministic-med	

34.1.12 bgp client-to-client reflection

no

bgp client-to-client reflection

no bgp client-to-client reflection

Oõ – N1'5B Đ

34.1.13 bgp cluster-id

no

bgp cluster-id *cluster-id*

no bgp cluster-id *cluster-id*

<i>cluster-id</i>	

no bgp confederation identifier

<i>as-number</i>	

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

--	--

<i>as-number</i>	

bgp default ipv4-unicast
no bgp default ipv4-unicast

address family ipv4

Ruijie(config-router)# bgp default ipv4-unicast

address-family ipv4	

34.1.17 bgp default local-preference

```
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	

34.1.18 bgp deterministic-med

no

bgp deterministic med

no 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	

34.1.19 **bgp enforce-first-as**

bgp enforce-first-as

no bgp enforce-first-as

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

show ip bgp	

34.1.20 **bgp fast-external-fallover**

no

bgp fast-external-falover


no bgp fast-external-falover

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



r

```
Ruijie(config)# router bgp 500
Ruijie(config-router)# bgp graceful-restart
Ruijie(config-router)# bgp graceful-restart restart-time 150
Ruijie(config-router)# no bgp graceful-restart restart-time
```



<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	

debug
debug

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

router bgp	

34.1.25 **bgp router-id**

no
bgp router-id ip-address
no bgp router-id ip-address

<i>ip-address</i>	

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

show ip bgp dampening dampened-paths	
bgp dampening	

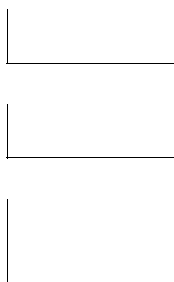
34.1.26 bgp update-delay

update-delay **bgp update-delay** **bgp**

bgp update-delay *delay-time*

no bgp update-delay

<i>delay-time</i>	



bgp update-delay

out	
soft	
soft in	
soft out	

r

neighbor
soft-reconfiguration inbound

show ip bgp neighbors

neighbor soft-reconfiguration inbound

Ruijie# **clear bgp ipv4 unicast ***

neighbor soft-reconfiguration inbound	
show ip bgp	

34.1.28 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
```





in

?

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

clear ip bgp	
show ip bgp	

34.1.32 clear ip bgp

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

*	
ipv4	
<i>address</i>	
<i>as number</i>	
in	
out	
soft	
soft in	
soft out	

r

neighbor
soft-reconfiguration inbound

show ip bgp neighbors

neighbor soft-reconfiguration inbound

Ruijie# **clear ip bgp ***

neighbor soft-reconfiguration inbound	
show ip bgp	

34.1.33 clear ip bgp dampening

clear ip bgp ipv4 unicast dampening *address mask*

ipv4 unicast	
<i>address</i>	

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

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

show ip bgp dampening dampened-paths	
bgp dampening	

34.1.34 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	

34.1.35 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	
-------------	--

34.1.36 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	

34.1.37 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

no default-information originate

network default-information originate

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

network	

redistribute

no

r

redistribute metric

Ruijie(config-router)# **default-metric 45**

redistribute	

34.1.40 distance bgp

no

distance bgp *external-distance internal-distance local-distance*

no distance bgp *external-distance internal-distance local-distance*

<i>external-distance</i>	
<i>internal-distance</i>	
<i>local-distance</i>	

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

external-distance 20

internal-distance 200

local-distance 200

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

--	--

**neighbor soft-reconfigurat
ion inbound**

neighbor filter-list	
neighbor distribute-list	

34.1.43 maximum-prefix

maximum

<i>maximum</i>	

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

router bgp	
neighbor remote-as	

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

router bgp	
neighbor remote-as	

34.1.48 neighbor default-originate

no

```
neighbor peer-address peer-group-name default-originate  
route-map map-tag  
no neighbor peer-address peer-group-name default-originate  
route-map map-tag
```

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



```
router bgp
```

router bgp	
neighbor remote-as	

34.1.50 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	

```
Ruijie(config-router)# neighbor 10.1.1.1  
distribute-list bgp-filter in
```

router bgp	
neighbor remote-as	
ip access-list	

34.1.51 neighbor ebgp-multihop

```
neighbor peer-address peer-group-name ebgp-multihop ttl  
no neighbor peer-address peer-group-name ebgp-multihop
```

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

```

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	

34.1.52 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	

34.1.53 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
```

<i>peer-address</i>	
<i>peer-group-name</i>	
<i>maximum</i>	
<i>threshold</i>	
warning-only	

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1
maximum-prefix 1000
```

router bgp	
neighbor remote-as	

34.1.54 neighbor next-hop-self

no

```
neighbor peer-address peer-group-name next-hop-self
no neighbor peer-address peer-group-name next-hop-self
```

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

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

router bgp	

neiremote-aser bgp

```
Ruijiesonfig)# router bgp 65000  
Ruijiesonfig-router)# neighbor 10.0.0.1 password  
Red-Giant
```

router bgp	
neighbor remote-as	

34.1.56 neighbor peer-group (assigning members)

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

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

--	--

remote-as update-source local-as reconnect-interval times
 advertisement-interval default-originate next-hop-self remove-p
 ivate-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	

34.1.57 neighbor peer-group (creating)

no

neighbor *peer-group-name* **peer-group**

no neighbor *peer-group-name* **peer-group**

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

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

Ruijie(config-router)# **neighbor** Red-Giant **peer-group**

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

34.1.58 neighbor prefix-list

no

neighbor *peer-address* *peer76 308.24 r70i90.88n j-14(1 Tf0.6171 0 mame Tf6.1714 0 TL*

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

distribute-list

neighbor

```
Ruijie(config)# ip prefix-list bgp-filter deny
```

```
10.0.0.1/16
```

```
Ruijie(config)# router bgpro9734989 TjP8(c57 TD-0.0001 1291 -2.0686
```

34.1.59 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*

<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	

34.1.60 neighbor remove-private-as

no

neighbor *peer-address peer-group-name remove-private-as*

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

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

```
Ruijie(config)# router bgp 65000  
Ruijie(config-router)# neighbor 10.0.0.1  
remove-private-as
```

router bgp	
neighbor remote-as	

34.1.61 neighbor route-map

no

neighbor *peer-address peer-group-name* **route-map** *map-tag* **n**
out

no neighbor *peer-address peer-group-name* **route-map** *map-tag*
in out



peer-address

<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
```

<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	

34.1.65 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
```

<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



<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>

34.1.68 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	

34.1.69 neighbor update-source

no

I

B

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

<i>peer-address</i>	

peer-group-name

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E² Ó hy€-Ñ Ó Ó >áb õax gÄ~,X ^8h^âi-™KDÑ Ó • cTD

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	

34.1.71 neighbor weight

no

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

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

ms0.9Tc043 0 TD()TjET174.72 353.96 e2>5.7<01d8>Tj/TT5 1 Tf0 Tr2.0229 0 TD0 Tc()TjET



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

router bgp	
redistribute	
Network synchronization	

34.1.73 network synchronization

no

network synchronization

no network synchronization

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

Ruijie(config-router)# **network synchronization**

router bgp	
redistribute	
network(BGP)	

34.1.74 overflow memory-lack

overflow memory-lack

no overflow memory-lack

clear bgp

|all

```
Ruijie(config)# router bgp 6500
```

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

```
OVER67210787.< TD-0.0022 T12055f>]TJ /TT5 1 Tf 0 Tr 4.01225814.14 r54/TT2 1 Tf 1.6re 38 6
```

<i>process-id</i>	
route-map <i>map-tag</i>	route-map route-map
metric <i>metric-value</i>	
match	
internal	

external 1 2

2

```
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	

no

```
redistribute isis isis-tag route-map map-tag metric metric-valu
level-1 level-1-2 level-2
```

```
no redistribute isis isis-tag route-map map-tag metric
level-2
```

--	--

/

no

r

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

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

static-rmap

```
Ruijie(config-router)# F
```

no router bgp *as-number*

<i>as-number</i>	

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

ip routing	
bgp router-id	

network

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

Ruijie(config-router)# **timers bgp 80 240**



```
*> 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
```

34.2.2 show ip bgp cidr-only

show ip bgp cidr-only

```

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

```

ip community-list	

34.2.5 show ip bgp dampening dampened-paths

show ip bgp dampening dampened-paths

```

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 ?

```

34.2.6 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 ?

```

34.2.7 show ip bgp dampening parameters

show ip bgp dampening parameters

```

Ruijie (config-router)# bgp dampening 25 10000 10000 200
Ruijie# show ip bgp dampening parameters
dampening 25 10000 10000 200
Dampening Control Block(s):
Reachability Half-Life time      : 25 min
Reuse penalty                     : 10000
Suppress penalty                  : 10000

```

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

Inbpf notificar]TJfigur

```
Ruijie# show ip bgp paths
```

34.2.12 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

```

34.2.13 show ip bgp regexp

show ip bgp regexp *regexp*

<i>regexp</i>	

```

Ruijie# show ip bgp regexp _300_
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

```

34.2.14 show ip bgp summary

show ip bgp summary

```

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	

34.2.15 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

34.2.16 show ip as-path-access-list

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

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

35

35.1

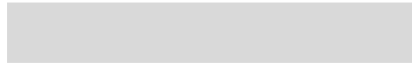
35.1.1 distribute-list in

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*

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



```

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

```

access-list	
prefix-list	
redistribute	

35.1.3 ip community-list

no

```

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

```

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

--	--

```
Ruijie(config)# ip community-list standard 1 deny 100:20
200:20
Ruijie(config)# ip community-list standard 1 permit
internet
```

match community	
set community-list delete	
show ip community-list	

35.1.4 ip default-network

ip default-network

```
ip default-network network
no ip default-network network
```

network

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

```
Ruijie# configure terminal
Ruijie(config)# ip prefix-list pre1 permit 201.1.1.0/24
Ruijie(config)# router ospf
Ruijie(config-router)# distribute-list prefix pre1 out
rip
Ruijie(config-router)# end
```

35.1.6 ip prefix-list description

```
ip prefix-list description
no
ip prefix-list prefix-lis-name description descripton-text
```

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
```

35.1.8 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	

35.1.9 ip routing

ip routing

no ip routing

`no ip routing`

35.1.10 ip static route-limit

ip static route-limit

ip static route-limit *number*

ip static route-limit *number*

<i>number</i>	

ip static

route-limit

show running config

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

35.1.11 ipv6 prefix-list

ipv6

prefix-list

no

Ipv6 prefix-list *prefix-lis-name* **seq** *seq-number* **deny** **permit**

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

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

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

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

35.1.12 ipv6 prefix-list description

```
description no ipv6 prefix-list
ipv6 prefix-list prefix-lis-name description description-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
```

35.1.13 ipv6 prefix-list sequence-number

```
no ipv6 prefix-list description  
Ipv6 prefix-list sequence-number
```

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

35.1.14 match as-path

match as-path **no**

match as-path *as-path-acl-list-num* *as-path-acl-list-num.....*

no match as-path *as-path-acl-list-num.....*

<i>as-path-acl-list-num</i>	

match as-path

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

route-map ROUTEMAP2IBGP

match as-path 20 30

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

35.1.15 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

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	

35.1.16 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>	

match interface

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
match interface fastethernet 0/0
```

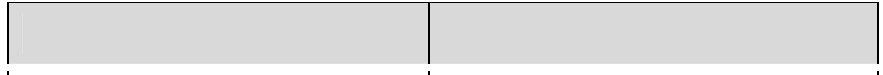
match ip address	
match ip next-hop	
match ip route-source	
match metric	
match route-type	
match tag	
set metric	
set metric-type	
set tag	

35.1.17 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-num



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	

35.1.18 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-l0 Tecutefermit192.168.1200.1
nccess-l0 Tec2tefermit197.168120.1
```

35.1.19 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
```

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

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

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

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

35.1.22 match ipv6 route-source

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

set

match

|

match
s e t

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

35.1.23 match length

match

length **no**

match length *min-length max-length*

no match length *min-length max-length*

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

set match match set

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

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

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

35.1.25 match origin

35.1.26 match route-type

match route-type

no

**match route-type local | internal | external type-1 | type-2 | level-1
| level-2**

**no match route-type local | internal | external type-1 | type-2 |
level-1 | level-2**

local	
Internal	
external	
type-1 type-2	
level-1 level-2	

set

match

match

set

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

maximum-paths *number*

no maximum-paths *number*

<i>number</i>	

permit	
deny	

sequence-number

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

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

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

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

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

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

35.1.33 set community

set community **no**

set community *community-number community-number ...* **additive**
none

no set community *community-number community-number ...*
additive none

<i>community-number</i>	
additive	
none	

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

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

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

35.1.34 set dampening

set

dampening no

set dampening *half-life reuse suppress max-suppress-time*

no set dampening

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

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

