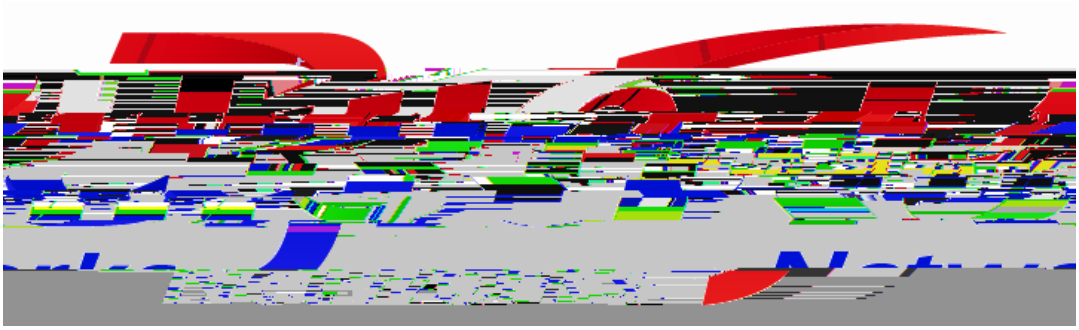


RG-S5750-28GT-S

RGOS 10.4(2b11)p1

! ?Ô

RGOS®10.4(2b11)p1

z

z

z

1.

Courier New 5

2.

Arial

[ ] [ ]

{ x | y | ... }

[x | y | ...]

//

3.

a **!**

!

a	**1.** **2.** **3.**

1 CLI Ñ ã a —

1.1 " - ‘ a —

1.1.1 alias

alias no

alias mode command-alias original-command

no alias mode [original-command]

mode	
command-alias	
original-command	

EXEC

EXEC **h p s u un** **help ping show undebug undebug**

no alias exec

alias ?

Ruijie(config)# alias ?

aaa-gs AAA server group mode

acl acl configure mode

bgp Configure bgp Protocol

config globle configure mode

*

*command-alias=original-command

EXEC ”s” ”show” ”s?” ’s’

-	-

1.1.2 privilege

privilege

no

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

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

mode	CLI
[**all**]	
level level	0-15
reset	
command-string	

privilege CLI

privilege ?

CLI

config	
exec	
interface	
ip-dhcp-pool	DHCP
keychain	KeyChain
keychain-key	KeyChain-key
time-range	Time-Range

CLI 1 ”test” **reload**

EXEC

Ruijie# show aliases exec

exec mode alias:

h help

p ping

s show

u undebug

un undebug

alias	

-	-

2.1.2 enable

enable

-	-

-	-

-	-

2.1.3 enable password

enable password **no**

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

Password	EXEC
Level	
0|7	0 7
encrypted-password	

no enable service

enable service ssh-sesrver, SSH Server

Ruijie(Config # enable service ssh-sesrver

show service	

-	-

2.1.6 execute

execute

execute {[**flash:**] filename}

flash:	
filename	

PC

TFTP Flash

CLI

line_rcms_script.text

Telnet

configure terminal

line tty 1 16
transport input all
no exec
end

Ruijie# execute flash: line_rcms_script.text
executing script file line_rcms_script.text .....
executing done
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# line vty 1 16
Ruijie(config-line)# transport input all
Ruijie(config-line)# no exec
Ruijie(config-line)# end

-	-

-	-

2.1.7 ip http authentication

Http Server Web Web

ip http authentication

ip http authentication { **enable** | **local** }

enable	enable password enable secret 15 enable
local	username 15

enable

Web **no ip http authentication**

Web local

Ruijie(config)# ip http authentication local

lockable

no lockable

-	-

line

EXEC

lock

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

lock	

-	-

2.1.12 login

AAA

login **no**

login

no login

-	-

line

AAA

VTY console

VTY

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

password	line

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

username	

-	-

2.1.15 privilege mode

CLI

-	-

CLI

CLI

CLI

CLI

-	-

-	-

2.1.16 password

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

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

no password

1 telnet IPV4 192.168.1.1
vlan 1 VRF vpn1
Ruijie# telnet 192.168.1.1 /source interface vlan 1 /vrf vpn1

ip telnet source-interface	IP Telnet
show session	TTY
exit	

-	-

2.1.19 username

username

username name{**nopassword**|**password**{password | [**0|7**]encrypted-password }}

username name **privilege** privilege-level

no username name

name	
password	
0|7	0 7

encrypted-password

7

a 7

7

15

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

login local	

-	-

2.2 " n ‡ , Ä • 8 - ‘ a —

2.2.1 banner login

banner login

no banner login

banner login c message c

c	
message	

-	-
-	-

2.2.3 boot system

no

boot system url

no boot system

url	

“ flash:/rgos.bin ”

url

	1	flash	URL	flash
a	2			
		Boot ROM		

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

Ruijie#dir
Directory of flash:/
  11015744 2008-01-01 08:00:46 rgos.bin
  12019754 2008-02-01 08:00:46 s5750_10_4.bin

399 2006-01-01 08:01:37 config.text
33,030,144 bytes total. (10,590,592 bytes free)

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

show boot system	

-

-	-

2.2.4 clock set

clock set

clock set hh:mm:ss month day year

hh:mm:ss	24 : :
day	1-31
month	1-12
year	1993-2035

clock set

2003 3 17 10 20 30

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

Ruijie# show clock

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

show clock	

-	-

2.2.5 clock update-calendar

clock update-calendar

-	-

calendar

Ruijie# clock update-calendar

-	-

-

-	-

2.2.6 exec-timeout

LINE **exec-timeout** **no exec-timeout**
LINE

exec-timeout minutes [seconds]

no exec-timeout

minutes	
seconds	

10 min

LINE

LINE

line vty 0 5 30
Ruijie(config-line)# exec-timeout 5 30

-	-

-	-

2.2.7 hostname

hostname

hostname name

name	63

Ruijie

CHAP

Ruijie# reload in 10

Router will reload in 600 seconds.

-	-

-	-

2.2.10 session-timeout

LINE **session-timeout**

no session-timeout LINE

session-timeout minutes [**output**]

no session-timeout

minutes	
output	

0 min

LINE

LINE

LINE

line vty 0 5 30

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

-	-

-	-

2.2.11 speed

memory	NVRAM **copy running-config startup-config**
network	TFTP **copy running-config tftp**
terminal	**show running-config**

1 **boot config**

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

2 **boot config** U U **write**

```
Ruijie(config)#  boot config  /mnt/usb1/config.text
Ruijie#  write
Building configuration...
Write to boot config file: [/mnt/usb1/config.text]
[OK]
Ruijie#  usb remove  1
0:1:1:38 Ruijie: USB-5-  USB_DISK_REMOVED: USB Device <USB Mass Storage Device> Removed!
Ruijie#  write
Building configuration...
Write to boot config file: [/mnt/usb1/config.text]
[Failed]
The device [usb1] does not exist, write to the default config file [/config.text]? [no]  yes
Write to the default config file: [/config.text]
[OK]
```


boot config	
copy	
show running-config	

-	-

2.3 ¡ µ - ‘ a —

2.3.1 show clock

show clock

show clock

-	-

detail

show clock

Ruijie# show clock

clock: 2003-3-17 10:27:21

clock set	

-	-

2.3.2 show line

show line

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

console	
aux	aux
vty	vty
line-num	line

console

```
Ruijie#      show line console          0
CON   Type   speed  Overruns
* 0   CON    9600   45927
Line 0, Location: "", Type: "vt100"
Length: 24 lines, Width: 79 columns
Special Chars: Escape Disconnect Activation
        ^^x   none     ^M
Timeouts:    Idle EXEC   Idle Session
        never     never
History is enabled, history size is 10.
Total input: 53564 bytes
Total output: 395756 bytes
Data overflow: 27697 bytes
stop rx interrupt: 0 times
```

-	-

-	-

2.3.3 show reload

show reload

show reload

-	-

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

-	-

-	-

2.3.4 show running-config

show running-config

show running-config

-	-

-	-

-	-

2.3.5 show startup-config

NVRAM

show startup-config

show startup-config

-	-

NVRAM startup-config

startup-config Flash “ /config.text ”

-	-

-	-

2.3.6 show version

show version

show version [**slots** | **devices**]

slots	
devices	

Ruijie# show version
Systemdescription:RuijieDualStackMulti-LayerSwitch(S3760- 24)
By Ruijie Network
System start time: 1970-6-14 11:49:53
System uptime: 3:17:1:17
System hardware version: 2.0
System software version: RGOS 10.3.00(4), Release(34679)
System boot version: 10.2.34077
System CTRL version: 10.2.24136
System serial number: 1234942570001

-	-

-	-

3 LINE a —

3.1 LINE " - ‘ a —

3.1.1 access-class

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

[**no**] **access-class** access-list-number {**in | out**}

access-list-number	access-list

in

-	-

3.1.2 line

LINE

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

aux	
console	
tty	
vty	telnet/ssh

VTY **no**

VTY

line vty line-number

no line vty line-number

-	-

VTY 5 0--4

VTY

1 VTY 20 VTY 0--19

Ruijie(config)# line vty 19

2 VTY 10 VTY 0—9

Ruijie(config)# line vty 10

-	-

-	-

3.1.4 transport input

Line **transport input** Line

default transport input LINE

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

default transport input

all	Line
ssh	Line SSH

telnet	Line Telnet
none	Line

VTY TTY NONE
default transport input

Line

Line VTY
VTY **show**
running Line
d**efault transport inpu**t **no transport**
input LINE
transport input none

4 " î U ¹ ÿ Ë] n a —

4.1 " - ‘ a —

4.1.1 ping

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

vrf-name	VRF
ip-address	IPv4
length	
times	
seconds	
data	
source	IPv4 127.0.0.1
df-bit	IP DF DF 1 DF 0
validate	

2 5 100Byte IP

Ping z 1 0 0 B y tI e P Ɤ Z

DNS

1 ping

```
Ruijie# ping 192.168.5.1
Sending5,100-byteICMPEchoesto192.168.5.1,timeoutis2seconds:
 < press Ctrl+C to break >
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/10
ms
```

2 ping

```
Ruijie# ping 192.168.5.197 length 1500 ntimes 100 timeout 3 data ffff
source 192.168.4.10
 Sending 100, 1000-byte ICMP Echoes to 192.168.5.197, timeout is 3
seconds:
 < press Ctrl+C to break >
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
Successrateis100percent(100/100),round-trip ripmin/avg/max=2/2/3
ms
```

-	-

-	-

4.1.2 traceroute

traceroute .