```
router bgp 100
neighbor 172.16.233.52 route-map tag in
```

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

35.1.35 set extcommunity

```
set extcommunity no
```

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

```
no set extcommunity rt soo
```




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

match as-path	

set ip default next-hop

set default interface	
set default interface	
set interface	
set ip default next-hop	
set ip precedence	

35.1.38 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

set interface	
set ip default next-hop	
set ip precedence	

35.1.39 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	
set default interface	
set interface	
set ip default next-hop	
set ip precedence	

35.1.40 set ip precedence

```
set ip precedence          no
```

```
set ip precedence 0-7 critical flash flash-override
immediate internet network priority routine
```

```
no set ip precedence 0-7 critical flash flash-override
immediate
```

set ip precedence

```

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

```

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

35.1.42 set level

```

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

```

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

```
route-map redrip permit 10
set level backbone
```

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

35.1.43 set local-preference

set local-preference **no**

set local-preference *number*

no set local-preference

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

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

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

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

35.1.44 set metric

set

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

-	
<i>metric-value</i>	

.....

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

35.1.45 set metric-type

set metric-type no

set metric-type *type*

no set metric-type

<i>type</i>	

set
match
match
set

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

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

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

35.1.46 set next-hop

```
set next-hop no
```

```
set next-hop ip-address
```

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

<i>p-address</i>	

set

match

match

set

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

no set origin

egp	
igp	
Incomplete	

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

match as-path	
match metric	
match origin	

set as-path prepend

set originator-id **no**

set originator-id *ip-addr*

no originator-id *ip-addr*

<i>ip-addr</i>	

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

set tag *tag*

no set tag

<i>tag</i>	

35.1.50 set weight

set community	
set metric	
set metric-type	

35.1.51 ip ref ecmp load-balance source

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

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

no

no

no ip ref ecmp route dip port
no

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

Ruijie(config)# **ip ref ecmp load-balance dip port**

35.2

35.2.1 show route-map

show route-map

show route-map *route-map-name*

<i>route-map-name</i>	

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


35.2.2 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
```

35.2.3 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
```

35.2.4 show ip route

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

.

--	--

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

35.2.6 show ip ref

```
Ruijie# show ip ref
-----statistic information-----:
current    routes: 5
alloc weight_nodes: 5
alloc bal_tables: 0
alloc adj_nodes: 5
alloc res_adj: 0
-----:
```

--	--

36

36.1

36.1.1 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 interface	
set default interface	
set ip tos	
set ip dscp	
set ip precedence	
match ip address	
match length	

36.1.2 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
```

37 IPv6

37.1

- ' 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 dad attempts
- ' ipv6 nd suppress-ra
- ' ipv6 redirects
- ' clear ipv6 neighbors
- ' tunnel mode ipv6ip
- ' tunnel destination
- ' tunnel source
- ' tunnel ttl

37.1.1 ping ipv6

ping ipv6 *ipv6-address*

ipv6-address

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
```

37.1.3 ipv6 enable

ipv6 enable

no ipv6 enable

ipv6 enable

r

U

r

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

37.1.7 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 interface	

37.1.11 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

off-link

no-autoconfig

valid-lifetime

preferred-lifetime

ipv6 nd prefix default

at valid-date preferred-date

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

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

show ipv6 interface	

37.1.12 ipv6 nd ra-lifetime

“ ”

no ipv6 nd ra-lifetime

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



show ipv6 interface

ra-info

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

37.1.16 ipv6 nd managed-config-flag

managed address

configuration

ipv6 nd managed-config-flag

no ipv6 managed-config-flag

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

show ipv6 interface	
ipv6 nd other-config-flag	

37.1.17 ipv6 nd dad attempts

ipv6 nd dad attempts *value*

no ipv6 nd dad attempts

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

show ipv6 interface	

37.1.18 ipv6 nd suppress-ra

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

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

show ipv6 interface	

37.1.19 ipv6 redirects

```
ipv6 redirects  
no ipv6 redirects
```

Ruijie# **clear ipv6 neighbors**

ipv6 neighbor	
show ipv6 neighbors	

37.1.21 tunnel mode ipv6ip

Ruijie(config-if)#

tunnel source	
tunnel mode	
tunnel ttl	

37.1.23 tunnel source

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

no tunnel source

ipv4-address

interface-type interface-number

r

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

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

tunnel mode	
tunnel destination	
tunnel ttl	

37.1.24 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	

37.2

37.2.1 show ipv6 route

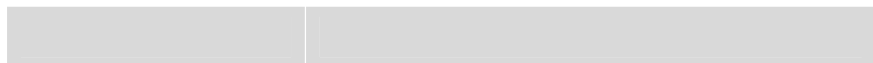
show ipv6 route static local connected

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	
------------	--

37.2.2 show ipv6 neighbors

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

verbose

interface-id

ipv6-address

```
Ruijie# show ipv6 neighbors vlan 1
```

```
IPv6 Address Linklayer Addr Interface
```

```
/ "Q@Ø !Ñ•@ÍÍ CÐ Î G%f~ rÅ•‡X5%o^q Y G%o^q9•0%•Q‡RFx~‡ 0 G%o^q9•0 h~h
```

38 OSPFv3

38.1

38.1.1 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

no

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

,

,

ipv6 ospf cost

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

ipv6 ospf cost	
show ipv6 ospf	

38.1.6 clear ipv6 ospf process

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

process-id	

```
en
clear ipv6 ospf process
```

38.1.7 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*
metric-type *type* route-map *map-name*

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

redistribute default-information

redistribute

default-information originate

show ipv6 ospf database

show ipv6 route

default-information originate
default-metric

default-information originate always

redistribute	
show ipv6 ospf	
show ipv6 ospf database	

38.1.8 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	

38.1.9 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	

38.1.11 ipv6 ospf dead-interval

no

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

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



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>	

38.1.13 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>	

ipv6 ospf network point-to-point

ipv6 ospf priority	

show ipv6 ospf interface

ipv6 ospf priority 0

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

38.1.16 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>	

show ipv6 ospf interface	

38.1.18 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	

38.1.19 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	

38.1.20 max-concurrent-dd

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

<i>number</i>	

```
router ipv6 ospf 1  
max-concurrent-dd 4
```

38.1.21 passive-interface

no

passive-interface default *interface-type interface-number*

no passive-interface default *interface-type interface-number*

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

passive-interface default
no passive-interface vlan 1

ipv6 ospf area	
show ipv6 ospf	
show ipv6 ospf neighbor	


38.1.22 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**

<i>protocol</i>	
metric <i>metric-value</i>	
metric-type <i>type-value</i>	

route-map *map-tag* **route-med**  á B> "Y°U2`À

match

level

match

match
metric metric-type

route-map

redistribu : 10 route-map test

default-info	
default-met	
summary-p	
show ipv6 c	
show ipv6 ospf database	

no

Router-id

router-id 1.1.1.1

Ro2Tj/TW

mh49522.62 re3000

<i>holdtime</i>	
-----------------	--

spf-delay
spf-holdtime

spf-delay *spf-holdtime*

timers spf 2 4

clear ipv6 ospf	
show ipv6 ospf	

38.2

38.2.1 show ipv6 ospf

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
```

```
Ruijie# show ipv6 ospf
```

ipv6 router ospf	
default-information originate	
default-metric	
<i>router-id</i>	
timers spf	

38.2.2 show ipv6 ospf database

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

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

```
Ruijie# show ipv6 ospf database
      OSPFv3 Router with ID (1.1.1.1) (Process 1)
      Link-LSA (Interface FastEthernet 1/0)
Link State ID  ADV Router      Age  Seq#          CkSum
Prefix
0.0.0.2        1.1.1.1          197  0x80000001  0x7cd8
0
0.0.0.5        2.2.2.2          206  0x80000001  0x8c86
0
Link-LSA (Interface Loopback 1)
```

Link State ID ADV Router Age Seq# CkSum
Prefix
0.0.64.1 1.1.1.1 82 0x80000001 0xb760
0

Router-LSA (Area 0.0.0.0)

Link State ID ADV Router Age Seq# CkSum
Link
0.0.0.0 1.1.1.1 17 0x80000006 0x62a1 1
0.0.0.0 2.2.2.2 156 0x80000003 0x8653
1

Network-LSA (Area 0.0.0.0)

Link State ID ADV Router Age Seq# CkSum
0.0.0.5 2.2.2.2 157 0x80000001 0xf8f6

Router-LSA (Area 0.0.0.1)

Link State ID ADV Router Age Seq# CkSum
Link
0.0.0.0 1.1.1.1 17 0x80000002 0x0529
0

Inter-Area-Prefix-LSA (Area 0.0.0.1)

Link State ID ADV Router Age Seq# CkSum
0.0.0.1 1.1.1.1 77 0x80000002 0x83b4

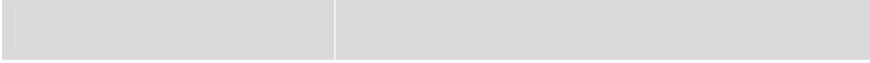
AS-external-LSA

Link State ID ADV Router Age Seq# CkSum
0.0.0.1 1.1.1.1 1 0x80000001 0x6035 E2



```
Ruijie# show ipv6 ospf interface
FastEthernet 1/0 is up, line protocol is up
Interface ID 2
IPv6 Prefixes
fe80::2d0:22ff:fe22:2223/64 (Link-Local Address)
OSPFv3 Process (1), Area 0.0.0.0, Instance ID 0
Router ID 1.1.1.1, Network Type BROADCAST, Cost: 1
Transmit Delay is 1 sec, State BDR, Priority 1
Designated Router (ID) 2.2.2.2
Interface Address fe80::c800:eff:fe84:1c
Backup Designated Router (ID) 1.1.1.1
Interface Address fe80::2d0:22ff:fe22:2223
Timer interval configured, Hello 10, Dead 40, Wait 40,
Retransmit 5
Hello due in 00:00:02
Neighbor Count is 1, Adjacent neighbor count is 1
Hello received 26 sent 26, DD received 5 sent 4
LS-Req received 1 sent 1, LS-Upd received 3 sent 6
LS-Ack received 6 sent 2, Discarded 0

BFD ,
```



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 '
"

```
Ruijie# show ipv6 ospf route
OSPFv3 Process (1)
```

```

Router ID      Bits  Metric  Next-Hop
Interface
1.1.1.1       EB  --
2.2.2.2       E   1       2.2.2.2
FastEthernet 1/0

```

```

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

```

ipv6 router ospf	
area range	

38.2.7 show ipv6 ospf virtual-links

```
show ipv6 ospf process-id virtual-links
```



ipv6 router ospf	
area virtual-link	
show ipv6 ospf neighbor	

39 IGMP

39.1 IGMP

```
' clear ip igmp group
' clear ip igmp interface
' ip igmp access-group
' ip igmp join-group
' ip igmp static-group
' ip igmp immediate-leave group-list
' ip igmp last-member-query-count
' ip igmp last-member-query-interval
' ip igmp limit (          )
' ip igmp query-interval
' ip igmp query-max-response-time
' ip igmp query-timeout
' ip igmp robustness-variable
' ip igmp version
' ip igmp limit (          )
' ip igmp proxy-server
' 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
```

39.1.1 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

39.1.2 clear ip igmp interface

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

39.1.3 ip igmp access-group

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

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

<i>access-list</i>	

ip igmp access-group

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

39.1.4 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
```

39.1.5 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
```

39.1.6 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

39.1.7 ip igmp last-member-query-count

last-member-query-count

last-member-query-count

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

no ip igmp last-member-query-count

<i>number</i>	

ip igmp

last-member-query-count

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

39.1.8 ip igmp last-member-query-interval

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

no ip igmp last-member-query-interval

<i>interval</i>	

ip igmp

last-member-query-count

```
Ruijie# configure terminal  
Ruijie(config)# interface eth 0  
Ruijie(config-if)# ip igmp last-member-query-interval  
200
```

ip igmp immediate-leave

39.1.9 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**

39.1.10 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**

39.1.11 ip igmp query-max-response-time

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

no ip igmp query-max-response-time

<i>seconds</i>	

S

!

—

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

39.1.13 ip igmp robustness-variable

```
ip igmp robustness-variable
```

{1 2 3}	
-------------	--

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

39.1.15 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

39.1.16 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**

39.1.17 ip igmp mroute-proxy

39.1.19 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.