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

vrf-name	VRF
Ip-address	IPv4

number	
source	IPv4 127.0.0.1
seconds	
minimum maximum	TTL

Traceroute

DNS

traceroute

6 61.154.8.17 8 msec 12 msec 16 msec

7 61.154.8.250 12 msec 12 msec 12 msec

8 218.85.157.222 12 msec 12 msec 12 msec

9 218.85.157.130 16 msec 16 msec 16 msec

10 218.85.157.77 16 msec 48 msec 16 msec

11 202.97.40.65 76 msec 24 msec 24 msec

12 202.97.37.65 32 msec 24 msec 24 msec

13 202.97.38.162 52 msec 52 msec 224 msec

14 202.96.12.38 84 msec 52 msec 52 msec

15 202.106.192.226 88 msec 52 msec 52 msec

16 202.106.192.174 52 msec 52 msec 88 msec

17 210.74.176.158 100 msec 52 msec 84 msec

18 202.108.37.42 48 msec 48 msec 52 msec

IP 202.108.37.42

1 17 4

Ruijie# traceroute www.ietf.org

Translating " www.ietf.org "...[OK]

< press Ctrl+C to break >

Tracing the route to 64.170.98.32

1 192.168.217.1 0 msec 0 msec 0 msec

2 10.10.25.1 0 msec 0 msec 0 msec

3 10.10.24.1 0 msec 0 msec 0 msec

4 10.10.30.1 10 msec 0 msec 0 msec

5 218.5.3.254 0 msec 0 msec 0 msec

6 61.154.8.49 10 msec 0 msec 0 msec

7 202.109.204.210 0 msec 0 msec 0 msec

8 202.97.41.69 20 msec 10 msec 20 msec

9 202.97.34.65 40 msec 40 msec 50 msec

10 202.97.57.222 50 msec 40 msec 40 msec

11 219.141.130.122 40 msec 50 msec 40 msec

12 219.142.11.10 40 msec 50 msec 30 msec

-	-

-

-	-

5 Ç a —

5.1

-	-

5.1.2 clear counters

clear counters [interface-id]

interface-id	

show interfaces **clear counters**

Ruijie# clear counters gigabitethernet 1/1

show interfaces	

-	-

5.1.3 clear interface

clear interface interface-id

interface-id	

Switch Port,L2 Aggregrate port ,Routed port,L3 Aggregate port

shutdown **no shutdown**

Ruijie# clear interface gigabitethernet 1/1

shutdown	

-	-

5.1.4 descriptioin

no

description string

no description

string	

show interfaces

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

show interfaces	

-	-

5.1.5 duplex

no

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

no duplex

auto	
full	
half	

show interfaces

Ruijie(config-if)# duplex full

show interfaces	

-	-

5.1.6 flowcontrol

aggregate port aggregate port

aggregate port **show**

interfaces **show interfaces aggregateport**

show interfaces	

-

-	-

5.1.9 interface giagbitEthernet

interface gigabitEthernet mod-num/port-num

mod-num/port-num	/

no **show interfaces** **show interfaces** **gigabitEthernet**

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

show interfaces	

-	-

5.1.10 interface vlan

switch virtual interface SVI

no SVI

interface vlan vlan-id

no interface vlan vlan-id

vlan-id	VLAN ID

show interfaces **show interfaces vlan**

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

start cable-diagnoses,please wait...
cable-daignoses end!this is result:
4 pairs
pair state length(meters)
---- ---------- --------------
A Ok 1
pair state length(meters)
---- ---------- --------------
B Ok 2
pair state length(meters)
---- ---------- --------------
C Short 1
pair state length(meters)
---- ---------- --------------
D Short 1

copper	

Ap SVI

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

show interfaces	

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

-	-

5.1.13 mtu

mtu

Mtu num

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

show interfaces	**ef361.68( )Tj/T**

clear interface	
show interfaces	

-	-

5.1.15 snmp trap link-status

LinkTrap Link SNMP LinkTrap, **no** SNMP LinkTrap

snmp trap link-status

no snmp trap link-status

Link SNMP LinkTrap

Ap SVI LinkTrap Link SNMP LinkTrap,

1 Link trap

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

2 Link trap

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


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

-	-

5.1.16 speed

no

10	10Mbps
100	100Mbps
1000	1000Mbps
10G	10Gbps
auto	

Ap Ap

Ap **show interfaces**

SFP

10M 100M

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

show interfaces	

-	-

5.1.17 switchport access

access port VLAN

no VLAN

switchport access vlan vlan-id

no switchport access vlan

vlan-id	VLAN ID

switch port access VLAN VLAN 1

VLAN ID VLAN ID VLAN

VLAN VLAN ID VLAN

trunkport

Ruijie(config)# interface gigabitethernet 1/1

Ruijie(config-if)# switchport access vlan 2

switchport mode	switch port
switchport trunk	trunkport native VLAN Trunk VLAN

switch port access port

trunk port, 802.1Q **no**

switchport mode {**access | trunk**}

no switchport mode

access	switch port access port
trunk	switch port trunk port

switch port access

switch port access VLAN

switchport access vlan VLAN

switch port trunk VLAN

Ó Ь = “ VLAN VLAN trunk port VLAN Ж 0

Acsess vlan is 1,Native vlan is 1

Protected is disabled

Vlan lists is

1,3-4094

diagnosis	

Ruijie# show interfacesgigabitEthernet 0/1 switchport

Interface Switchport ModeAccess Native Protected VLAN lists

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

GigabitEthernet 0/1 enabled Access 11 Disabled ALL

6 Aggregate Port a —

6.1 " - ‘ a —

6.1.1 aggregateport load-balance

AP no

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

no aggregateport load-balance

dst-mac	MAC AP MAC MAC
src-mac	MAC AP MAC MAC
src-dst-ip	IP IP IP—— IP IP—— IP
dst-ip	IP AP IP IP
src-ip	IP AP IP IP
src-dst-mac	MAC MAC MAC—— MAC MAC—— MAC

MAC

show aggregateport load-balance

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

show aggregateport load-balance	aggregateport

-	-

6.1.2 port-group

Aggregate Port no Aggregate Port

port-group port-group-number

no port-group

port-group-number	Aggregate Port Aggregate Port

Aggregate Port

AP VLAN trunk port native VLAN AP

1/3 AP 3

Ruijie(config)# interface gigabitethernet 1/3

Ruijie(config-if)# port-group 3

-	-

7 VLAN a —

7.1 " - ‘ a —

7.1.1 name

VLAN **no**

name vlan-name

no name

switchport access vlan vlan-id

no switchport access vlan

vlan-id	VLAN ID

switch port access VLAN VLAN 1

VLAN ID VLAN ID VLAN
VLAN VLAN ID VLAN

trunk port

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

switchport mode	switch port
switchport trunk	trunk port native VLAN Trunk VLAN

-	-

7.1.3 switchport mode

switch port access port trunk port hybrid port uplink port 802.1Q no

switchport mode {**access** | **trunk | hybrid | uplink | dot1q-tunnel**}

no switchport mode

access	switch port access port
trunk	switch port trunk port
hybrid	switch port hybrid port
uplink	switch port uplink port
dot1q-tunnel	switch port 802.1Q tunnel port

switch port access

switch port access VLAN
switchport access vlan VLAN
switch port trunk VLAN
VLAN VLAN trunk port VLAN
VLAN **switchport trunk** VLAN

Ruijie(config-if)# switchport mode trunk

switchport access	access port VLAN
switchport trunk	trunk port native VLAN Trunk VLAN

-	-

7.1.4 switchport trunk

trunk port native VLAN Trunk VLAN
no trunk

switchport trunk {**allowed vlan** { **all** | [**add** | **remove** | **except**] vlan-list }| **native vlan** vlan-id}

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

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

VLAN all Native VLAN VLAN 1

Native VLAN

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

VLAN

Trunk VLAN 1 4094
Trunk VLAN VLAN Trunk

show interfaces switchport

VLAN 2 1/15

```
Ruijie(config)# interface fastethernet 1/15
Ruijie(config-if)# switchport trunk allowed vlan remove 2
Ruijie(config-if)# end
Ruijie# show interfaces fastethernet 1/15 switchport
Interface Switchport Mode Access Native Protected VLAN lists
--------- --------- --------- --------- --------- --------
FigabitEthernet 1/15 enabled TRUNK 1 1 Disabled 1,3-4094
```

show interfaces	
switchport access	access port VLAN

-	-

7.2 ¡ µ - ‘ a —

7.2.1 show vlan

VLAN

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

vlan-id	VLAN ID

end **Ctrl+C**

exit

```
Ruijie#      show vlan id       1
VLAN Name                Status   Ports
---------- ------------- ---------- ---------- ----------
  1 VLAN0001             STATIC   Fa0/1, Fa0/2
```

name	VLAN
switchport access	Vlan

-	-

Super-vlan

subvlan ip

subvlan-address-range start-ip end-ip

no subvlan-address-range

VLAN

end **Ctrl+C**

exit

Ruijie(config)# vlan 3

Ruijie(config-vlan)# supervlan

show supervlan	supervlan

-	-

8.1.4 proxy-arp

VLAN ARP

proxy-arp

no proxy-arp

-	-

VLAN

end **Ctrl+C**

exit

Ruijie(config)# vlan

show supervlan	supervlan

-	-

8.2 ¡ µ - ‘ a —

8.2.1 show supervlan

SuperVLAN SubVLAN

show supervlan

show supervlan id vlan-id

vlan-id	VLAN ID

Ruijie# show supervlan

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

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

3 ON 4 ON

5 ON

9 Protocol VLAN a —

9.1 " - ‘ a —

9.1.1 protocol-vlan ipv4 addr mask addr vlan id

IP VLAN

addr	IP x.x.x.x
id	VLAN ID 1- VLAN

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	-

RGOS10.1

-	-

9.1.2 protocol vlan ipv4

IP VLAN

show protocol-vlan profile	-
show protocol-vlan profile num	-
no protocol-vlan profile	-
no protocol-vlan profile num	-

RGOS10.1

-	-

9.1.4 protocol-vlan profile num vlan id

profile

num	profile
id	VLAN ID 1- VLAN

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	-

RGOS10.1

-	-

9.2 ¡ µ - ‘ a —

9.2.1 show protocol-vlan

Protocol VLAN

show vlan protocol-vlan

-	-

Ruijie# show protocol-vlan

-	-

RGOS10.1

VLAN

VLAN

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

show vlan private-vlan	-

RGOS10.1

show vlan private-vlan	-

RGOS10.1

-	-

10.1.5 switchport private-vlan host-association

private VLAN primary VLAN secondary VLAN

switchport private-vlan host-association p_vid s_vid

no switchport private-vlan host-association

p_vid	primary VID
s_vid	secondary VID
no	VLAN

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	-

RGOS10.1

Private VLAN

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

primary	primary VLAN
community	community VLAN
isolated	isolated VLAN

private VLAN

Ruijie# show vlan private-vlan

-	-

RGOS10.1

-	-

10.3 Hybrid a —

10.3.1 switchport hybrid allowed vlan

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

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

-	-

RGOS10.1

-	-

10.3.2 switchport hybrid native vlan

switchport hybrid native vlan vid

no switchport hybrid native vlan

hybrid vlan

no	hybrid VLAN

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

-	-

RGOS10.1

-	-

10.3.3 switchport mode hybrid

switchport mode hybrid

no switchport mode

hybrid

no	hybrid

Ruijie(config-if)# switchport mode hybrid

-	-

RGOS10.1

-	-

11 QinQ a —

11.1 " - ‘ a —

11.1.1 dot1q outer-vid vid register inner-vid v_list

tunnel vid

dot1q outer-vid vid **register inner-vid** v_list

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

-	-

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

access trunk hybrid uplink vid

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

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

v_list	vid
vid	tag vid
no	

tag vid 10-20 vid 100

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

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

RGOS10.3

-	-

11.1.3 dot1q relay-vid vid translate inner-vid v-list

access trunk hybrid uplink vid

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

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

v_list	vid
vid	tag vid
no	

tag vid 10-20 vid 100

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

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

RGOS10.4

-	-

11.1.4 dot1q-Tunnel cos inner-cos-value remark-cos outer-cos-value

/ tag tag

dot1q-Tunnel cos inner-cos-value remark-cos outer-cos-value

no dot1q-Tunnel cos inner-cos-value remark-cos outer-cos-value

no	

```
ruijie(config-if)#              frame-tag tpid          0x9100
ruijie(config-if)#               end
ruijie#       show frame-tag tpid
Ports  tpid
------ ---------
Gi0/3   0x9100
```

show frame-tag tpid	-

RGOS10.1

show inner-priority-trust	-

RGOS10.1

-	-

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

vlan mac vlan

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

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

no	vlan vlan

tag tag

ruijie# configure

ruijie(config)# interface gigabitEthernet 0/2

ruijie(config-if)# dst-0.64 rfg!òC 4ïB2A 4r $0 Y•Ú¾î5BEc¢!ñ˜ —sÀQ0 <% TÞÂ—s1ðR Ù•Ú²

no	uplink

uplink

uplink

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

show vlan	-

RGOS10.1

-	-

11.1.10 switchport dot1q-tunnel allowed vlan

dot1q-tunnel vlan

switchport dot1q-tunnel allowed vlan [**add**] {**tagged|untagged**} v_list

switchport dot1q-tunnel allowed vlan remove v_list

-

dot1q-tunnel vlan 3-6 vlan tag

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

show interface dot1q-tunnel	-

RGOS10.3

ruijie(config)# end

show traffic-redirect	-

RGOS10.3

-	-

11.1.13

show traffic-redirect	-

RGOS10.3

-	-

11.1.14 traffic-redirect access-group acl nested-vlan

dot1q-tunnel vid

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

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

acl	acl
vid	vid
no	vid

1.1.1.3 vid 9

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

-	-

11.1.16 **l2protocol-tunnel** proto-type **enable**

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

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

stp	stp
gvrp	gvrp
no	

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

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

RGOS10.3

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

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

stp	stp
gvrp	gvrp
no	01d0f8 3 (stp 000005 gvrp 000006)

ruijie# configure
ruijie(config-if)# l2protocol-tunnelgvrptunnel-dmac 011AA9000005
ruijie(config-if)# end

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

RGOS10.4

-	-

11.2 ¡ µ - ‘ a —

11.2.1 show dot1q-tunnel

dot1q-tunnel

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

intf-id	

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

-	-

RGOS10.3

-	-

11.2.2 show frame-tag tpid

tpid

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

intf-id	

tpid

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

-	-

RGOS10.1

-	-

11.2.3 show inner-priority-trust

show inner-priority-trust

-	-

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

-	-

RGOS10.1

-	-

11.2.4 show interface dot1q-tunnel

dot1q-tunnel

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

intf-id	

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

-	-

RGOS10.3

-	-

Ruijie# show interface intf-name remark

Ports Type From value To value

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

Gi0/1 Cos-To-Cos 3 5

-	-

RGOS10.1

-	-

11.2.6 show interface mac-address-mapping x

MAC

show mac-address-mapping x

-	-

ruijie# show mac-address-mapping 1

Ports Destination-VID Source-VID-list

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

Gi0/1 5 1-3

-	-

RGOS10.1

-	-

11.2.7 show registration-table

dot1q-tunnel vid

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

	-	-

11.2.8 show traffic-redirect

vid

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

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

ruijie# show l2protocol-tunnel stp
Destination mac : 01d0f8000005
L2protocol-tunnel: Stp Enable
ruijie# show l2protocol-tunnel gvrp
Destination mac : 01d0f8000006
L2protocol-tunnel: gvrp Disable

-	-

RGOS10.3

-	-

12 Share VLAN a —

12.1 " - ‘ a —

12.1.1 share

share vlan

S

Status duplicated
share vlan

-	-

5 ,ÕG!5B

end Ctrl+C

exit

```
Ruijie#      show mac-address-table share
Vlan MAC Address    Type   Interface  Status
---- -------------- ------- ----------- ----------
  1  0040.4650.1e1e DYNAMIC Gigabit 0/1 original
  2  0040.4650.1e1e DYNAMIC Gigabit 0/1 duplicated
```

GVRP

no gvrp dynamic-vlan-creation enable

-	-

vlan

show gvrp configuration

Ruijie(config)# gvrp dynamic-vlan-creation enable

show gvrp configuration	GVRP

-	-

13.1.3 gvrp enable

GVRP no

gvrp enable

no gvrp enable

-	-

GVRP

show gvrp configuration	GVRP

-	-

13.1.4 gvrp registration mode

VLAN

no

gvrp registration mode {**normal** | **disabled**}

no gvrp registration mode

-	-

VLAN

show gvrp configuration

GVRP no

gvrp timer {**join** | **leave** | **leaveall**} timer_value

no gvrp timer

join timer_value	0
leave timer_value	Leave Message VLAN Join Message VLAN Join Message Empty VLAN
leaveall timer_value	LeaveAll timer LeaveAll Message LeaveAll Message LeaveAll Message LeaveAll Message Leave timer leaveall leaveall + join

join timer 200ms leave timer 600ms leaveall timer 10,000ms

show gvrp configuration

no gvrp timer join leave leaveall timer

Ruijie(config)# gvrp timer join 200

show gvrp configuration	GVRP

13.2 ¡ µ - ‘ a —

13.2.1 clear gvrp statistics

GVRP

clear gvrp statistics { interface-id | **all**}

interface-id	ID

show gvrp statistics

Ruijie# clear gvrp statistics all

show gvrp statistics	GVRP

show gvrp configuration

```
Ruijie#      show gvrp configuration
Global GVRP Configuration:
GVRP Feature:enabled
GVRP dynamic VLAN creation:enabled
Join Timers(ms):200
Join Timers(ms):600
Join Timers(ms):10000
Port based GVRP Configuration:
Port:GigabitEthernet 3/1 app mode:normal reg mode:normal
Port:GigabitEthernet 3/2 app mode:normal reg mode:normal
Port:GigabitEthernet 3/3 app mode:normal reg mode:normal
Port:GigabitEthernet 3/4 app mode:normal reg mode:normal
Port:GigabitEthernet 3/5 app mode:normal reg mode:normal
Port:GigabitEthernet 3/6 app mode:normal reg mode:normal
Port:GigabitEthernet 3/7 app mode:normal reg mode:normal
Port:GigabitEthernet 3/8 app mode:normal reg mode:normal
Port:GigabitEthernet 3/9 app mode:normal reg mode:normal
Port:GigabitEthernet 3/10 app mode:normal reg
mode:normal
Port:GigabitEthernet 3/11 app mode:normal reg
mode:normal
Port:GigabitEthernet 3/12 app mode:normal reg
mode:normal
```


GVRP

show gvrp statistics {interface-id | **all**}

interface-id	ID

show gvrp statistics GVRP

```
Ruijie#  show gvrp statistics gigabitethernet  1/1
Interface  GigabitEthernet 3/1
RecValidGvrpPdu  0
RecInvalidGvrpPdu  0
RecJoinEmpty  0
RecJoinIn  0
RecEmpty  0
RecLeaveEmpty  0
RecLeaveIn  0
RecLeaveAll  0
SentGvrpPdu  0
SentJoinEmpty  0
SentJoinIn  0
SentEmpty  0
SentLeaveEmpty 0
SentLeaveIn  0
SentLeaveAll  0
JoinIndicated  0
LeaveIndicated 0
JoinPropagated 0
LeavePropagated 0
```

clear gvrp statistics	GVRP

-	-

13.2.4 show gvrp status

GVRP VLAN VLAN

show gvrp status

-	-

show gvrp status GVRP

Ruijie# show gvrp status

-	-

-	-

14 MAC a —

14.1 " - ‘ a —

14.1.1 address-bind

ip mac

address-bind ip-address mac-address

no address-bind ip-address

ip-address	IP
mac-address	mac

IP MAC IP IP
MAC IP MAC

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

show address-bind	

-	-

14.1.2 address-bind install

/

address-bind install

no address-bind install

-	-

fa 0/1

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

show address-bind uplink	

RGOS10.1

IP MAC IP IP
MAC IP MAC

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

show address-bind	

-	-

14.1.4 address-bind uplink

ip mac .