39.1.20 show ip igmp groups

show ip igmp groups *group-address interface-type interface-number*
[detail]

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

<i>interface-number</i>	
detail	

```
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
```

39.1.21 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

```

39.1.22 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
```

40 PIM-DM

40.1 PIM-DM

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

40.1.1 ip pim dense-mode

ip pim dense-mode

ip pim dense-mode

no ip pim dense-mode

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

/

“ ”

“ ”

“ ”

40.1.2 ip pim neighbor-filter

ip pim neighbor-filter

40.1.3 ip pim query-interval

ip pim query-interval

ip pim query-interval *interval-seconds*

no ip pim query-interval

<i>interval-seconds</i>	

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

40.1.4 ip pim state-refresh disable

state-refresh disable

ip pim

ip pim state-refresh disable
no ip pim state-refresh disable

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

r

ip pim state-refresh disable

```

Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim state-refresh
origination-interval 65

```

40.1.6 show ip pim dense-mode interface

show ip pim dense-mode

interface

show ip pim dense-mode interface *interface-type interface-number*
[detail]

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

show ip pim dense-mode interface

```

Ruijie# show ip pim dense-mode interface
Address      Interface      VIFIndex  Ver/  Nbr
              Mode          Count
10.10.10.10  FastEthernet 0/45      3     v2/D  1
50.50.50.50  VLAN 4        2         v2/D  1

```

show ip pim dense-mode neighbor	

40.1.7 show ip pim dense-mode neighbor

show ip pim dense-mode neighbor

show ip pim dense-mode neighbor *interface-type interface-number*

--	--



```
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
```

ip pim sparse-mode

```
Ruijie(config)# ip multicast-routing
```

41.1.5 ip pim accept-register list

ip pim accept-register list *access-list*

<i>access-list</i>	

```
Ruijie(config)# ip pim accept-register list [b
```

```
Ruijie(config)#
```

<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

41.1.8 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
```

41.1.9 ip pim ignore-rp-set-priority

ip pim ignore-rp-set-priority

```
Ruijie# configure terminal
Ruijie(config)# ip pim ignore-rp-set-priority
```

41.1.10 ip pim jp-timer

ip pim jp-timer *interval-seconds*

<i>interval-seconds</i>	

```
Ruijie# configure terminal
Ruijie(config)# ip pim jp-timer 50
```

41.1.11 ip pim mib

ip pim mib dense-mode

```
Ruijie# configure terminal
Ruijie(config)# ip pim mib dense-mode
```

41.1.12 ip pim neighbor-filter

ip pim neighbor-filter *access_list*

<i>access_list</i>	



41.1.14 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
```

41.1.15 ip pim register-rp-reachability

ip pim register-rp-reachability

```
Ruijie# configure terminal
```

```
Ruijie(config)# ip pim register-rp-reachability
```

41.1.16 ip pim register-source

```
ip pim register-source local_address interface-type  
interface-number
```

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

r

```
Ruijie# configure terminal  
Ruijie(config)# ip pim register-source 192.168.195.80  
Ruijie(config)# ip pim register-source g 0/3
```

41.1.17 ip pim register-suppression

```
ip pim register-suppression seconds
```

<i>seconds</i>	

```
Ruijie# configure terminal  
Ruijie(config)# ip pim register-suppression 100
```

41.1.18 ip pim rp-address

```
ip pim rp-address rp-address access_list
```

--	--

rp-address

```
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

41.1.20 ip pim rp-register-kat

ip pim rp-register-kat *seconds*

<i>seconds</i>	

```
Ruijie# configure terminal
Ruijie(config)# ip pim rp-register-kat 250
```

41.1.21 ip pim sparse-mode

ip pim sparse-mode

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim sparse-mode
```

/

"

"

"

"

41.1.22 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

41.1.23 ip pim ssm

ip pim ssm default / range *access_list*}

default	
<i>access_list</i>	

```
Ruijie# configure terminal  
Ruijie(config)# ip pim ssm default
```

```
Ruijie(config)# ip pim ssm range 10  
Ruijie(config)# access-list 10 permit 232.0.0.1  
0.0.0.255
```

```
access-list
```

41.1.24 show debugging

```
show debugging
```

```
Ruijie #show debugging  
PIM-SM Debugging status:  
PIM packet debugging is on
```

41.1.25 show ip pim sparse-mode bsr-router

```
show ip pim sparse-mode bsr-router
```

```
Ruijie# show ip pim sparse-mode bsr-router
PIMv2 Bootstrap information
This system is the Bootstrap Router (BSR)
BSR address: 192.168.127.1
Uptime:      01d23h14m, BSR Priority: 64, Hash mask
length: 10
Next bootstrap message in 00:00:42
Role: Candidate BSR  Priority: 64, Hash mask length: 10
State: Elected BSR
Candidate RP: 30.30.100.200(GigabitEthernet 0/3)
Advertisement interval 60 seconds
Next Cand_RP_advertisement in 00:00:32
```

41.1.26 show ip pim sparse-mode interface

```
show ip pim sparse-mode interface interface-type interface-number
detail
```

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

```
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

41.1.27 show ip pim sparse-mode local-members

show ip pim sparse-mode local-members *interface-type*
interface-number



41.1.29 show ip pim sparse-mode neighbor

show ip pim sparse-mode neighbor [detail]

detail	

```
Ruijie# show ip pim sparse-mode neighbor detail  
Nbr 5.5.5.3 (VLAN 1)  
Expires in 81 seconds
```

41.1.30 show ip pim sparse-mode nexthop

show ip pim sparse-mode nexthop

41.1.31 show ip pim sparse-mode rp mapping

show ip pim sparse-mode rp mapping

```
Ruijie# show ip pim sparse-mode rp mapping
PIM Group-to-RP Mappings
Group(s): 224.0.0.0/4
RP: 30.30.200.1
Info source: 30.30.200.1, via bootstrap, priority 192
Uptime: 00:00:51, expires: 00:01:39
RP: 30.30.100.1
Info source: 30.30.200.1, via bootstrap, priority 192
Uptime: 00:19:14, expires: 00:01:38
Group(s): 224.0.0.0/4, Static
RP: 100.100.100.100
Uptime: 00:45:35
```

41.1.32 show ip pim sparse-mode rp-hash

show ip pim sparse-mode rp-hash *group-address*

<i>group-address</i>	

```
Ruijie# show ip pim sparse-mode rp-hash 225.1.1.1
RP: 30.30.100.1
Info source: 30.30.100.1, via bootstrap
```

42

42.1

- ' 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

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** 230.0.0.1

show ip mroute	

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** 230.0.0.1

show ip mroute

clear ip mroute

42.1.3 ip mroute

ip mroute *source-address mask protocol rpf-address*
interface-type interface-number distance

no ip mroute *source-address mask protocol rpf-address*
interface-type interface-number distance

<i>source-address</i>	
<i>mask</i>	
<i>protocol</i>	
<i>rpf-address</i>	
<i>interface-type</i> <i>interface-number</i>	
<i>distance</i>	

Distance Distance

õax > •± à

<i>limit</i>	
<i>threshold</i>	

limit

threshold

r

Ruijie(config)# DG % Ó^m—•• 1õ !" <2°Sàž ò gnñuDr\$A pG™Žý á ò athresTc (

```
Ruijie(config-if)# ip multicast ttl-threshold 5
```

42.1.6 ip multicast-routing

no

ip multicast-routing

no ip multicast-routing

r

```
Ruijie(config)# ip multicast-rounting
```

```
/
```

42.1.7 ip multicast boundary

no

```
ip multicast boundary access-list
```

```
no ip multicast boundary access-list
```

```
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
```

42.1.8 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
```

| |

```

Ruijie# show ip rpf 192.168.1.54
RPF information for 192.168.1.54
RPF interface: VLAN 1
RPF neighbor: 0.0.0.0
RPF route: 192.168.1.0/24
RPF type: unicast (connected)
RPF recursion count: 0
Doing distance-preferred lookups across tables
Distance: 0
Metric: 0 RPF information for 192.168.1.54
RPF interface: VLAN 1
RPF neighbor: 0.0.0.0
RPF route: 192.168.1.0/24
RPF type: unicast (connected)
RPF recursion count: 0
Doing distance-preferred lookups across tables
Distance: 0
Metric: 0

```

42.1.10 show ip mvif

show ip mvif *interface-type interface-number*

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

```

Ruijie# show ip mvif vlan 1
Interface          Vif      Owner      TTL      Local
Remote            Uptime

```

Idx	Module	Address	Address
VLAN 1	1	PIM-DM	2 192.168.1.1
0.0.0.0		00:13:16	

42.2 IP

```
' debug nsm mcast all  
' debug nsm mcast fib-msg  
' debug nsm mcast vif  
' debug nsm mcast register  
' debug nsm mcast stats
```

42.2.1 debug nsm mcast all

no

```
debug nsm mcast all
```

```
Ruijie# debug nsm mcast all
```

42.2.2 debug nsm mcast fib-msg

no

```
debug nsm mcast fib-msg
```

show storm-control

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# switchport protected
```

show interfaces	

43.1.3 protected-ports route-deny

```
protected-ports route-deny
no protected-ports route-deny
```

show running-config

```
Ruijie(config)# protected-ports route-deny
```

show running-config	

43.1.4 switchport port-security

```
switchport port-security violation protect restrict shutdown
no switchport port-security violation
```

port-security	
violation protect	
violation restrict	
violation shutdown	

```
Ruijie(config)# interface gigabitethernet 1/1  
Ruijie(config-if)# switchport port-security  
Ruijie(config-if)# switchport port-security  
violation shutdown
```

show port-security	

43.1.5 switchport port-security aging

switchport port-security aging static time *time*

no switchport port-security aging static time

static	
<i>time</i>	

no switchport port-security aging

time

no switchport port-security mac-address *mac-address*
maximum

mac-address <i>mac-address</i>	
ip-address <i>ip-address</i>	
ip-address <i>ipv6-address</i>	
maximum <i>value</i>	

```
Ruijie# configure terminal  
Ruijie(config)# interface gigabitethernet 1/1  
Ruijie(config-if)# switchport mode access  
Ruijie(config-if)# switchport port-security  
Ruijie(config-if)# switchport port-security  
mac-address 00d0.f800.073c ip-address 192.168.12.202
```

show port-security	

43.1.7 arp-check

no

no | default arp-check auto

cpu

auto :

Ruijie(config-if)# **arp-check**

show port-security	

43.2

' **show storm-control**

' **show port-security**

43.2.1 show storm-control

show storm-control *interface-id*

--	--

```

Ruijie# show storm-control gigabitethernet 1/1
Interface Broadcast Control Multicast Control Unicast
Control
-----
Gi1/1 Disabled Disabled Disabled

```

storm-control	

43.2.2 show port-security

```

show port-security address interface interface-id

```

address	
interface <i>interface-id</i>	

```

Ruijie# show port-security
Secure Port MaxSecureAddr(count) CurrentAddr(count)
Security Action
-----
Gi1/1 128 1 Restrict
Gi1/2 128 0 Restrict

```

Gi1/3 8 1 Protect

switchport port-security	
switchport port-security aging	
switchport port-security mac-address	

44 802.1X

44.1 dot1x

- ' dot1x auto-req
- ' dot1x auto-req packet-num

show dot1x auto-req	

44.1.2 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

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	

44.2 dot1x

- ' **dot1x timeout quiet-period**
- ' **dot1x timeout re-authperiod**
- ' **dot1x timeout server-timeout**
- ' **dot1x timeout supp-timeout**
- ' **dot1x timeout tx-period**

44.2.1 dot1x timeout quiet-period

no

dot1x timeout quiet-period *seconds*
no dot1x timeout quiet-period

seconds

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	

44.2.3 dot1x timeout ref0 g501 220.22 0.48001 1.92 re230dot1x tim1 21.38 96

dot1x timeout server-timeout seconds

no dot1x timeout server-timeout

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  
Authed User Number: 0  
Re-authen Enabled:  Disabled  
Re-authen Period:   1000 sec  
Quiet Timer Period: 1000 sec  
Tx Timer Period:    3 sec  
Supplicant Timeout: 3 sec  
Server Timeout:     10 sec  
Re-authen Max:      3 times  
Maximum Request:    3 times  
Filter Non-RG Supp: Disabled  
Client Oline Probe: Disabled  
Eapol Tag Enable:   Disabled  
Authorization Mode:  Group Server
```

show dot1x	

44.2.4 dot1x timeout supp-timeout

```
dot1x timeout supp-timeout seconds  
no dot1x timeout supp-timeout
```

seconds

show dot1x

```
Ruijie# configure terminal  
Ruijie(config)# dot1x timeout supp-timeout 10  
Ruijie(config)# end  
Ruijie# show dot1x  
802.1X Status:          Enabled  
Authentication Mode:    EAP-MD5  
Authed User Number:    0  
Re-authen Enabled:     Disabled  
Re-authen Period:      1000 sec  
Quiet Timer Period:    1000 sec  
Tx Timer Period:        3 sec  
Supplicant Timeout:    10 sec  
Server Timeout:        10 sec  
Re-authen Max:         3 times  
Maximum Request:       3 times  
Filter Non-RG Supp:    Disabled  
Client Oline Probe:    Disabled  
Eapol Tag Enable:      Disabled  
Authorization Mode:     Group Server
```

show dot1x	

44.2.5 dot1x timeout tx-period

dot1x timeout tx-period *seconds*
no dot1x timeout tx-period

seconds

show dot1x

```
Ruijie# configure terminal  
Ruijie(config)# dot1x timeout tx-period
```