address-bind uplink intf-id

no address-bind uplink intf-id

intf-id	

IP MAC IP IP
MAC IP MAC
(address-bind install) $

MAC

14.1.6 clear mac-address-table filtering

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

filtering	
address mac-addr	
vlan vlan-id	VLAN

show mac-address-table filtering

00d0.f800.0c0c

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

interface interface-id	
vlan vlan-id	VLAN

show mac-address-table static

MAC 00d0.f800.073c

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

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

← x V T	5

show mac-address-table dynamic

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

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

-	-

14.1.9 mac-address-table filtering

no

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

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

mac-address	
vlan vlan-id	VLAN ID

show mac-address-table filtering

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

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

-	-

14.1.10 mac-address-table notification

MAC **no**

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

no mac-address-table notification [**interva**l | **history-size**]

interval value	MAC Trap 1
history-size value	MAC 50

1 50

MAC Trap

snmp-server enable traps mac-notification

MAC Trap

U4@

-	-

14.1.11 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

mac-addr	MAC
vlan-id	VLAN
interface-id	(AggregatePort)

show mac-address-table static

clear mac-address-table static

00d0.f800.073c VLAN 4
gigabitethernet 1/1

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	

-	-

14.1.12 snmp trap mac-notification

MAC **no**

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

mac-address-learning

MAC

1

Ruijie(config-if)# no mac-address-learning

14.2 ¡ µ - ‘ a —

14.2.1 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

14.2.3 show mac-address-table address

MAC

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

address mac-addr	MAC
interface interface-id	
vlan vlan-id	VLAN

Ruijie# show mac-address-table address 00d0.f800.1001

Vlan MAC Address Type Interface

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

1 00d0.f800.1001 STATIC Gi1/1

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

-	

14.2.4 show mac-address-table aging-time

show mac-address-table aging-time

-	-

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

“	

MAC

Ruijie# show mac-address-table filtering

Vlan MAC Address Type Interface

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

1 0000.2222.2222 FILTER Not available

1 00d0.f800.1002 STATIC gigabitethernet 1/1
1 00d0.f800.1003 STATIC gigabitethernet 1/1
1 00d0.f800.1004 STATIC gigabitethernet 1/1

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

-	-

14.2.9 show mac-address-table notification

MAC

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

interface interface-id	MAC
history	MAC

MAC

Ruijie#

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:ADDVlan:1MACAddr:00f8.d012.3456GigabitEthernet3/1

mac-address-table notification	MAC
snmp trap mac-notification	MAC

-	-

14.2.10 show mac-address-table static

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

mac-addr	MAC
vlan-id	VLAN
interface-id	(AggregatePort)

```
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

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	

-	-

14.2.12 show mac-address-learning

–CûDAÈ Pí TrÐ Ð w =Â ñ € m ´!c™Ð9FpÂ %iT!“ •r „7ˆ B AVæh@B± 'ƒcu’ — pK€• œ`	

```
Ruijie(config-ext-nacl)#  permit ip  host 1.1.1.1 host 233.3.3.3
Ruijie(config)#  interface ethernet  0
Ruijie(config-if)#  ip igmp access-group  ext_acl
```

-	-

-	-

15.1.2 ip igmp join-group

no

ip igmp join-group group-address

no ip igmp join-group group-address

-	-

15.1.3 ip igmp immediate-leave group-list

IGMPversion2 IGMPversion3

no

ip igmp immediate-leave group-list access-list

no ip igmp immediate-leave group-list

access-list	

IGMP 2s

IGMP IGMP

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	-

-	-

15.1.4 ip igmp last-member-query-count

last-member-query-count leave
last-member-query-count no

ip igmp last-member-query-count number

no ip igmp last-member-query-count

number	, <2-7>

except	access-list limit
access-list	

1024

IGMP

IGMP

300

Ruijie(config-if)# ip igmp limit 300

-	-

-	-

15.1.7 ip igmp limit (æ e ")

igmp no

ip igmp limit number [except access-list]

no ip igmp limit number [except access-list]

number	IGMP
except	access-list limit

65536

IGMP

IGMP

300

Ruijie config # ip igmp limit 300

-	-

-	-

15.1.8 ip igmp mroute-proxy

ip igmp mroute-proxy interfname

no ip igmp mroute-proxy

interfname	

proxy-service

gmp

mroute-proxy

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

-	-

-	-

15.1.9 ip igmp proxy-service

mroute-proxy

mroute-proxy

ip igmp proxy-service

no ip igmp proxy-service

-	-

proxy-service

32 IGMP Proxy

proxy-service proxy-service

mroute-proxy

proxy-service .

switchport **ip igmp**

mroute-proxy interface

proxy-service

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

-	-

no

ip igmp query-max-response-time seconds

no ip igmp query-max-response-time

255s

IGMPv2 **ip igmp query-interval** Ruijie 255s

1 Ethernet 0 200s

Ruijie(config-if)# ip igmp query-timeout 200

2 Ethernet 0

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

-	-

-	-

15.1.13 ip igmp robustness-variable

no

ip igmp robustness-variable number

no ip igmp robustness-variable

number	2-7

2

3

```
Ruijie#      configure terminal
Ruijie(config)#          interface ethernet          0
Ruijie(config-if)#              ip igmp robustness-variable          3
```

-	-

-	-

15.1.14 ip igmp ssm-map enable

igmp ssm-map

ip igmp ssm-map enable

no ip igmp ssm-map enable

-	-

ip igmp ssm-map static

igmp ssm-map

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

-	-

-	-

15.1.15 ip igmp ssm-map static

ssm-map

ip igmp ssm-map static access-list a.b.c.d

no ip igmp ssm-map static access-list a.b.c.d

access-list	Acl <1-99> |<1300-1999> |WORD
a.b.c.d	

ip igmp ssm-map enable v3

ACL 11 192.168.2.2

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

-	-

no ip igmp static-group group-address

group-address	

Eth0 236.6.6.6

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

-	-

-	-

15.1.17 ip igmp version

IGMP no

ip igmp version {1 | 2 }

no ip igmp version

{1 | 2 }	<1-23>

2

igmp igmp

2

Ruijie# configure terminal

Ruijie(config)# interface ethernet 0

Ruijie(config-if)# ip igmp version 2

-	-

-	-

15.2 ¡ µ - ‘ a —

IGMP

-	-

15.2.3 show ip igmp groups

IGMP

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

group-address	32 IP D 8

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

-	-

-	-

15.2.4 show ip igmp interface

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

interface-type	
interface-number	

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

-	-

-	-

15.2.5 show ip igmp ssm-mapping

IGMP ssm-map

show ip igmp ssm-mapping (A.B.C.D)

A.B.C.D	

IGMP ssm-map

1 ssm-map
Ruijie# sh ip igmp ssm-mapping

SSM Mapping : Enabled

Database : Static mappings configured

2 233.3.3.3

Ruijie# show ip igmp ssm-mapping 233.3.3.3

Group address: 233.3.3.3

Database : Static

Source list : 192.3.3.3

: 3.3.3.3

-	-

-	-

16 DHCP Snooping a —

16.1 DHCP snooping æ e a —

16.1.1 ip dhcp snooping

DHCP Snooping no
DHCP Snooping

[**no**] **ip dhcp snooping**

-	-

DHCP Snooping **show ip dhcp snooping** DHCP snooping

a DHCP Snooping Private VLAN

DHCP snooping

```
Ruijie#      configure terminal
Ruijie(config)#          ip dhcp snooping
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	DHCP snooping

-	-

16.1.2 ip dhcp snooping bootp-bind

DHCP Snooping Bootp
no DHCP snooping Bootp

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

-	-

DHCP Snooping Bootp DHCP Snooping Bootp Bootp DHCP Snooping Bootp

DHCP Snooping Bootp

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

show ip dhcp snooping	DHCP snooping

-	-

16.1.3 ip dhcp snooping database write-delay

DHCP Snooping FLASH

no FLASH

ip dhcp snooping database write-delay time

[**no**] **ip dhcp snooping database write-delay**

time	DHCP snooping FLASH

FLASH

DHCP Snooping FLASH

IP

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

show ip dhcp snooping	DHCP snooping

-	-

16.1.4 ip dhcp snooping database write-to-flash

DHCP Snooping

	-	-

16.1.5 ip dhcp snooping information option

DHCP option82

ņ

	-	-

[

DHCP

no

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

rate-value	PPS[Packet Per Second]

DHCP Snooping VLAN

CPP[CPU Protect Protocol] CPP DHCP

CPP DHCP Snooping

CPP

show ip dhcp snooping

1 100pps

```
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 Trusted Rate limit (pps)
------------------------ ------- ------------
FastEthernet0/1 NO 100
```

show ip dhcp snooping	DHCP snooping

-	-

16.2.2 ip dhcp snooping suppression

suppression no
no suppression

[**no**] **ip dhcp snooping suppression**

-	-

DHCP
DHCP

fastethernet 0/2 suppression

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

-	-

-	-

16.2.3 ip dhcp snooping trust

DHCP snooping TRUST
no UNTRUST

[**no**] **ip dhcp snooping trust**

16.3 DHCP snooping ¡ µ a —

16.3.1 show ip dhcp snooping

DHCP Snooping

show ip dhcp snooping

-	-

DHCP Snooping

DHCP Snooping

DHCP Snooping

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

ip dhcp snooping	DHCP snooping
ip dhcp snooping verify mac-address	DHCP snooping mac
ip dhcp snooping write-delay	flash
Ip dhcp snooping information option	DHCP option82
ip dhcp snooping bootp-bind	DHCP Snooping Bootp
ip dhcp snooping trust	DHCP snooping trust

16.4 DHCP snooping c Q " a —

16.4.1 clear ip dhcp snooping binding

DHCP Snooping

clear ip dhcp snooping binding

-	-

DHCP snooping

DHCP snooping

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

show ip dhcp snooping binding	DHCP snooping

-	-

16.4.2 debug ip dhcp snooping

DHCP Snooping

debug ip dhcp snooping {**event** | **packet**}

-	-

DHCP snooping

DHCP snooping

Ruijie# debug ip dhcp snooping event

Ruijie# debug ip dhcp snooping packet

-	-	(Mã

17 IGMP Snooping a —

17.1 " - ‘ a —

17.1.1 deny

profile profile deny

deny

deny	profile

profile deny

profile

profile range profile
profile

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

ip igmp profile	profile
range	

-	-

17.1.2 permit

profile profile permit profile

permit

permit	profile

profile deny

profile

profile range profile
profile

224.2.2.2 profile

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

ip igmp profile	profile
range	

high-ip-address

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

igmp snooping ivgl

Ruijie(config)# ip igmp snooping ivgl

vlan 2 igmp snooping

Ruijie(config)# ip igmp snooping vlan 2

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

-	-

17.1.7 ip igmp snooping svgl vlan

vlan SVGL vlan **ip igmp snooping svgl vlan** no Shared VLAN vlan 1

ip igmp snooping svgl vlan vid

no ip igmp snooping svgl vlan

vid	vlan id

Shared VLAN vlan 1

SVGL IVGL-SVGL

vlan 2 igmp snooping svgl vlan

Ruijie(config)# ip igmp snooping svgl vlan 2

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

-	-

17.1.8 ip igmp snooping svgl profile

profile SVGL **ip igmp snooping svgl profile** no

ip igmp snooping svgl profile profile-number

no ip igmp snooping svgl profile

profile-number	profile <1-65536>

svgl profile

SVGL IVGL-SVGL

igmp snooping svgl profile 2

Ruijie(config)# ip igmp snooping svgl profile 2

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

-	-

17.1.9 ip igmp snooping dyn-mr-aging-time

ip igmp snooping dyn-mr-aging-time time

no ip igmp snooping dyn-mr-aging-time

time	, <1-3600>

300s

IGMP PIM

Hello

100s

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

-	-

IP IGMP

IP IGMP

100s

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

-	-

17.1.12 ip igmp snooping suppression enable

igmp snooping Report **ip igmp snooping suppression enable** no igmp snooping suppression

ip igmp snooping suppression enable

no ip igmp snooping suppression enable

-	-

disable

IGMP

vlan IGMP Report

IGMP Report

suppression IGMPv1/v2 report

IGMPv3 report

igmp snooping suppression

Ruijie(config)# ip igmp snooping suppression

-	-

17.1.13 ip igmp snooping mrouter learn pim-dvmrp

IGMP Query/Dvmrp/PIM Hellp

ip igmp snooping mrouter learn no

ip igmp snooping mrouter learn pim-dvmrp

no ip igmp snooping mrouter learn pim-dvmrp

no

vlan

vlan

vlan

igmp snooping

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

ip igmp snooping vlan mrouter learn pim-dvmrp	

-	-

17.1.14 ip igmp snooping vlan mrouter interface

,

ip igmp snooping vlan mrouter interface no

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

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

vid	vlan id
interface-id	id

IP

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

17.1.15 ip igmp snooping vlan mrouter learn pim-dvmrp

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

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

igmp snooping

IGMP **ip igmp snooping vlan static interface**

no

ip igmp snooping vlan vid **static** ip-addr **interface** interface-id

no ip igmp snooping vlan vid **static** ip-addr **interface** interface-id

vid	vlan id
ip-addr	
interface-id	id

Ruijie(config)# ip igmp snooping vlan 1 static 224.0.0.2 inter f ace fastEthernet 0/1

ip igmp snooping vlan mrouter interface	

-	-

17.1.17 ip igmp snooping filter

profile no profile

ip igmp snooping filter profile-number

no ip igmp snooping filter profile-number

profile-number	profile <1-65536>

IGMP Profile IGMP Report
IGMP Profile
profile filter

0/1 profile 1

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

ip igmp profile	profile

-	-

17.1.18 ip igmp snooping max-groups

, **ip igmp snooping max-groups** no

ip igmp snooping max-groups number

no ip igmp snooping max-groups

number	<0 – 1024>

IGMP Report

0/1 100

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

ip igmp snooping filter	

-	-

17.2 ¡ µ 0 ³ Å a —

17.2.1 show ip igmp snooping

igmp snooping

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

	igmp snooping
gda-table	
interfaces	igmp snooping filtring
mrouter	
statistics [**vlan** vlan-id]	snooping
vlan	vlan snooping

EXEC

-	-

-	-

17.2.2 show ip igmp profile [profile-number]

	profile
profile-number	profile

EXEC

profile

debug igmp-snp event

debug igmp-snp packet

debug igmp-snp msf

debug igmp-snp warning

undebug igmp-snp

undebug igmp-snp event

undebug igmp-snp packet

undebug igmp-snp msf

undebug igmp-snp warning

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

-	-

18.1.5 spanning-tree autoedge

Autoedge disabled Autoedge

spanning-tree autoedge [**disabled**]

disabled	Autoedge

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

show spanning-tree interface	STP

-	-

18.1.6 spanning-tree bpdufilter

BPDU filter enabled disabled

BPDU filter

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

enabled	BPDU filter
disabled	BPDU filter

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

Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)#

-	-

18.1.9 spanning-tree guard loop

loop guard no loop guard loop guard bpdu

spanning-tree guard loop

no spanning-tree guard loop

-	-

loop guard

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

-	-

-	-

18.1.10 spanning-tree guard none

guard no guard

spanning-tree guard none

no spanning-tree guard none

-	-

guard

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

-	-

-	-

18.1.11 spanning-tree guard root

root guard no root guard root guard

spanning-tree guard root

no spanning-tree guard root

-	-

root guard

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

-	-

-	-

18.1.12 spanning-tree link-type

“ ” no

spanning-tree link-type [**point-to-point** | **shared**]

no spanning-tree link-type

poinit-to-point	point-to-point.
shared	shared

point-to-point
shared.

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

show spanning-tree interface	STP

-	-

18.1.13 spanning-tree loopguard default

loop guard no loop guard loop guard
bpdu

spanning-tree loopguard default

no spanning-tree loopguard default

-	-

loop guard

Ruijie(config)# spanning-tree loopguard default

-	-

-	-

18.1.14 spanning-tree max-hops

BPDU Max-hops Count
BPDU Region Instance no

spanning-tree max-hops hop-count

no spanning-tree max-hops

hop-count	BPDU 1 40

hop-count 20

Region Root Bridge BPDU Hot Count Root Bridge
Hop Count 1 0 BPDU
Hops 0 BPDU
max-hops Instance

MST Instance Max-hops 10
Ruijie(config)# spanning-tree max-hops 10
show spanning-tree mst

show spanning-tree	MSTP

-	-

18.1.15 spanning-tree mode

STP no

spanning-tree mode [**stp** | **rstp** | **mst**p]

no spanning-tree mode

.

Ruijie(config)# spanning-tree mode stp

show spanning-tree	

-	-

18.1.16 spanning-tree mst configure

MST MSTP Region no
name revision vlan map

spanning-tree mst configuration

no spanning-tree mst configuration

-	-

10 VLAN Instance 0 VLAN Instance
no **no instance** instance-id [**vlan** vlan-range] (no
Instance 1 64)
name name MST 32 no name

revision version MST 0 65535 no revision

show MST region

MST VLAN 3, 5-10 MST Instance 1.

```
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)#
```

VLAN 3 Instance 1 MST

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

Instance 1

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

MST show

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

-	-

18.1.18 spanning-tree mst port-priority

Instance

Region no

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

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

Instance-id	Instance 0 64
priority	0 16 32 48 64 80 96 112 128 144 160 176 192 208 224 240 16 16

Instance-id 0

priority 128

.

Region

Instance 20 Gigabitethernet 1/1 10

Ruijie(config)# interface gigabitethernet 1/1

Ruijie(config-if)# spanning-tree mst 20 port-priority 0

show spanning-tree mst instance interface interface-id

-	-

18.1.19 spanning-tree mst priority

Instance

disabled	Portfast

-

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

show spanning-tree interface	STP

-	-

18.1.22 spanning-tree portfast bpdufilter default

BPDU filter no BPDU filter

spanning-tree portfast bpdufilter default

no spanning-tree portfast bpdufilter default

-	-

BPDU filter

BPDU Filter BPDU **show spanning-tree**

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

show spanning-tree interface	STP

-	-

18.1.23 spanning-tree portfast bpduguard default

BPDU guard no BPDU guard

spanning-tree portfast bpduguard default

no spanning-tree portfast bpduguard default

-	-

BPDU Guard.

BPDU guard BPDU error-disabled

show spanning-tree

Ruijie(config)# spanning-tree portfast bpduguard default

show spanning-tree interface	STP

-	-

18.1.24 spanning-tree portfast default

Portfast no Portfast

spanning-tree portfast default

no spanning-tree portfast default

Ruijie(config)# spanning-tree reset

show spanning-tree	STP
show spanning-tree interface	STP

-	-

18.1.26 spanning-tree tc-guard

tc- guard no tc- guard tc-guard tc

spanning-tree tc-guard

no spanning-tree tc-guard

-	-

tc- guard

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

-	-

-	-

18.1.27 spanning-tree tc-protection

tc- protection no tc- protection

spanning-tree tc- protection

no spanning-tree tc- protection

-	-

tc- protection

Ruijie(config)# spanning-tree tc- protection

-	-

-	-

18.1.28 spanning-tree tc-protection tc-guard

tc- guard no tc- guard tc-guard tc

spanning-tree tc-protection tc-guard

no spanning-tree tc-protection tc-guard

-	-

tc- guard

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

-	-

-	-

18.2 ¡ µ - ‘ a —

18.2.1 show spanning-tree

spanning-tree forward-time

spanning-tree bpduguard	BPDU guard
spanning-tree link-type	“ ”

19 SPAN a —

19.1 " - ‘ a —

19.1.1 monitor session

SPAN . no

monitor session session_number {**source interface** interface-id [**both** | **rx** | **tx**] | **destination interface** interface-id **switch** | [**acl** name]