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	

44.3.2 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
```

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	

44.4 dot1x

- ' dot1x probe-timer
- ' dot1x client-probe enable

44.4.1 dot1x probe-timer

dot1x probe-timer interval *alive interval*
no dot1x probe-timer

no

interval

alive

interval

show dot1x

```
Ruijie# configure terminal
Ruijie(config)# dot1x probe-timer interval 30
Ruijie(config)# dot1x probe-timer alive 120
Ruijie(config)# end
Ruijie# show dot1x probe-timer
Hello Interval: 30 Seconds
Hello Alive: 120 Seconds
```

Show dot1x probe-timer	

44.4.2 dot1x client-probe enable

no dot1x client-probe enable

```
Ruijie# configure terminal
Ruijie(config)# dot1x client-probe enable
Ruijie(config)# end
Ruijie# show dot1x
802.1X Status:          Enabled
Authentication Mode:    EAP-MD5
```

Authed User Number: 0
Re-authen Enabled: Enabled
Re-authen Period: 1000 sec
Quiet Timer Period: 1000 sec
Tx Timer Period: 10 sec
Supplicant Timeout: 10 sec
Server Timeout: 10 sec
Re-authen Max: 5 times
Maximum Request: 3 times
Filter Non-RG Supp: Disabled
Client Oline Probe: Enabled
Eapol Tag Enable: Disabled
Authorization Mode: Group Server



show dot1x

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	

44.5.3

dot1x auth-fail max-attempt *num*

no dot1x auth-fail max-attempt

<i>num</i>	

show dot1x

VLAN

```
Ruijie# configure terminal
```

```
Ruijie(config)# dot1x auth-fail max-attempt 5
Ruijie(config)# end
Ruijie#write
```

44.5.5 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)#
```

dot1x default

```
Ruijie(config-if)# dot1x dynamic-vlan enable
Ruijie(config)# end
Ruijie#
```

show dot1x	

44.5.8 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
Ruijie(config)# end
Ruijie#
```

--	--

<code>show running-config</code>	
----------------------------------	--

44.5.9 dot1x eapol-tag

`dot1x eapol-tag`
`no dot1x eapol-tag`

`show dot1x`

```
Ruijie# configure terminal  
Ruijie(config)# dot1x eapol-tag  
Ruijie(config)# end  
Ruijie#
```

<code>show dot1x</code>	

44.5.10 dot1x mac-auth-bypass

`dot1x mac-auth-bypass`
`no dot1x mac-auth-bypass`

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	

-	

```
Ruijie(config-if)# dot1x mac-auth-bypass timeout-activity 3600
Ruijie(config-if)# end
Ruijie#write
```

```
show dot1x port-control interface
```

```
-
```

44.5.12 dot1x mac-auth-bypass violation

dot1x mac-auth-bypass violation

no dot1x mac-auth-bypass violation

```
v
```

```
show run
```

```
Ruijie# configure terminal
Ruijie(config)# interface fa 0/1
Ruijie(config-if)# dot1x mac-auth-bypass violation
Ruijie(config-if)# end
Ruijie#write
```

```
show dot1x port-control interface
```

	-	

44.5.13 dot1x max-req

no

dot1x max-req *count*
no dot1x ma87x-req

count

0 Tc(T5 1 Tf-2 -2.25.4971.0009 Tc0.0031 Tw[(dot1257 0 TD0.c[<01cf60715>-5.1db9(f)]

no

dot1x private-supplicant-only
no dot1x private-supplicant-only

show dot1x private-supplicant-only

```
Ruijie# configure t  
Ruijie(config)# dot1x private-supplicant-only  
Ruijie(config)# end  
Ruijie#
```

show dot1x private-supplicant-only	

44.5.15 dot1x port-control auto

no

dot1x port-control auto
no dot1x port-control

show dot1x

```
Ruijie# configure terminal
Ruijie(config)# interface g0/1
Ruijie(config-if)# dot1x port-control auto
Ruijie(config-if)# end
Ruijie#
```

show dot1x	

44.5.16 dot1x port-control-mode

```
dot1x port-control-mode mac-based port-based single-host
no dot1x port-control-mode
```

mac-based

port-based

single-host

```
show dot1x port-control
```

```
show dot1x
port-control
show running-config
dot1x port-control-mode port-based single-host
```

```
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	

44.5.17 dot1x stationarity enable

dot1x stationarity enable
no dot1x stationarity enable

```
Ruijie# configure terminal
Ruijie(config)# dot1x stationarity enable
Ruijie(config)# end
Ruijie#
```

44.5.18 dot1x redirect url

44.5.19 dot1x redirect for special tcp-destination port

no dot1x redirect for special tcp-destination port *port num*

<i>port num</i>	

└───┘

└───┘

└───┘

```
Ruijie(config)#dot1x redirect for special tcp-destination port  
8443
```

dot1x redirect url	
dot1x redirect time-out	
dot1x redirect num for special source-ip	

44.5.20 dot1x redirect time-out

dot1x redirect time-out port *time-out-interval*

no dot1x redirect time-out port

<i>time-out-interval</i>	

└───┘

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└───┘

```
Ruijie(config)# dot1x redirect time-out 5
```

dot1x redirect url	
dot1x redirect for special tcp-destination port	
dot1x redirect num for special source-ip	
show dot1x	

└───┘

-	

44.5.21 dot1x redirect num for special source-ip

dot1x redirect num for special source-ip *num*

no dot1x redirect num for special source-ip

<i>num</i>	

┌

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```
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	

┌

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44.6 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**
-

dot1x reauth-max	
-------------------------	--

dot1x re-authentication	
--------------------------------	--

dot1x timeout quiet-period

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	

44.6.4 show dot1x private-supPLICANT-only

show dot1x private-supPLICANT-only

```
Ruijie# show dot1x private-supPLICANT-only
private-supPLICANT-only:: disabled
```

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	

44.6.5 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	

44.6.6 show dot1x port-control

show dot1x port-control interface *interface*

interface

```
Ruijie# show dot1x port-control
interface dyn-user static-user max-user qos
ctrl-mode status
-----
Gi0/1      0          1          6000      dscp: 0
mac-base Authed
Ruijie#
```

dot1x auth-mode	
dot1x max-req	
dot1x port-control auto	
dot1x reauth-max	
dot1x re-authentication	

dot1x timeout quiet-period	
dot1x timeout re-authperiod	
dot1x timeout server-timeout	
dot1x timeout supp-timeout	
dot1x timeout tx-period	

44.6.7 show dot1x probe-timer

show dot1x probe-timer

```
Ruijie# show dot1x probe-timer
Hello Interval: 20 Seconds
Hello Alive: 250 Seconds
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	

44.6.8 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	

44.6.9 show dot1x reauth-max

show dot1x reauth-max

```
Ruijie# show dot1x reauth-max
reauth-max: 2 times
Ruijie#
```

dot1x auth-mode	
dot1x max-req	
dot1x port-control auto	
dot1x reauth-max	
dot1x re-authentication	

dot1x timeout quiet-period	
dot1x timeout re-authperiod	
dot1x timeout server-timeout	
dot1x timeout supp-timeout	
dot1x timeout tx-period	

44.6.10 show dot1x summary

show dot1x summary

```
Ruijie# show dot1x summary
ID      MAC          Interface VLAN Auth-State
Backend-State Port-Status Type
-----
1 00d0f8000000 Gi0/1      1  Authenticated Idle
Authed   Static
Ruijie#
```

dot1x auth-mode	
dot1x max-req	
dot1x port-control auto	

dot1x reauth-max	
dot1x re-authentication	
dot1x timeout quiet-period	
dot1x timeout re-authperiod	
dot1x timeout server-timeout	
dot1x timeout supp-timeout	

dot1x timeout tx-period

Up-bandwidth is 1024 kbps
Down-bandwidth is 1024 kbps
Authorization vlan is dep7
Authorization session time is 1000000 seconds
Authorization ip address is 192.168.217.64
Start accounting
Permit proxy user
Permit dial user
IP privilege is 2



```
Ruijie# show dot1x timeout quiet-period  
quiet-period: 60 sec
```

--	--

45 AAA

45.1

- ' **aaa authentication dot1x**
- ' **aaa authentication enable**
- ' **aaa authentication login**
- ' **aaa authentication ppp**
- ' **login authentication**

45.1.1 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	

45.1.2 aaa authentication enable

aaa authentication

enable

```
aaa authentication enable default method1 method2
```

```
no aaa authentication enable default
```

default

method

local	
none	
group	

aaa authentication enable

local	
none	
group	

aaa authentication login

```
Ruijie(config)# aaa authentication login list-1 group
radius local
```

aaa new-model	
username	
login authentication	

45.1.4 aaa authentication ppp

authentication ppp

aaa

aaa authentication ppp default *list-name method1 method2*

no aaa authentication ppp default *list-name*

default

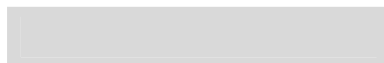
list-name

method

local	
none	
group	

aaa authentication ppp

Ruijie(config)# **aaa authentication ppp** *rds_ppp* **group**
radius local



45.1.5 login authentication

login authentication

login authentication default *list-name*

no login authentication

default

list-name

```
Ruijie(config)# aaa authentication login list-1 local  
Ruijie(config)# line vty 0 4  
Ruijie(config-line)# login authentication list-1
```

aaa new-model	
username	
login authentication	

45.2

-
- ' **aaa authorization commands**
 - ' **aaa authorization config-commands**
 - ' **aaa authorization console**
 - ' **aaa authorization exec**
 - ' **aaa authorization network**
 - ' **authorization commands**
 - ' **authorization exec**

45.2.1 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	

45.2.3 aaa authorization console

aaa authorization console

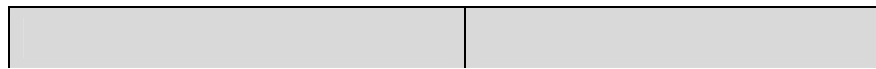
aaa authorization console

no aaa authorization console

Ruijie(config)# **aaa authorization console**



Ruijie(config)# **aaa authorization network default group
radius**



aaa new-model

```
Ruijie(config)# aaa authorization commands 15 cmd group  
tacacs+ none  
Ruijie(config)# line vty 0 4  
Ruijie(config-line)# authorization commands 15 cmd
```

aaa new-model	
aaa authorization commands	

45.2.7 authorization exec

authorization exec

authorization exec default *list-name*

no authorization exec

default

list-name

level

default

list-name

method



aaa new-model	
aaa authentication	
accounting commands	

45.3.3 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



45.3.5 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
```

level

default

list-name

list-name

```
Ruijie(config)# aaa accounting exec exec-1 group radius  
none  
Ruijie(config)# line vty 0 4  
Ruijie(config-line)# accounting exec exec-1
```

aaa new-model	
aaa accounting commands	

45.4 AAA

```
' aaa group server  
' ip vrf forwarding  
' server  
' show aaa group
```

45.4.1 aaa group server

```
aaa group server radius tacacs+ name
```

```
Ruijie(config)# aaa group server radius ss
Ruijie(config-gs-radius)# server 192.168.4.12
Ruijie(config-gs-radius)# server 192.168.4.13
Ruijie(config-gs-radius)# ip vrf forwarding vrf-name
Ruijie(config-gs-radius)# end
```

aaa group server	

show aaa group

```
Ruijie(config)# aaa group server radius ss
Ruijie(config-gs-radius)# server 192.168.4.12
acct-port 5 auth-port 6
Ruijie(config-gs-radius)# end
Ruijie# show aaa group
Group Name: ss
Group Type: radius
Referred: 2
Server List:
IP Address: 192.168.4.12
Authentication Port: 6
Accounting Port: 5
Referred: 1
```

Referred: 2
Server List:
IP Address: 192.168.217.64
Authentication Port: 1812
Accounting Port: 1813
Referred: 1

aaa group server	

45.5 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**

45.5.1 aaa local authentication attempts

aaa local authentication attempts *max-attempts*

max-attempts

```
Ruijie# configure terminal  
Ruijie(config)# aaa local authentication attempts 6
```

show running-config	
show aaa lockout	

45.5.2 aaa local authentication lockout-time

aaa new-model

no

Ruijie# `clear aaa local user lockout all`

<code>show running-config</code>	
<code>show aaa lockout</code>	

45.5.5 debug aaa

```

Ruijie# show aaa method-list
Authentication method-list
aaa authentication login default group radius
aaa authentication ppp default group radius
aaa authentication dot1x default group radius
aaa authentication dot1x san-f local group angel group
rain none
aaa authentication enable default group radius
Accounting method-list
aaa accounting network default start-stop group radius
Authorization method-list
aaa authorizing network default group radius

```

aaa authentication	
aaa authorization	
aaa accounting	

45.5.7

```

show aaa user lockout all user-name word

```

word

```

Ruijie# show aaa user lockout all

```

show running-config	
show aaa lockout	

Ruijie(config)#

aaa authentication	
radius-server key	
radius-server retransmit	
radius-server timeout	

46.1.4 radius-server key

radius-server key

radius-server key 0 | 7 *text-string*

no radius-server key

text-string

0 7

46.1.5 radius-server retransmit

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	

46.1.6 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	
radius-server retransmit	
radius-server key	

46.1.7 radius-server deadtime

radius-server deadtime

no

radius-server deadtime *minutes*

no radius-server deadtime

minutes

Ruijie(config)# **radius attribute 16 vendor-type 211**

radius set qos cos	

46.1.9 radius set qos cos

radius set qos cos
no radius set qos cos

-
- ' **show radius server**
 - ' **show radius parameter**
 - ' **show radius vendor-specific**

46.2.1 debug radius

debug radius event | detail
no debug radius event | detail

46.2.2 show radius server

show radius server

```
Ruijie# show radius server  
server ip : 192.168.4.12  
acct port: 23  
authen port: 77  
server state: ready  
server ip : 192.168.4.13  
acct port: 45  
authen port: 74  
server state: ready
```

radius-server host	

radius-server retransmit	
radius-server key	
radius-server timeout	

46.2.3 show radius parameter

show radius parameter

```
Ruijie# show radius parameter
Server Timeout: 5 Seconds
Server Deadtime: 5 Minutes
Server Retries: 3
Server Key: *****
```

radius-server host	
radius-server retransmit	

y Y. y H ")X*ä-

```

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-diractory        9
10      file-count             10
11      file-name-0            11
12      file-name-1            12
13      file-name-2            13
14      file-name-3            14
15      file-name-4            15
16      max up-rate            75
17      version to server     17
18      flux-max-high32       18
19      flux-max-low32        19
20      proxy-avoid            20
21      dailup-avoid           21
22      ip privilige           22
23      login privilige       42
24      limit to user number  50

```

radius-server host	
radius-server retransmit	
radius-server key	
radius-server timeout	

47 TACACS+

47.1 TACACS+

- ' **aaa group server tacacs+**
- ' **server TACACS+**
- ' **ip vrf forwarding TACACS+**
- ' **ip tacacs source-interface**
- ' **tacacs-server host**
- ' **tacacs-server key**
- ' **tacacs-server timeout**

47.1.1 aaa group server tacacs+

aaa group server tacacs+ *group-name*
no aaa group server tacacs+ *group-name*

group-name

```
Ruijie(config)# aaa group server tacacs+ tac1  
Ruijie(config-gs-tacacs+)#server 1.1.1.1
```

server	
ip vrf forwarding	

47.1.2 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	

47.1.3 ip vrf forwarding(TACACS+)

ip vrf forwarding *vrf-name*
no ip vrf forwarding

vrf-name

```
Ruijie(config)# aaa group server tacacs+ tac1  
Ruijie(config-gs-radius)# server 1.1.1.1  
Ruijie(config-gs-radius)# ip vrf forwarding vpn1
```

aaa group server tacacs+	
server	

47.1.4 ip tacacs source-interface

ip tacacs source-interface *interface*
no ip tacacs source-interface

Interface

tacacs-server host	
tacacs-server timeout	

47.1.7 tacacs-server timeout

tacacs-server timeout *seconds*

no tacacs-server timeout

seconds

```
Ruijie(config)# tacacs-server timeout 10
```

tacacs-server host	
tacacs-server key	

47.2 TACACS+

' **debug tacacs+**

' **show tacacs**

47.2.1 debug tacacs+

debug tacacs+
no debug tacacs+

47.2.2 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	

48 SSH

48.1 SSH

- ' **crypto key generate**
- ' **crypto key zeroize**
- ' **ip ssh version**
- ' **ip ssh time-out**
- ' **ip ssh authentication-retries**

48.1.1 crypto key generate

crypto key generate rsa | dsa

rsa	
dsa	

enable service ssh-server

r

no crypto key generate crypto
key zeroize

```
Ruijie# configure terminal  
Ruijie(config)# crypto key generate rsa
```

show ip ssh	
crypto key zeroize rsa dsa	

48.1.2 crypto key zeroize

crypto key zeroize rsa / dsa

rsa	
dsa	

service ssh-server no enable

```
Ruijie# configure terminal
```

Ruijie(config)# **crypto key zeroize rsa**



show ip ssh	

48.1.4 ip ssh time-out

no

ip ssh time-out *time*
no ip ssh time-out

<i>time</i>	

no ip ssh

time-out

show ip ssh

```
Ruijie# configure terminal  
Ruijie(config)# ip ssh time-out 100
```

show ip ssh	

48.1.5 ip ssh authentication-retries

ip ssh authentication-retries *retry times*
no ip ssh authentication-retries

<i>retry times</i>	

show ip ssh

Ruijie# **show ip ssh**

ip ssh version 1 2	
ip ssh time-out time	
ip ssh authentication-retries retry times	

48.2.2 show ssh

show ssh

Ruijie# **show ssh**

48.2.3 show crypto key mypubkey

show crypto key mypubkey *rsa/dsa*

rsa	
dsa	

Ruijie# **show crypto key mypubkey rsa**

crypto key generate rsa dsa	

48.2.4 disconnect ssh

disconnect ssh vty *session-id*

```
Ruijie# disconnect ssh 1  
Ruijie# disconnect ssh vty 1
```

show ssh	
clear line vty <i>line_number</i>	

49 CPU

49.1

- ' **cpu-protect type** *packet-tpye* **pps** *pps_value*
- ' **cpu-protect type** *packet-tpye* **pri** *pri_value*

49.1.1 **cpu-protect type packet-type pps pps_value**

cpu-protect type arp bpdud **ipv6mc** igmp rip ospf vrrp

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>	

49.2

- ' **show cpu-protect mboard**
- ' **show cpu-protect slot** *slot-id*
- ' **show cpu-protect type** *packet-type*

49.2.1 show cpu-protect mboard

show cpu-protect mboard

show cpu-protect slot <i>slot-num</i>	

49.2.2 show cpu-protect slot

show cpu-protect slot *slot_num*

slot_num

--	--

50.1.2 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	

50.1.3 system-guard sam

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

```
Ruijie(config-if)# system-guard  
scan-dest-ip-attack-packets 100
```

system-guard enable	

50.1.5 system-guard detect-maxnum *number*

no

system-guard detect-maxnum *number*

no system-guard detect-maxnum

--	--

no

number

Ruijie(config)# **system-guard detect-maxnum 200**

system-guard enable	

50.1.6 system-guard exception-ip *ip mask*

no

system-guard exception-ip *ip mask*

no system-guard exception-ip *ip mask all-eip*

<i>ip</i>	
<i>mask</i>	
<i>all-eip</i>	

Ruijie(config)# **system-guard exception-ip
192.168.5.145/24**

system-guard enable	

50.1.7 clear system-guard [interface *interface-id* [ip-address *ip-address*]]

clear system-guard interface *interface-id ip-address*

interface <i>interface-id</i>	
ip-address <i>ip-address</i>	

```
Ruijie(config)# clear system-guard interface  
fastethernet 0/1
```

system-guard enable	

50.2

- ' **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 interface *interface-id***

50.2.1 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

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	

50.2.3 show system-guard detect-ip [interface *interface-id*]

```
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	

50.2.4 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	

show smp-server	

51.1.4 security event interval

security event interval *interval*

no security event interval

interval

show security event interval

Ruijie(config)# **security event interval 10**

show security event interval	

51.1.5 security address-bind enable

security address-bind enable

no security address-bind enable

```
Ruijie(config-if)# security address-bind enable
```

Ruijie# **show security event interval**
Event sending interval(Seconds):5

security event interval <i>interval</i>	

52 DAI

52.1 VLAN DAI

ip arp inspection vlan

52.1.1 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	

52.2

52.2.1 ip arp inspection trust

```
trust          no          ip arp inspection
ip arp inspection trust
no ip arp inspection trust
```

```
Ruijie(config)# interface gigabitEthernet 0/19
Ruijie(config-if)# ip arp inspection trust
```

show ip arp inspection interface	

52.3 DHCP Snooping

53.1.3 show anti-arp-spoofing

show anti-arp-spoofing

show anti-arp-spoofing

anti-arp-spoofing ip	

54 IP Source Guard

54.1 IP Source Guard

ip source binding

54.1.1 ip source binding

no

show ip source binding	

54.2 IP Source Guard

ip verify source

```
FastEthernet          0/1 ip          active
192.168.4.243        00d0.f801.0101 1
```

show ip verify source	

54.3 IP Source Guard

- ' **show ip verify source**
- ' **show ip source binding**
- ' **debug ip source bind**

54.3.1 show ip verify source

```
show ip verify source interface interface-id
```

interface-id

inactive-no-snooping-vlan

inactive-trust-port

active

Ruijie # **show ip verify source**

Interface	Filter-type	Filter-mode
Ip-address	Mac-address	VLAN

FastEthernet 0/1	ip	active
00d0.f801.0101	1	192.168.4.243



ip source binding	

54.3.3 debug ip source bind

55 NFPP

55.1

- ' **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**

55.1.1 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>	
--	--

55.1.2 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>	

55.1.3 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
```

show arp-guard configuration	

55.1.4 arp-guard rate-limit

arp-guard rate-limit *pps* per-src-ip per-src-mac per-port

pps

per-src-ip

```
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
```

show arp-guard configuration	

55.1.5 arp-guard attack-threshold

```
arp-guard attack-threshold pps per-src-ip per-src-mac per-port
```

```

"
"
"
```

“ ”

“ ”

“ ”

arp-guard attack-threshold 2 per-src-ip
arp-guard attack-threshold 3 per-src-mac
arp-guard attack-threshold 50 per-port

show arp-guard configuration	
clear arp-guard users	
show arp-guard users	

55.1.6 arp-guard scan-threshold

arp-guard scan-threshold pkt-cnt

pkt-cnt

"

"

"

"

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	

55.1.8 clear arp-guard scan

clear arp-guard scan

Ruijie# **clear arp-guard scan**

55.2.2 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	

55.2.3 show arp-guard scan

show arp-guard scan statistics **vlan** *vid* **interface** *interface-id*
mac-address

statistics

vid

interface-id

mac-address

77bb6Af.0/AsusA(4RsT*CB)0

-
- ' **ip access-group**
 - ' **mac access-group**
 - ' **expert access-group**
 - ' **ipv6 traffic-filter**

56.1.1 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* *Tw(os)Tj/TT1402 Tc(17.4c09*

destination-mac-address **any** **precedence** *precedence* **tos** *tos*
fragments **time-range** *time-range-name*

' **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
```

```
Ruijie(config)# access-list 102 permit tcp any any eq domain
Ruijie(config)# access-list 102 permit udp any any eq domain
Ruijie(config)# access-list 102 permit icmp any any echo
Ruijie(config)# access-list 102 permit icmp any any echo-reply
```

```
Ruijie(config)# access-list 702 deny host 00d0f8000c0c any aarp
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mac access-group 702 in
```

```
Ruijie(config)# access-list 2702 deny tcp host 192.168.12.3 mac 00d0.f800.0044 any any
Ruijie(config)# access-list 2702 permit any any any any
Ruijie(config)# show access-lists
expert access-list extended 2702
10 deny tcp host 192.168.12.3 mac 00d0.f800.0044 any any
10 permit any any any any
```

show access-lists	
mac access-group	

56.1.2 ip access-list

no

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	

56.1.3 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	

56.1.4 expert access-list

no