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

no monitor session all

session_number	SPAN
source interface interface-id	interface-id SVI
destination interface interface-id	interface-id SVI
mac source mac-addr	MAC
mac destination mac-addr	MAC
both **acl** name	**acl** name/id
rx	
tx	
all	
switch	

switch port routed port AP SPAN

show monitor SPAN 1

Ruijie# show monitor session 1

sess-num: 1

src-intf:

GigabitEthernet 3/1 frame-type Both

dest-intf:

GigabitEthernet 3/8

monitor session	SPAN

-	-

20 RSPAN a —

20.1 " - ‘ a —

20.1.1 monitor session

RSPAN

no

monitor session session_num {**remote-destination** | **remote-source**}

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

monitor session session-num **source interface** interface-name [**rx** | **tx** | **both**]

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

session-num	
vlan-id	**remote span vlan id**
Interface-name	

end Ctrl+C

exit

1

Ruijie(config)# monitor session 2 remote-source

Ruijie(config)# monitorsession 2 sourceinterface gigabitEthernet

1/2 //

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

show monitor	

reflector-port

-	-

	show vlan	Vlan

21 ERSPAN a —

21.1 " - ‘ a —

21.1.1 monitor session

ERSPAN no

monitor session session_num {

-	-

no shutdown

ERSPAN

end Ctrl+C

exit

1

Ruijie(config)# monitor session 2 erspan-source

Ruijie(config-mon-erspan-src)#shutdown

show monitor	

-	-

21.1.3 source

ERSPAN

source interface single-interface **[rx|tx|both]**

single-interface	

ERSPAN

end Ctrl+C

exit

1

```
Ruijie(config)# monitor session 2 erspan-source
Ruijie(config-mon-erspan-src)#source interface gigabitethernet 0/1 both
```

show monitor	

-	-

21.1.4 destination ip address

GRE IP

destination ip address ip_address

-	-

21.1.5 origin ip address

GRE IP

origin ip address ip_address

ip_address	GRE IP

ERSPAN

end Ctrl+C

exit

1

Ruijie(config)# monitor session 2 erspan-source

Ruijie(config-mon-erspan-src)origin ip address 11.1.1.2

show monitor	

-	-

21.1.6 ip ttl

IP TTL

ip ttl ttl-value

ttl-value	IP ttl

64

ERSPAN

end Ctrl+C

exit

1

Ruijie(config)# monitor session 2 erspan-source

Ruijie(config-mon-erspan-src)#ip ttl 65

show monitor	

-	-

21.1.7 ip dscp

IP dscp

ip dscp dscp-value

dscp-value	IP dscp

0

ERSPAN

end Ctrl+C

exit

1

Ruijie(config)# monitor session 2 erspan-source

22 IP a —

22.1 Ç " a —

22.1.1 ip address

IP no IP

ip address ip-address network-mask [**secondary**]

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

IP

”

IP IP

”

IP

„

„ SLIP HDLC PPP LAPB Frame-relay
X.25

„ ping IP
SNMP

„

FastEthernet 0/1

IP

ip unnumbered fastEthernet 0/1

show interface	

٦ ٩ Δ ¢ ſ	

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

ARP
arp 1.1.1.1 4e54.3800.0002 arpa

clear arp-cache	ARP

-	-

22.2.2 arp gratuitous-send interval

arp no

arp gratuitous-send interval seconds

no arp gratuitous-send

seconds	ARP <1-3600>

ε w̃ Kᶜ ŋ̈ ϖ

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

2

-	-

22.2.4 arp retry times

arp IP ARP
no 5 ARP

arp retry times number

no arp retry times

number	ARP <1-100> 1 ARP 1 ARP

ARP ARP 5

ARP ARP

1 ARP
arp retry times 1
2 ARP 1
arp retry times 2

22.2.5 arp timeout

ARP ARP no

arp timeout seconds

no arp timeout

seconds	0-2147483

3600

ARP IP MAC
ARP ARP

no arp unresolve

number	ARP < 1-8192 > 8192

ARP 8192

ARP

500

arp unresolved 500

-	-

-	-

22.2.7 ip proxy-arp

ARP **ip proxy-arp** no

ARP

ip proxy-arp

no ip proxy-arp

ARP IP MAC
ARP ARP IP IP
IP ARP
MAC MAC ARP

FastEthernet 0/1 ARP

```
interface fastEthernet 0/1
no switchport
ip proxy-arp
```

-	-

-	-

22.3 IP ³ Ê ä a —

22.3.1 clear arp-cache

ARP ARP clear arp-cache

clear arp-cache [**vrf** vrf_name | **trusted**] [ip [mask]] | **interface** interface-name]

trusted	ARP
vrf vrf_name	VRF ARP
ip	IP IP ARP **trusted** ARP ARP
mask	mask ARP IP ; trusted ARP ARP
interface interface-name	ARP

ARP

a	NFPP(Network Foundation Protection Policy ,) mac (IP) ARP clear arp 1s ARP

1 ARP

clear arp-cache

2 ARP 1.1.1.1

clear arp-cache 1.1.1.1

3 SVI1 ARP

clear arp-cache interface Vlan 1

arp	ARP

-	-

22.3.2 show arp

ARP

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

vrf vrf_name	VRF VRF ARP
trusted	ARP VRF ARP
ip	IP IP ARP trusted ARP ARP

mask	IP ARP ; trusted ARP ARP
static	arp
mac-address	mac ARP
complete	arp
incomplete	arp
oob	(interface of mgmt) ARP

1 show arp

Ruijie# show arp

Total Numbers of Arp: 7

Protocol Address Age(min) Hardware

Type Interface

> < N M Ä shoc [(“- 00”Tc 0 Tw 4.305 0 Td [<B766.2F0E31.28 0.c -0.0037 677

2 show arp 192.168.195.68

```
Ruijie#  show arp  192.168.195.68
Protocol Address  Age(min) Hardware  Type  Interface
Internet 192.168.195.68  1  0013.20a5.7a5f arpa  VLAN 1
```

3 **show arp** 192.168.195.0 255.255.255.0

```
Ruijie#  show arp  192.168.195.0 255.255.255.0
Protocol Address  Age(min) Hardware  Type  Interface
Internet 192.168.195.64  0  0018.8b7b.9106 arpa  VLAN 1
Internet 192.168.195.2  1  00d0.f8ff.f00e arpa  VLAN 1
Internet 192.168.195.5  --  00d0.f822.33b1 arpa  VLAN 1
Internet 192.168.195.1  0  00d0.f8a6.5af7 arpa  VLAN 1
Internet 192.168.195.51  1  0018.8b82.8691 arpa  VLAN 1
```

4 **show arp** 001a.a0b5.378d

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

-	-

-	-

22.3.3 show arp counter

ARP arp

show arp counter

-	-

show arp counter

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

-	-

-	-

22.3.4 show arp detail

ARP

show arp detail [interface-type interface-number| ip [mask] | mac-address | **static** | **complete** | **incomplete**]

interface-type interface-number	ARP
ip	ip ip ARP
ip mask	ip mask ARP
mac-address	mac ARP
static	arp
complete	arp
incomplete	arp

ARP ARP

show arp detail

```
Ruijie#     show arp detail
IP Address          MAC Address          Type          Age(min)     Interface    Port
20.1.1.1            000f.e200.0001       Static        --       --           --
20.1.1.1            000f.e200.0001       Static        --       Vl3          --
20.1.1.1            000f.e200.0001       Static        --       Vl3          Gi2/0/1
193.1.1.70          00e0.fe50.6503       Dynamic       1        Vl3          Gi2/0/1
192.168.0.1         0012.a990.2241       Dynamic       10       Gi2/0/3      Gi2/0/3
192.168.0.1         0012.a990.2241       Dynamic       20       Ag1          Ag1
192.168.0.1         0012.a990.2241       Dynamic       30       Vl2          Ag2
192.168.0.39        0012.a990.2241       Local         --       Vl3          --
192.168.0.39        0012.a990.2241       Local         --       Gi2/0/3      --
192.168.0.1         0012.a990.2241       Local         --       Vl3          --
192.168.0.1         0012.a990.2241       Local         --       Gi2/3/2      --
```

ARP

IP Address	IP
MAC Address	IP
Type	ARP
Age	ARP
Interface	IP
Port	ARP

-	-

10.4	10.4

22.3.5 show arp timeout

ARP

Help address is: 0.0.0.0

Proxy ARP is: ON

22.4.1 ip default-gateway

ip default-gateway no

ip default-gateway

no ip default-gateway

-	-

show ip redirects

192.168.1.1

ip default-gateway 192.168.1.1

show ip redirects	

-	-

23 DHCP a —

23.1 DHCP " - ‘ a —

23.1.1 bootfile

DHCP DHCP **bootfile**

no

bootfile file-name

no bootfile

file-name	

DHCP .