```
expert access-list extended id name
no expert access-list extended id name
```

id

name

show access-lists	

56.1.6 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	

56.1.7 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

hostdestination-ipv6-address **dscp** *dscp* **flow-label**
flow-label **fragments** **time-range** *time-range-name*

Internet Control Message Protocol

sn **deny icmp** *source-ipv6-prefix / prefix-length | any*
source-ipv6-address **host** *destination-ipv6-prefix* *prefix-length*
host *destination-ipv6-address* **any** *icmp-type* *icmp-type*
icmp-code *icmp-message* **dscp** *dscp* **flow-label**
flow-label **fragments** **time-range** *time-range-name*

Transmission Control Protocol

sn **deny tcp** *source-ipv6-prefix / prefix-length* **host**
source-ipv6-address **any** *operator* **port** *port* *destination-ipv6-prefix*
prefix-length **host** *destination-ipv6-address* **any** *operator* **port**
port **dscp** *dscp* **flow-label** *flow-label* **fragments** **time-range**
time-range-name **match-all** *tcp-flag*

User Datagram Protocol

deny udp *source-ipv6-prefix/prefix-length* **host**
source-ipv6-address **any** *operator* **port** *port*
destination-ipv6-prefix /prefix-length **host** *destination-ipv6-address*
any *operator* **port** *port* **dscp** *dscp* **flow-label** *flow-label*
fragments **time-range** *time-range-name*

access-list

Sn
source-ipv6-prefix
destination-ipv6-prefix
prefix-length
source-ipv6-address
destination-ipv6-address
dscp
dscp
flow-label
flow-label
protocol

```
Ruijie(config)# expert access-list extended 2702
Ruijie(config-exp-nacl)# deny tcp host
192.168.4.12 host 0013.0049.8272 any any
Ruijie(config-exp-nacl)# permit any any any any
Ruijie(config-exp-nacl)# show access-lists
expert access-list extended 2702
10 deny tcp host 192.168.4.12 host 0013.0049.8272 any
any
20 permit any any any any
Ruijie(config-exp-nacl)#
```

```
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	
ipv6 access-list	
permit	

56.1.8 permit

source-mac-address any destination destination-wildcard host destination any host destination-mac-address any time-range time-range-name

sn permit protocol VID out[/inner in source source-wildcard host Source any host source-mac-address any destination destination-wildcard host destination any host destination-mac-address any precedence precedence tos tos fragments time-range time-range-name

Internet Control Message Protocol

sn permit icmp VID out inner in source source-wildcard host source any host source-mac-address any destination destination-wildcard host destination any host destination-mac-address any icmp-type icmp-type icmp-code icmp-message precedence precedence tos tos fragments time-range time-range-name

Transmission Control Protocol

sn permit tcp VID ou inner in source source-wildcard host Source any host source-mac-address any operator port port destination destination-wildcard host destination any host destination-mac-address any operator port port precedence precedence tos tos fragments time-range time-range-name match-all tcp-flag

User Datagram Protocol

sn permit udp VID out inner in source source -wildcard host source any host source-mac-address any operator port port destination destination-wildcard host destination any host destination-mac-address any operator port port precedence precedence tos tos fragments time-range time-range-name

sn permit protocol source-ipv6-prefix prefix-length any host source-ipv6-address destination-ipv6-prefix prefix-length any hostdestination-ipv6-address dscp dscp flow-label flow-label

```
Ruijie(config)# ip access-list extended 102
Ruijie(config-ext-nacl)# permit tcp host 192.168.4.12
eq 100 any
Ruijie(config-ext-nacl)# show access-lists
ip access-list extended 102
10 permit tcp host 192.168.4.12 eq 100 any
Ruijie(config-ext-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ip access-group 102 in
Ruijie(config-if)#
```

```
Ruijie(config)#
```

```
Ruijie(config-ext-nacl)#
```

```
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	
ipv6 access-list	
deny	

56.1.9 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	

56.1.10 remark

remark *text*

Text

Ruijie# **ip access-list extended 102**

Ruijie(config-ext-nacl)# **remark** *first_remark*

Ruijie(config-ext-nacl)# **permit tcp** 1.1.1.1 0.0.0.0
2.2.2.2 0.0.0.0

Ruijie(config-ext-nacl)# **remark** *second_remark*

Ruijie(config-ext-nacl)# **permit tcp** 3.3.3.3 0.0.0.0
4.4.4.4 0.0.0.0

Ruijie(config-ext-nacl)# **end**

Ruijie# **configure terminal**

Ruijie(config)# **access-list 80 remark** *test_remark*

--	--

show access-lists	
ip access-list	

56.1.11 no sn

no sn

sn

Ruijie(config)# **ipv6 access-li**

host ::192.168.4.12 any Ruijie(config-ipv6-nacl)# **12 deny ipv6 host any any**

cl)# **show access-lists** ipv6 access-list extended v6-acl

:192.168.4.12 any 12 deny ipv6 any any

cl)# **no 12** Ruijie(config-ipv6-nacl)# **show access-lists** ipv6 access-list extended v6-acl

:192.168.4.12 any

cl)#

--	--	--

access-lost (ACL)Tj /TT3 1 Tf32.2514 0 T*40 Tc 0 Tw d2c5816ef044d>Tj /TT2 1 Tf32 0

--	--

show access-lists

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	

56.1.14 expert access-group

no

expert access-group *id name in out*
no expert access-group *id name in out*

id

name

in

out

show ipv6 traffic-filter

```
Ruijie(config)# interface GigaEthernet 0/1
Ruijie(config-if)# ipv6 traffic-filter v6-acl in
```

show access-group	

56.2

- ' show access-lists
- ' show ip access-group
- ' show expert access-group
- ' show mac access-group
- ' show ipv6 traffic-filter
- ' show access-group

56.2.1 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	

56.2.2 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	

56.2.3 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.
```

expert access-list	

56.2.4 show mac access-group

```
Ruijie# show mac access-group interface gigabitethernet  
0/3  
mac access-group mm in  
Applied On interface GigabitEthernet 0/3.
```

mac access-list	

56.2.5 show ipv6 traffic-filter

```
show ipv6 traffic-filter
```

```
Ruijie# show access-group
ip access-list standard ipstd3
Applied On interface GigabitEthernet 0/1.
ip access-list standard ipstd4
Applied On interface GigabitEthernet 0/2.
ip access-list extended 101
Applied On interface GigabitEthernet 0/3.
ip access-list extended 102
Applied On interface GigabitEthernet 0/8.
```

ip access-group	
mac access-group	
expert access-group	
ipv6 traffic-filter	

id

name

.

56.3.3 security uplink enable

security uplink enable

no security uplink enable

Ruijie(config-if)#**security uplink enable**

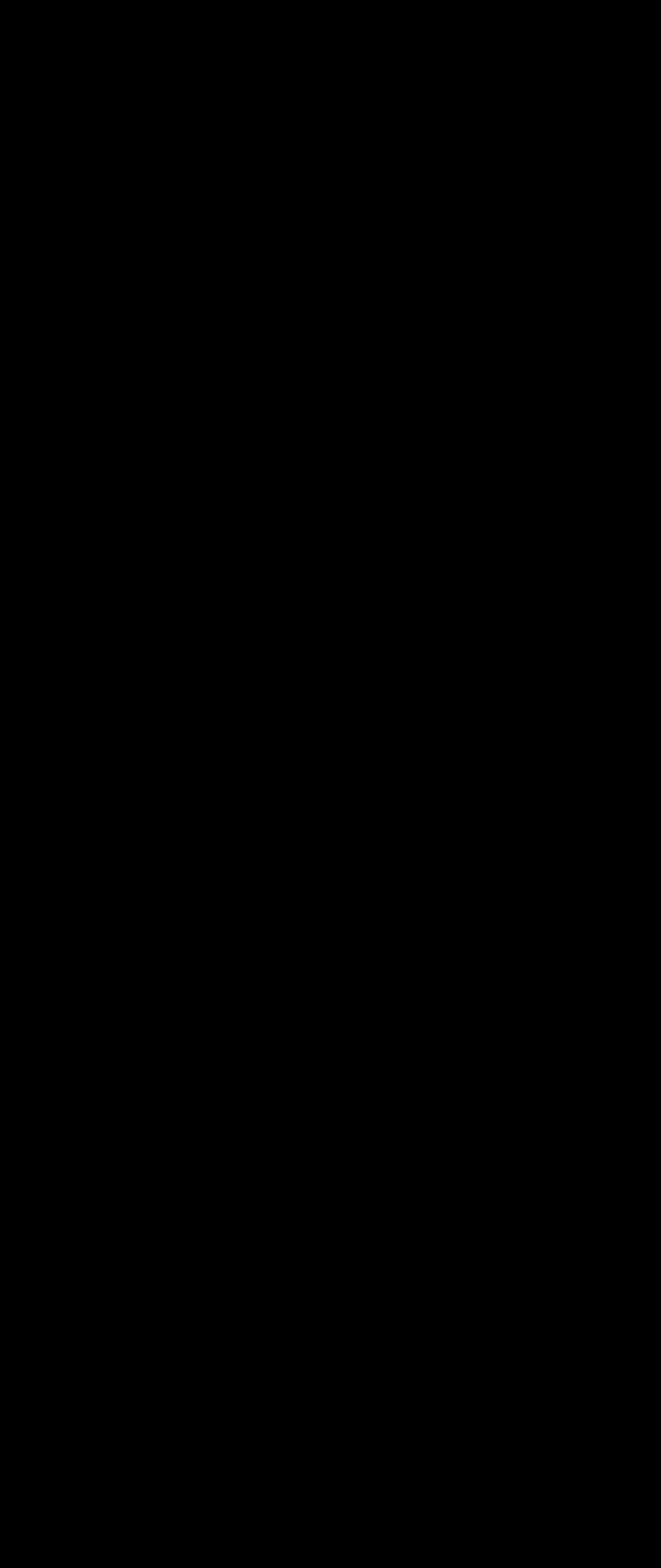
show secu-acl	

57

QOS

57.1

--	--	--	--	--	--	--	--	--	--



Ruijie(config)# **mac access-list extended me**

Ruijie(config-ext-macl)# **permit host 1111.2222.3333
any**

Ruijie(config-ext-macl)# **exit**

Ruijie(config)# **class-map cm**

Ruijie(config-cmap)# **match access-group me**

Ruijie(config-cmap)# **exit**

show mac access-lists

show ip access-lists

show class-map

57.2.4 Policy Maps

no policy-map *policy-map-name*

no class *class-map-name*

set ip dscp *new-dscp*

no set ip dscp

police *rate-bps burst-byte exceed-action drop dscp dscp-value*

no police

policy-map-name

no policy-map *policy-map-name*

class-map-name

no class *class-map-name*

new-dscp

rate-bps

burst-byte

drop

dscp-value

Ruijie(config)# **policy-map po**

Ruijie(config-pmap)# **class cm**

Ruijie(config-pmap-c)# **set ip dscp 10**

Ruijie(config-pmap-c)# **police 1000000 4096**
exceed-action dscp 16

show policy-map

57.2.5 service-policy

service-policy **input output** *policy-map-name*

no service-policy input output

policy-map-name

no

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

Ruijie(config-if)# **service-policy input po**

Ruijie(config)# **virtual-group 3**

Ruijie(config-if)# **service-policy input po**

show mls qos interface

57.2.6 priority-queue

no priority-queue

priority-queue

no priority-queue

Ruijie(config)# **no priority-queue**

show mls qos queueing

57.2.7 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

57.2.8 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
```

57.2.9 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
```

57.2.10 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
```

57.2.11 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
```

57.2.12 mls qos scheduler

```
mls qos scheduler sp rr wrr drr
```

no mls qos scheduler

sp

rr

wrr

drr

no

Ruijie(config)# **mls qos scheduler sp**

show mls qos scheduler

57.2.13 drr-queue bandwidth

drr-queue bandwidth *weight1...weight8*

no drr-queue bandwidth

weight1...weight8

no

Ruijie(config)# **drr-queue bandwidth 1 2 3 4 5 6 7 8**

show mls qos queueing

57.2.14 mls qos map ip-prec-dscp

mls qos map ip-prec-dscp dscp1...dscp8

no mls qos map ip-prec-dscp

dscp

no

```
Ruijie(config)# mls qo map ip-prec -dscp 8 10 16 18 24  
26 32 34
```

show mls qos maps

virtual-group

virtual-group *virtual-group-number*

no virtual-group *virtual-group-number*

<i>virtual-group-number</i>	

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

show virtual-group	

57.3

57.3.1 show class-map

```
show class-map class-name
```

```
class-name
```

policy-name

class-name

Ruijie# **show policy-map**

57.3.3 show mls qos interface

show mls qos interface *interface-id* **policers**

interface-id

policers

Ruijie# **show mls qos interface fastEthernet 0/1**

57.3.4 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
```

57.3.5 show mls qos queueing