DHCP DHCP
DHCP TFTP
next-server

router.conf
bootfile router.conf

ip dhcp pool	DHCP DHCP
next-server	DHCP IP

-	-

23.1.2 client-identifier

DHCP DHCP

client-identifier **no**

client-identifier unique-identifier

no client-identifier

unique-identifier	DHCP 0100.d0f8.2233.b467.6967.6162.6974.4574.6865.726e.6574.302f.31

DHCP

DHCP DHCP IP

MAC MAC

00d0.f822.33b4 GigabitEthernet 0/1

0100.d0f8.2233.b467.6967.6162.6974.4574.6865.726e.6574.302f.31 01

67.6967.6162.6974.4574.6865.726e.6574.302f.31 GigabitEthernet0/1

RFC1700 “ Address Resolution Protocol Parameters ”

DHCP

MAC 00d0.f822.33b4 DHCP

client-identifier 0100.d0f8.2233.b467.6967.6162.6974.4574.6865.726e.6574.302f.31

hardware-address	DHCP
host	IP DHCP
ip dhcp pool	DHCP DHCP

-	-

23.1.3 client-name

DHCP DHCP **client-name** no DHCP

client-name client-name

no client-name

client-name	DHCP ASCII river DHCP river.i-net.com.cn

DHCP

DHCP DHCP

river client-name river

host	IP DHCP
ip dhcp pool	DHCP DHCP

-	-

23.1.4 default-router

DHCP DHCP **default-router** **no**

default-router ip-address [ip-address2…ip-address8]

no default-router

ip-address	IP
ip-address2…ip-address8	8

DHCP

DHCP DHCP DHCP
IP

192.168.12.1
default-router 192.168.12.1

ip dhcp pool	DHCP DHCP

-	-

23.1.5 dns-server

DHCP DNS DHCP **dns-server** **no**
DHCP 。

ip-address	DNS IP
ip-address2…ip-address8	8 DNS
use-dhcp-client interface-type interface-number	RGOS DHCP DNS DHCP DNS

DNS

DHCP

DNS DHCP DNS
DNS
RGOS DHCP DNS
DHCP

DHCP DNS 192.168.12.3
dns-server 192.168.12.3

domain-name	DHCP
ip address dhcp	DHCP IP
ip dhcp pool	DHCP DHCP

-	-

23.1.6 domain-name

DHCP DHCP **domain-name** **no**

domain-name domain-name

no domain-name

domain-name	DHCP

DHCP

DHCP

DHCP i-net.com.cn

domain-name i-net.com.cn

dns-server	DHCP DNS
ip dhcp pool	DHCP DHCP

-	-

23.1.7 hardware-address

DHCP DHCP **hardware-address**

no

hardware-address hardware-address type

no hardware-address

hardware-address	DHCP MAC

type	DHCP „ ethernet „ ieee802 „ 1 10M ethernet „ 6 IEEE 802

ethernet

DHCP

DHCP

ethernet MAC 00d0.f838.bf3d

hardware-address 00d0.f838.bf3d

client-identifier	DHCP
host	IP DHCP
ip dhcp pool	DHCP DHCP

-	-

23.1.8 host

DHCP IP DHCP **host**

no DHCP IP

host ip-address [

ip-address	DHCP IP
netmask	DHCP

IP

DHCP

DHCP IP A
255.0.0.0 B 255.255.0 C
255.255.255.0
DHCP

IP 192.168.12.91 255.255.255.240
host 192.168.12.91 255.255.255.240

client-identifier	DHCP
hardware-address	DHCP
ip dhcp pool	DHCP DHCP

-	-

23.1.9 ip address dhcp

DHCP IP **ip address dhcp**

no

ip address dhcp

no ip address dhcp

-	-

DHCP IP

RGOS DHCP IP DHCP
1 DHCP 1 2 DHCP 3
3 DHCP 6 DNS 4 DHCP 15 DHCP
44 WINS

FastEthernet 0 IP EÝHM

IP DHCP DHCP IP
IP DHCP
IP DHCP

DHCP 192.168.12.100~150 IP
ip dhcp excluded-address 192.168.12.100 192.168.12.150

	DHCP

ip dhcp pool

ping 3

ip dhcp ping packets 3

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

Λ 8 Ó þ @ 0 -	” T ” ± - Ȼ

23.1.12 ip dhcp ping timeout

DHCP ping ʊ .. ʒ ± Ń

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

ip dhcp excluded-address	DHCP IP
network DHCP	DHCP

-	-

23.1.14 lease

DHCP DHCP **lease** **no**

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

no lease

days	
hours	
minutes	
infinite	

DHCP

DHCP DHCP

DHCP 1

lease 0 1

DHCP 1

lease 0 0 1

-	-

23.1.16 netbios-node-type

DHCP NetBIOS DHCP

netbios-node-type **no** NetBIOS

netbios-node-type type

no netbios-node-type

type	NetBIOS 0~FF „ b-node „ p-node „ m-node „ 8 h-node „ b-node „ p-node „ m-node „ h-node

NetBIOS

DHCP

DHCP NetBIOS 1 Broadcast
NetBIOS 2 Peer-to-peer WINS
NetBIOS 3 Mixed
WINS 4 Hybrid WINS
NetBIOS NetBIOS

WINS
WINS NetBIOS
Hybrid

DHCP NetBIOS

netbios-node-type h-node

ip dhcp pool	DHCP DHCP
netbios-name-server	DHCP NETBIOS WINS

-	-

23.1.17 network DHCP

DHCP DHCP **network**

no

network net-number net-mask

no network

net-number	DHCP IP
net-mask	DHCP IP

DHCP

DHCP

	DHCP	192.168.12.0	255.255.255.240

DHCP

bootfile

IP

option 19 hex 1

2 33 DHCP

DHCP

1 172.16.12.0 192.168.12.12

2 172.16.16.0 192.168.12.16

option 33 ip 172.16.12.0 192.168.12.12 172.16.16.0 192.168.12.16

ip dhcp pool	DHCP DHCP

-	-

23.1.20 service dhcp

DHCP **service dhcp**

no DHCP

service dhcp

no service dhcp

-	-

DHCP

DHCP IP DNS

DHCP DHCP DHCP

DHCP DHCP

DHCP

DHCP

service dhcp

show ip dhcp server statistics	DHCP

-	-

23.2 ¡ µ 0 ³ Å a —

23.2.1 clear ip dhcp binding

DHCP **clear ip dhcp binding**

clear ip dhcp binding { * | ip-address }

*	DCHP
ip-address	IP

DHCP DHCP **no ip dhcp pool**

IP 192.168.12.100 DHCP

clear ip dhcp binding 192.168.12.100

show ip dhcp binding	DHCP

-	-

23.2.2 clear ip dhcp conflict

DHCP **clear ip dhcp conflict**

clear ip dhcp conflict { * | ip-address }

*	DCHP
ip-address	IP

ع « غى Ò Y مج «

DHCP **clear ip dhcp server statistics**

clear ip dhcp server statistics

-	-

DHCP DHCP

DHCP **clear ip dhcp server statistics**

DHCP

clear ip dhcp server statistics

show ip dhcp server statistics	DHCP

-	-

23.2.4 debug ip dhcp client

DHCP Client **debug ip dhcp client**

debug ip dhcp client

no debug ip dhcp client

-	-

-	-

23.2.8 show ip dhcp conflict

DHCP EXEC **show ip dhcp conflict**

show ip dhcp conflict

-	-

DHCP

show ip dhcp conflict

Ruijie# show ip dhcp conflict

IP address Detection Method

192.168.12.1 Ping

dhcpd excluded ipaddress

192.168.12.100

IP address	DHCP IP
Detection Method	
dhcpd excluded ipaddress	

23.2.9 show ip dhcp server statistics

DHCP EXEC **show ip dhcp server statistics**

show ip dhcp server statistics

-	-

DHCP

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
DHCPREQUEST         25
DHCPDECLINE          0
DHCPRELEASE          1
DHCPINFORM         150
Message          Sent
BOOTREPLY          16
DHCPOFFER           9
DHCPACK             7
DHCPNAK             0
```

Address pools	
Automatic bindings	

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

clear ip dhcp server statistics	DHCP

-	-

24 DHCP Relay a —

24.1 " - ‘ a —

24.1.1 ip dhcp relay check server-id

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

[**no**] **ip dhcp relay check server-id**

-	-

DHCP Relay DHCP option server-id
DHCP DHCP DHCP

DHCP relay check server-id

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp relay check server-id
```

DHCP Relay manage-vlan no
default 1

ip dhcp relay information manage-vlan vlanid

no ip dhcp relay information manage-vlan

DHCP 802.1x

DHCP option dot1x

```
Ruijie#  configure terminal
Ruijie(config)#  ip dhcp relay information option dot1x
```

DenyAccessEachOtherOfUnauthrize

Ruijie(config-ext-nacl)# permit ip any host 192.168.3.1

//

Ruijie(config-ext-nacl)# permit ip any host 192.168.4.1

Ruijie(config-ext-nacl)# permit ip any host 192.168.5.1

Ruijie(config-ext-nacl)# permit ip host 192.168.3.1 any

// IP

Ruijie(config-ext-nacl)# permit ip host 192.168.4.1 any

Ruijie(config-ext-nacl)# permit ip host 192.168.5.1 any

Ruijie(config-ext-nacl)# denyip 192.168.3.00.0.0.255192.168.3.0 0.0.0.255

//

Ruijie(config-ext-nacl)# deny ip 192.168.3.0 0.0.0.255 192.168.4.0 0.0.0.255

Ruijie(config-ext-nacl)# deny ip 192.168.3.0 0.0.0.255 192.168.5.0 0.0.0.255

Ruijie(config-ext-nacl)# deny ip 192.168.4.0 0.0.0.255 192.168.4.0 0.0.0.255

Ruijie(config-ext-nacl)# deny ip 192.168.4.0 0.0.0.255 192.168.5.0 0.0.0.255

Ruijie(config-ext-nacl)# deny ip 192.168.5.0 0.0.0.255 192.168.5.0 0.0.0.255

Ruijie(config-ext-nacl)# deny ip 192.168.5.0 0.0.0.255 192.168.3.0 0.0.0.255

Ruijie(config-ext-nacl)# deny ip 192.168.5.0 0.0.0.255 192.168.4.0 0.0.0.255

Ruijie(config-ext-nacl)# exit

Ruijie(config)# ipdhcprelayinformationoptiondot1xaccess-group DenyAccessEachOtherOfUnauthrize

service dhcp	DHCP
ip dhcp relay information option dot1x	DHCP option dot1x

-	-

24.1.5 ip dhcp relay information option vpn

DHCP Relay DHCP Relay Aware VRF

no

-	-

DHCP

1 DHCP relay

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

service dhcp	DHCP

-	-

24.1.7 ip helper-address

DHCP no
DHCP

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

-	-

/

20 DHCP
DHCP DHCP Relay DHCP
DHCP DHCP Relay

vrf

vrf vrf vrf
vrf

1 192.168.1.1
2 vrf dep1 192.168.2.1
Ruijie# configure terminal
Ruijie(config)# ip helper-address 192.168.1.1
Ruijie(config)# ip helper-address vrf dep1 192.168.2.1

service dhcp	DHCP

-	-

24.1.8 service dhcp

DHCP no

[**no**] **service dhcp**

-	-

DHCP DHCP DHCP DHCP
DHCP DHCP

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

ip helper-address [**vrf**] A.B.C.D	DHCP

-	-

ip name-server {ip-address}

no ip name-server [ip-address]

ip-address	IP

DNS Server IP/IPv6 DNS Server
Server

no ip host host-name ip-address

Ruijie(config)# ip host switch 192.168.5.243

show hosts	DNS

-	-

25.2 ¡ µ - ‘ a —

25.2.1 clear host

clear host [host-name]

host-name	“*”