```
show mls qos queueing
```

```
Ruijie# show mls qos queueing
```

57.3.6 show mls qos scheduler

```
show mls qos scheduler
```

```
Ruijie# show mls qos scheduler
```

57.3.7 show mls qos maps

```
show mls qos maps cos-dscp dscp-cos ip-prec-dscp
```

```
cos-dscp
```

```
dscp-cos
```

```
ip-prec-dscp
```

Ruijie# **show mls qos maps**

57.3.8 show mls qos rate-limit

show mls qos rate-limit interface *interface-id*

interface

Ruijie# **show mls qos rate-limit**

57.3.9 show virtual-group

show virtual-group *virtual-group-number* | **summary**

virtual-group-number

summary

Ruijie# **show virtual-group 1**

Ruijie# **show virtual-group summary**

58

WRED

58.1 WRED

58.2.1 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>	

```
Ruijie(config-if)# wrr-queue random-detect max-threshold 1 88 89 90
```

```
272.42 m01/TT3 1 T11n0<55c59.1c>6j9T2 .0460.852 g42 -7384.06
```

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

58.2.3 wrr-queue random-detect probability

wrr-queue random-detect min-threshold *queue_id* *prob1* [*prob2* *prob3*]

no wrr-queue random-detect min-threshold *queue_id*

<i>queue_id</i>	

<i>queue_id</i>	
<i>cos_value</i>	

Ruijie(config-if)#wrr-queue cos-map 2 1 6

58.3

> .

58.3.1 show queueing wred interface

show queueing wred interface *interface*

<i>Interface</i>	

59 VRRP

59.1

- ' vrrp authentication
- ' vrrp delay
- ' vrrp description
- ' vrrp ip
- ' vrrp preempt
- ' vrrp priority
- ' vrrp timers advertise
- ' vrrp timers learn
- ' vrrp track

59.1.1 vrrp authentication

no

vrrp group authentication *string*
no vrrp group authentication

group

string

vrrp 1 authentication x30dn78k

vrrp group ip <i>ipaddress secondary</i>	

59.1.2 vrrp delay

vrrp delay **minimum** *min-seconds* **reload** *reload-seconds*

no vrrp delay

min-seconds

min-seconds

reload-seconds

min-seconds *reload-seconds*

min-seconds

47Ç å1 Y

vrrp group ip <i>ipaddress secondary</i>	

59.1.3 vrrp description

no

vrrp group description *text*

no vrrp group description

group

text

no

vrrp group ip ipaddress secondary
no vrrp group ip ipaddress secondary

group

ipaddress

secondary

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	

59.1.6 vrrp priority

no

vrrp group priority *level*

no vrrp group priority

group

level

vrrp 1 priority 254



vrrp group ip

vrrp 1 timers advertise 4

vrrp group ip <i>ipaddress</i> secondary	
vrrp group timers learn	

59.1.8 vrrp timers learn

vrrp group timers learn
no vrrp group timers learn

group

vrrp 1 timers learn

vrrp group ip <i>ipaddress</i> secondary	

vrrp group timers advertise msec interval	
--	--

59.2.1 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	

59.2.2 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
```

59.2.3 debug vrrp events

```
%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
```

59.3

59.3.1 show vrrp

```
show vrrp brief grou
```

```
brief
```

```
group
```

```
Ruijie# show vrrp
```

```
FastEthernet 0/0 - pTi6 Tc( )TjEc( )TjEc( )TjEc( )TjEc( )TjEc( )TjE
```

```
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#
```



```

Ruijie# show vrrp interface fastethernet 0/0
FastEthernet 0/0 - Group 1
State is Backup
Virtual IP address is 192.168.201.1 configured
Virtual MAC address is 0000.5e00.0101
Advertisement interval is 3 sec
Preemption is enabled
min delay is 0 sec
Priority is 100
Master 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

```

vrrp group ip	
<i>ip address</i> secondary	

60 BFD

60.1

60.1.1 bfd

bfd

no

bfd interval *milliseconds* **min_rx** *milliseconds* **multiplier** *multiplier-value*

no bfd interval *milliseconds* **min_rx** *milliseconds* **multiplier** *multiplier-value*

Interval <i>milliseconds</i>	BFD <i>milliseconds</i> echo	BFD 50ns 1000ns
min_rx <i>milliseconds</i>	BFD <i>milliseconds</i> 1000ns	BFD 50ns
Multiplier <i>multiplier-value</i>	<i>multiplier-value</i>	

r

```
Ruijie(config)# interface fastEthernet 0/2
Ruijie(config)# no switchport
```

```
Ruijie(config-if)# bfd interval 100 min_rx 100 multiplier 3
```

bfd all-interfaces	
clear bfd	
ip ospf bfd	
ip rip bfd	

60.1.2 bfd all-interfaces

bfd all-interfaces

no

bfd all-interfaces

no bfd all-interfaces

BFD

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
```

Ruijie(config)# **bfd cpp**

-	

60.1.4 bfd echo

bfd echo

no

bfd echo

no bfd echo

Interval milliseconds *min_rx milliseconds*

r

redirects

no ip
no ip deny land

```
Ruijie(config)# no switchport
Ruijie(config-if)# bfd echo
```

bfd	
ip redirects	
ip deny land	
bfd slow-timer	

60.1.5 bfd slow-timer

bfd slow-timer

```
Ruijie(config)# bfd slow-timer 14000
```

bfd echo	

60.1.6 bfd up-dampening

	()	UP
<i>milliseconds</i>		

└───

	10.3(5)	

60.1.7 ip ospf bfd

```
ip ospf bfd
  disable
ip ospf bfd disable
```

bfd	
bfd all-interfaces	

60.1.8 ip rip bfd

```

ip rip bfd
disable          no
ip rip bfd disable
no ip rip bfd

```

disable	() R I P B F D

di sabl e BFD

no bfd all-interfaces

ip rip bfd [disable]

```

Ruijie(config)# interface FastEthernet 0/2
Ruijie(config-if)# no switchport
Ruijie(config-if)# ip rip bfd disable

```

--	--

bfd	
bfd all-interfaces	

60.1.9 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*

vrf <i>vrf-name</i>	
<i>interface-type</i> <i>interface-number</i>	
<i>gateway</i>	IP BFD IP BFD
source <i>ip-address</i>	() BFD IP , IP

BFD

r BFD

```
Ruijie(config)# interface FastEthernet 0/1
Ruijie(config-if)# no switchport
Ruijie(config-if)# ip address 172.16.0.1 255.255.255.0
```

```
Ruijie(config-if)# bfd interval 50 min_rx 50 multiplier 3
Ruijie(config-if)# ip route static bfd FastEthernet 0/1 172.16.0.2
Ruijie(config-if)# ip route 10.0.0.0 255.0.0.0 FastEthernet
0/1 172.16.0.2
```

bfd	

60.1.10 neighbor fall-over bfd

neighbor fall-over

```
Ruijie(config-router)# neighbor 172.16.0.2 fall-over bfd
```

```
Ruijie(config-router)# end
```



	IP	BFD
r	VRRP	,
	IP	

```

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	

60.2

> [_____](#)

60.2.1 show bfd neighbors

```

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

```



-	

61 RERP

61.1

- ' rerp enable
- ' rerp hello-interval
- ' rerp fail-interval
- ' rerp region

- ' ring
- ' edge-ring
- ' major-ring

61.1.1 rerp enable

- rerp enable
- no rerp enable

--	--

h r e e l r l

Ruijie(config)# **rerp fail-interval 6**



rerp hello- interval

rerp enable	
--------------------	--

61.1.5 ring

ring *num* **role** **master** **backup** **transit** **ctrl-vlan** *vid* **primary-port**
interface *interface-id* **secondary-port** **interface** *interface-id*
no ring *num*

num

master | **backup** | **transit**

vid

interface-id

```
Ruijie(config)# rerp region 1  
Ruijie(config-rerp)# ring 1 role master ctrl-vlan 100  
primary-port interface GigabitEthernet 0/1  
secondary-port interface GigabitEthernet 0/2
```

rerp region	

61.1.6 edge-ring

edge-ring *num* **role** **primary-edge|secondary-edge** **ctrl-vlan** *vid*
shared-port interface *interface-id* **sub-port interface** *interface-id*
no ring *num*

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	

61.1.7 major-ring

major-ring *num* **edge-ring-vlan** *vid*

num

vid

```
Ruijie(config)# rerp region 1  
Ruijie(config-rerp)# major-ring 1 edge-ring-vlan 100
```

rerp region	
ring	

61.2

- ' **show rerp**
- ' **show rerp statistics**
- ' **clear rerp statistics**
- ' **debug rerp**

61.2.1 show rerp

```
show rerp
```

```
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)
```

61.2.2 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

61.2.3 clear rerp statistics

clear rerp statistics

61.2.4 debug rerp

debug rerp packet event

undebug rerp packet event

packet

event

62 REUP

62.1

- ' **mac-address-table move update receive**
- ' **mac-address-table move update transmit**

- ' **switchport backup interface *interface-id***
- ' **switchport backup interface *interface-id* **preemption****
- ' **mac-address-table update group**

show interface switchport backup	

62.1.2 switchport backup interface *interface-id!*

c

î

`preemption delay 40`

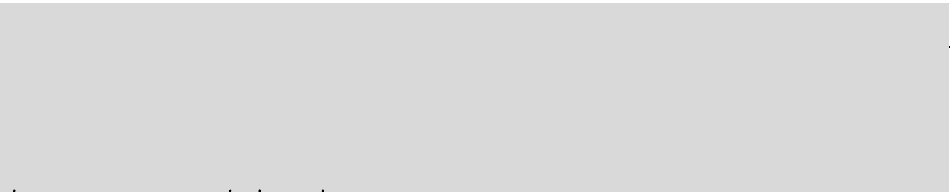
<code>show interface switchport backup</code>	

62.1.3 mac-address-table move update receive

`mac-address-table move update receive`

`no mac-address-table move update receive`

Ruijie(config)# `mac-address-table move update receive`



Ruijie(config)# **mac-address-table move update transit**

mac-address-table move update transit	

62.1.5 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	

62.2

- ± **show interfaces *interface-id* switchport backup detail**
- ± **show mac-address-table update group detail**

62.2.1 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
```

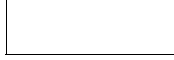
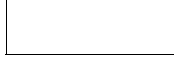
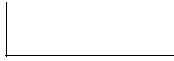
62.2.2 show interfaces [*interface-id*] switchport backup [detail]

63.1.3 rldp detect-max

rldp detect-max *num*

no rldp detect-max

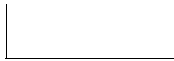




```
Ruijie(config)# rldp enable
```



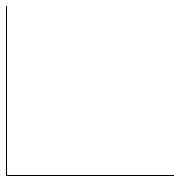
rldp port	

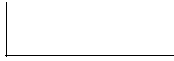


63.1.5 rldp loop-detect enable

rldp loop-detect enable

no rldp loop-detect enable





```
Ruijie(config)# rldp loop-detect enable
```



	rldp enable	
--	--------------------	--

63.1.7 rldp reset

rldp shutdown disable

rldp reset

--

--

--

--

Ruijie# **rldp reset**

	rldp enable	

--

63.2

> .

> .

63.2.1 show rldp

show rldp interface *interface-id*

	<i>Interface-id</i>	

--

--

--

--

--

63.2.2 debug rldp

debug rldp packet | event | error

undebug rldp packet | event | error

	packet	
	event	
	error	

--

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64 DLDP

64.1

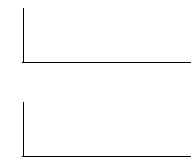
- > _____
- > _____
- > _____

64.1.1 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)#interface vlan 1
Ruijie(config-if-VLAN 1)#ip address 10.83.132.1 255.255.255.0

Ruijie(config-if-VLAN 1)#dldp 10.83.132.10

Ruijie#config
Ruijie(config)#interface vlan 1
Ruijie(config-if-VLAN 1)#ip address 10.83.132.1 255.255.255.0

Ruijie(config-if-VLAN 1)#dldp 10.83.131.10 next-hop 10.83.132.2

Ruijie#config
Ruijie(config)#interface vlan 1
Ruijie(config-if-VLAN 1)#no dldp 10.83.132.10
```



```
fig
```

```
(g)#interface vlan 1
```

```
fig-if-VLAN 1)#ip address 10.83.132.1 255.255.255.0 //
```

```
IP
```

```
đ
```

Ruijie#show dldp

|
|

|
|

64.3

64.3.1 clear dldp

clear dldp interface *interface-name ip-address*

|

<i>interface-name</i>	

L

65 TPP

65.1

65.1.1 topology guard

no topology guard

cpu topology-limit

```
Ruijie(config)# topology guard  
Ruijie(config)# no topology guard
```

tp-guard port enable

cpu topology-limit

65.1.2 tp-guard port enable

no tp-guard port enable

```
Ruijie(config-if)# tp-guard port enable  
Ruijie(config-if)# no tp-guard port enable
```

topology guard

65.2 TPP

65.2.1 show tpp

show tpp

```
Ruijie# show tpp
```

topology guard

66

66.1

- ' **cd**
- ' **cp**
- ' **ls**
- ' **makefs**
- ' **mkdir**
- ' **mv**
- ' **pwd**
- ' **rm**
- ' **rmdir**

66.1.1 cd

cd *DIRECTORY*

,

Is	

66.1.2 cp

PATHNAME

Ruijie# **ls**

Ruijie# **ls tmp**

66.1.4 makefs

makefs dev DEVNAME fs FSNAME

makefs fs FSNAME dev DEVNAME

DEVNAME

FSNAME

```
Ruijie# makefs dev /dev/mtdblock/1 fs jffs2
```

66.1.5 mkdir

```
mkdir DIRECTORY
```

```
DIRECTORY
```

```
Ruijie# mkdir test
```

66.1.6 mv

```
mv sour SOURCE_FILE dest DESTINE_FILE DIRECTORY
```

```
mv dest DESTINE_FILE DIRECTORY sour SOURCE_FILE
```

```
SOURCE_FILE
```

```
DESTINE_FILE/DIRECTORY
```

type file

s,óK õ"ã +

rm *FILE*

FILE

rm

Ruijie# **rmdir** *tmp*

Ruijie# **ls**

51	0%	0%	0%	bgpd
52	0%	0%	0%	pimd
53	0%	0%	0%	pim6d
54	0%	0%	0%	pdmd
55	0%	0%	0%	dvmrpd
56	0%	0%	0%	vty_connect
57	0%	0%	0%	aaa_task
58	0%	0%	0%	Tlogtrap
59	0%	0%	0%	dhcp6c
60	0%	0%	0%	sntp_recv_task
61	0%	0%	0%	ntp_task
62	0%	0%	0%	sla_daemon
63	0%	3%	1%	track_daemon
64	0%	0%	0%	pbr_guard
65	0%	0%	0%	vrrpd
66	0%	0%	0%	psnpd
67	0%	0%	0%	igsnpd
68	0%	0%	0%	coa_recv
69	0%	0%	0%	co_oper
70	0%	0%	0%	co_mac
71	0%	0%	0%	radius_task
72	0%	0%	0%	tac+_acct_task
73	0%	0%	0%	tac+_task
74	0%	0%	0%	dhcpd_task
75	0%	0%	0%	dhcps_task
76	0%	0%	0%	dhcpping_task
77	0%	0%	0%	dhcpc_task
78	0%	0%	0%	uart_debug_file_task
79	0%	0%	0%	ssp_init_task
80	0%	0%	0%	rl_listen
81	0%	0%	0%	ikl_msg_operate_thread
82	0%	0%	0%	bcmDPC
83	0%	0%	0%	bcmL2X.0
84	3%	3%	3%	bcmL2X.0
85	0%	0%	0%	bcmCNTR.0
86	0%	0%	0%	bcmTX
87	0%	0%	0%	bcmXGS3AsyncTX
88	0%	2%	1%	bcmLINK.0
89	0%	0%	0%	bcmRX
90	0%	0%	0%	mngpkt_rcv_thread
91	0%	0%	0%	mngpkt_recycle_thread
92	0%	0%	0%	stack_task
93	0%	0%	0%	stack_disc_task
94	0%	0%	0%	redun_sync_task
95	0%	0%	0%	conf_dispatch_task
96	0%	0%	0%	devprob_task

97	0%	0%	0%	rdp_snd_thread
98	0%	0%	0%	rdp_rcv_thread
99	0%	0%	0%	rdp_slot_change_thread
100	4%	2%	1%	datapkt_rcv_thread
101	0%	0%	0%	keepalive_link_notify
102	0%	0%	0%	rerp_msg_rcv_thread
103	0%	0%	0%	ip_scan_guard_task
104	0%	0%	0%	ssp_ipmc_hit_task
105	0%	0%	0%	ssp_ipmc_trap_task
106	0%	0%	0%	hw_err_snd_task
107	0%	0%	0%	rerp_packet_send_task
108	0%	0%	0%	idle_vlan_proc_thread
109	0%	0%	0%	cmic_pause_detect
110	1%	1%	1%	stat_get_and_send
111	0%	1%	0%	rl_con
112	75%	80%	90%	idle

,
,
,
,

"

"

67.1.2 cpu-log

cpu-log

```
ruijie(config)# cpu-log log-limit 70 80
```

```
Oct 20 15:47:01 %SYSCHECK-5-CPU_USING_RATE: CPU  
utilization in one minute : 95% Using most cpu's task  
is ktimer : 94%
```

```
Oct 20 15:47:01 %SYSCHECK-5-CPU_USING_RATE: CPU  
utilization in one minute :68% Using most cpu's task  
is ktimer : 60%
```

```
Oct 20 15:47:01 %SYSCHECK-5-CPU_USING_RATE: The CPU  
using rate has down!
```

67.2

```
show memory  
memory-lack exit-policy  
show memory protocols
```

67.2.1 show memory

```
show  
  
memory  
  
show memory
```

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
	OVERFLOW

67.2.2 memory-lack exit-policy

```
memory-lack exit-policy bgp ospf pim-sm rip
no memory-lack exit-policy
```

bgp ospf pim-sm rip	
no	

/

```
Ruijie(config)# memory-lack exit-policy bgp
```

show memory	

67.2.3 show memory protocols

show memory protocols

/

Ruijie(config)# **show memory protocols**

```
=====
protocol      |memory(byte)
BGP           |102000000
OSPF          |24000000
RIP           |10000000
PIM           |50000000
LDP           |20000000
-----
Total        |206000000
```

show memory	

67.3

67.3.1

> _____

67.3.1.1 threshold set

no

```
Ruijie(config)# threshold set cpu member 2 70 90
```



Ruijie# **show threshold memory**

threshold set	

68

68.1

68.1.1 logging on

logging on

no logging on

0

logging monitor	
------------------------	--

logging trap

no logging buffered

buffer-size

```
Ruijie(config)# logging buffered 10000 6
```

logging on	
show logging	
clear logging	

68.1.4 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	

68.1.5 logging file flash

logging file flash:*filename max-file-size level*

no logging file

filename

max-file-size

Ruijie(config)# **logging file flash:trace**

logging on	
show logging	
more flash	

68.1.6 logging console

logging console *level*

no logging console

level

show logging

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

logging on	
show logging	

68.1.7 logging monitor

logging monitor *level*

no logging monitor

level

terminal

monitor

Ok - Alog 97742185FD 0.0971 Tc <3f550cfc>Tj 33>Tj /TT2 1 Tf 6 51>4d369 -1 1 f

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

logging on	
show logging	

68.1.8 logging trap

logging trap *level*

no logging trap

level

show logging

Ä

logging source ip *ip-address* **ipv6** *ipv6-address*

no logging source ip ipv6

ip-address

ipv6-address

Ruijie(config)# **logging source ip** 192.168.1.1





**Numerica
I**



count

no logging

Ruijie(config)# **logging count**

show logging count	
show logging	

68.1.13 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)#
Ruijie(config)#line console 0
Ruijie(config-line)#logging synchronous
```

```
Ruijie#configure terminal
Oct 9 23:40:55 %LINK-5-CHANGED: Interface
GigabitEthernet 0/1, changed state to down
Oct 9 23:40:55 %LINEPROTO-5-UPDOWN: Line protocol on
Interface GigabitEthernet 0/1, changed state to DOWN
Ruijie#configure terminal ----
```

show running-config	

68.1.15 service sequence-numbers

service sequence-numbers

no service sequence-numbers

Ruijie(config)# **service sequence-numbers**

logging on	
service timestamps	

68.1.16 service timestamps

service timestamps *message-type uptime datetime msec year*

no service timestamps *message-type*

default service timestamps *message-type*

message-type

uptime

datetime

msec

year

```
Ruijie(config)# service timestamps debug datetime msec
Ruijie(config)# service timestamps log datetime msec
Ruijie(config)# end
Ruijie(config)# Oct  8 23:04:58.301 %SYS-5-CONFIG_I:
Configured from console by console
```



```
Ruijie(config)# service sysname
Ruijie(config)# end
Ruijie#
Mar 22 15:35:57 S3250 %SYS-5-CONFIG: Configured from
console by console
```

show logging	

68.1.18 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:	

68.1.19 clear logging

Monitor logging: level informational, 0 messages logged
Buffer logging: level debugging, 6 messages logged
Timestamp debug messages: datetime
Timestamp log messages: disabled
Sequence log messages: enable
Trap logging: level debugging, 2 message lines logged, 0 reserved, 0 fail
logging to 202.101.11.22
logging to 192.168.200.112
Log Buffer (Total 4096 Bytes) : have written 680
00001 2004-11-17 10:20:59 Ruijie: %7:%LINK CHANGED:
Interface FastEthernet 0/0, changed state to up
00002 2004-11-17 10:20:59 Ruijie: %7:%LINE PROTOCOL
CHANGE: Interface FastEthernet 0/0, changed state to UP
00003 2004-11-17 10:57:18 Ruijie: %7:%LINK CHANGED:
Interface FastEthernet 0/1, changed state to
administratively down
00004 2004-11-17 10:57:21 Ruijie: %7:%LINK CHANGED:
Interface FastEthernet 0/1, changed state to down
00005 2004-11-17 10:57:41 Ruijie: %7:%LINK CHANGED:
Interface FastEthernet 0/1, changed state to
administratively down
00006 2004-11-17 10:57:43 Ruijie: %7:%LINK CHANGED:
Interface FastEthernet 0/1, changed state to down

count

show logging count

logging

show logging

```

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
00006 2004-11-17 10:57:43 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
00004 2004-11-17 10:57:21 Ruijie: %7:%LINK CHANGED:
Interface FastEthernet 0/1, changed state to down
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

69 POE

- ' PoE enable
- ' PoE-power lower lower
- ' PoE-power upper upper
- ' PoE disconnect-mode mode

69.1

69.1.1 poe enable

no

poe enable

no poe enable

```
Ruijie(config-if)# poe enable  
Ruijie(config-if)# no poe enable
```

69.1.2 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#
```

69.1.3 poe-power upper upper

no

```
poe-power upper upper
no poe-power upper
```

```
Ruijie# configure
Ruijie(config)# poe-power upper 56
Ruijie(config)# end
```

69.1.4 poe disconnect-mode mode

no

```
poe disconnect-mode mode
no poe disconnect-mode
```

```
Ruijie# configure
Ruijie(config)# poe disconnect-mode dc
```

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

69.2

```
' show poe interfaces  
' show poe powersupply
```

69.2.1 show poe interfaces

```
show poe interfaces interface-id
```

```
Ruijie# show poe interface gigabitethernet 0/2  
Interface : Gi0/2  
Port power enabled : ENABLE  
Port connect status : OFF  
Port PD Class : no PD devices  
Port max power : 15.4 W  
Port current power : 0 W  
Port peak power : 0 W  
Port current : 0 mA  
Port voltage : 48 V  
Port trouble cause : normal
```

69.2.2 show poe powersupply

```
show poe powersupply
```

```
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

-
- ' **device-priority**
 - ' **device-descriptionm**
 - ' **show memberm**

70.1.1mdevice-priority

device-priority

<i>memberm</i>	

Ruijie(config)#m

2 8m

--	--

show member	
--------------------	--

70.1.2 device-description

device-description member *member description*

member <i>member</i>	
<i>description</i>	

Ruijie(config)# **device-description member 2 red-giant**

show member	

70.2

70.2.1 show member

<i>member</i>	
---------------	--

```
Ruijie# show member
Member Mac Address      Priority Software Version
HardwareVersion Description
-----
1          00d0.f810.3323    1          RGOS 10.1.00(2),
ReleaJ c. 9 Priority Software Version
HardwareVersion Description
```