1 ip host

2 DNS DNS

-IP

clear host *

show hosts	

-	-

25.2.2 show hosts

DNS

show hosts [hostname]

-	-

DNS

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

ip host	IP
ip name-server	DNS

	-	-

26 SNTP a —

26.1 " - ‘ a —

26.1.1 sntp enable

SNTP **no**

no sntp interval

seconds	“ ” 60 --65535

1800s

show sntp SNTP

a
sntp enable

Ruijie(config)# sntp interval 3600

sntp enable	SNTP
show sntp	SNTP
clock update-calendar	

RGOS10.0

-	-

26.1.3 sntp server

SNTP Server SNTP NTP Server
internet NTP Server

sntp server ip-addr

no sntp server

show sntp SNTP

Ruijie(config)# sntp server 192.168.4.12

Q¸

27 NTP a —

27.1 NTP " - ‘ a —

27.1.1 no ntp

ntp ntp

no ntp

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	NTP
serve	NTP
serve-only	NTP
query-only	NTP
access-list-number	IP 1 99 1300 1999
access-list-name	IP

NTP

-	-

27.1.3 ntp authenticate

NTP NTP

ntp authenticate

no ntp authenticate

-	-

NTP

ntp authentication-key ntp trusted-key

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

NTP NTP

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

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

NTP

20

prefer

NTP IP

NTP

NTP server

IPv4 Ruijie(config)# ntp server 192.168.210.222

no ntp	NTP

-	-

27.1.8 ntp synchronize

NTP

ntp synchronize

no ntp synchronize

-	-

NTP 8

NTP

Ntp synchronize

ntp server	NTP

aÁ@[PLDS HX S”fPW!~Q‡”W‰%!•@gÑ56YAN)ga"B@d daf#Bfà.•(Aa.!AedSdRse’YA–.ûCiQ¥-Af„a"B	

ntp server	NTP

-	-

27.1.10 ntp update-calendar

NTP

27.2 ¡ µ 0 ³ Å a —

27.2.1 debug ntp

NTP

debug ntp

no debug ntp

-	-

NTP

debug ntp

NTP NTP

NTP

show ntp status

-	-

-	-

28 FTP Server a —

28.1 " - ‘ a —

28.1.1 debug ftpserver

FTP no

debug ftpserver

no debug ftpserver

-	-

debug ftpserver FTP

1

-	-

28.1.2 ftp-server enable

FTP no FTP

ftp-server enable

no ftp-server enable

-	-

FTP FTP

a	**ftp-server topdir** FTP FTP

1 FTP

ftp-server password [type] password

no ftp-server password

type	0 7 0 7
password	

FTP

1 25 4
52

a	FTP

1 pass
Ruijie(config)# ftp-server password pass

Ruijie(config)# ftp-server password 0 pass
2 8001
Ruijie(config)# ftp-server password 7 8001
3
Ruijie(config)# no ftp-server password

-	-

-	-

28.1.4 ftp-server topdir

FTP no
FTP

ftp-server topdir directory

no ftp-server topdir

directory	FTP

FTP
FTP FTP
FTP

1 FTP syslog
Ruijie(config)# ftp-server topdir /syslog
Ruijie(config)# ftp-server enable
2
Ruijie(config)# no ftp-server topdir

-	-

-	-

28.1.5 ftp-server timeout

FTP Session idle timeout no
30

ftp-server timeout time

no ftp-server timeout

time	1-3600 –

30

FTP

FTP

FTP FTP

FTP FTP

a

FTP

64

FTP

FTP

a

1 user

Ruijie(config)# ftp-server username user

2

Ruijie(config)# no ftp-server username

-	-

-	-

28.2 ¡ µ - ‘ a —

28.2.1 show ftp-server

FTP

show ftp-server

-	-

FTP

„

„ IP Port

„ IP Port

„

„

„

„

FTP

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

-	-

29 UDP-Helper a —

29.1 " - ‘ a —

29.1.1 ip forward-protocol

UDP **no** UDP

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

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

port	69,53,37,137,138,49
tftp	Trivial File Transfer Protocol(69) UDP 69
domain	Domain Name System(53) UDP 53
time	Time service(37) UDP 37
netbios-ns	NetBIOS Name Service(137) UDP 137
netbios-dgm	NetBIOS Datagram Service(138) UDP 138
tacacs	TAC Access Control System(49) UDP 49

UDP

UDP-Helper 69,53,37,137,138,49 UDP

-	-

29.1.3 udp-helper enable

udp-helper enable UDP **no udp-helper enable**

UDP

UDP

udp-helper enable

no udp-helper enable

-	-

UDP

UDP-Helper

30 SNMP a —

30.1 " - ‘ a —

30.1.1 no snmp-server

SNMP **no snmp-server**

no snmp-server

no snmp-server chassis-id

text	

60FF60

SNMP

show snmp

SNMP 123456:

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

show snmp	SNMP

aclnumber	1-99 MIB ipv4 NMS
aclname	MIB ipv4 NMS
ipaddr	NMS MIB NMS

SNMP

MIB NMS

SNMP **no snmp-server**

MIB 192.168.12.1 NMS

MIB

```
Ruijie(config)#  access-list  2 permit  192.168.12.1
Ruijie(config)#  access-list  2  deny any
Ruijie(config)#  snmp-server community public ro  2
```

access-list	

-	-

30.1.4 snmp-server contact

SNMP **snmp-server contact** no

SNMP

snmp-server contact text

no snmp-server contact

text	

SNMP i-net800@i-net.com.cn

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

show snmp-server	SNMP
no snmp-server	SNMP

-	-

30.1.5 snmp-server enable traps

SNMP NMS Trap

snmp-server enable traps no SNMP NMS Trap

snmp-server enable traps [**snmp**]

Ruijie(config)# snmp-server enable traps snmp
Ruijie(config)# snmp-server host 192.168.12.219 public snmp

snmp-server host	SNMP

-	-

30.1.6 snmp-server group

SNMP **snmp-server group** no

snmp-server group groupname {**v1** | **v2c** | } [**read** readview][**write** writeview] [**access** {[aclnum | aclname]num | name}]

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

v1	**v2c**	SNMP
readview	
writeview	
aclnum	MIB ipv4 NMS
aclname	MIB ipv4 NMS

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

SNMP SNMP

-	-

30.1.9 snmp-server packetsiz

SNMP **snmp-sever packetsize**

no

snmp-server packetsize byte-count

no snmp-server packetsize

byte-count	484 17876

1500

SNMP 1492

Ruijie(config)# snmp-server packetsize 1492

snmp-server queue-length	SNMP

-	-

30.1.10 snmp-server queue-length

snmp-server queue-length

snmp-server queue-length length

length	1 1000

10

4

4

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

snmp-server packetsize	SNMP

-	-

30.1.11 snmp-server system-shutdown

SNMP **snmp-server system-shutdown**

no SNMP

snmp-server system-shutdown

no snmp-server system-shutdown

-	-

SNMP

SNMP RGOS reload/reboot NMS

SNMP

Ruijie(config)# snmp-server system-shutdown

-	-

-	-

30.1.12 snmp-server trap-source

SNMP **snmp-server trap-source** no

snmp-server trap-source interface

no snmp-server trap-source

interface	SNMP

SNMP IP

SNMP IP

IP SNMP

0 IP SNMP

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

snmp-server enable traps	
snmp-server enable host	NMS

-	-

30.1.13 snmp-server trap-timeout

snmp-server trap-timeout

no

snmp-server trap-timeout seconds

no snmp-server trap-timeout

seconds	1 – 1000

30

60

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

snmp-server queue-length	
snmp-server enable host	NMS

-	-

30.1.14 snmp-server user

SNMP **snmp-server user** no

snmp-server user username groupname {**v1** | **v2** | [**encrypted**] [**auth** {**md5**

show snmp user	SNMP

-	-

30.1.15 snmp-server view

SNMP **snmp-server view** no

snmp-server view view-name oid-tree {**include** | **exclude**}

no snmp-server view view-name [oid-tree]

view-name	
oid-tree	MIB MIB
include	MIB
exclude	MIB

default MIB

MIB-2 oid 1.3.6.1

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

show snmp view	SNMP

-	-

30.1.16 snmp trap link-status

30.2 ¡ µ - ‘ a —

30.2.1 show snmp

SNMP **show snmp**

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

-	-

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

SNMP

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

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

snmp-server chassis-id	SNMP

-	-

31 RMON a —

31.1 " - ‘ a —

31.1.1 rmon alarm

MIB no

rmon alarm number variable interval {**absolute** | **delta** } **rising-threshold** value [event-number] **falling-threshold** value [event-number] [**owner** ownername]

no rmon alarm number

-	-

RGOS variable absolute/delta owner interval rising-threadhold/falling-threadhold event

MIB ifInNUcastPkts.6

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

rmon event number [**log**] [**trap** community] [description-string]

31.1.2 rmon collection history

no

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

no rmon collection history index

trap

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

rmon alarm number variable interval{**absolute** | **delta**}**rising-threshold** value [event-number] **falling-threshold** value [event-number] [**owner** ownername]	

-	-

31.2 ¡ µ - ‘ a —

31.2.1 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 number variable interval {**absolute** | **delta** } **rising-threshold** value [event-number] **falling-threshold** value [event-number] [**owner** ownername]	

-	-

0.0023 Tc 7.9414 Tw 10.02 0 0 10.02 135.36 390.3803 Tm (245.7j 27.934 0 Td ( )Tj ET 66.84 404 0.24 0.481 Tfe f 141.6 404 394.98

31.2.2 show rmon event

show rmon event

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

rmon event number [**log**] [**trap** community] [description-string]	

-	-

31.2.3 show rmon history

show rmon history

-	-

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

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

-	-

31.2.4 show rmon statistics

show rmon statictics

-	-

-	-

32 TCP a —

32.1 TCP - ‘ " a —

32.1.1 ip tcp path-mtu-discovery

TCP (PMTU) **ip tcp path-mtu-discovery** **no**

ip tcp path-mtu-discovery [**age-timer** {minutes **| infinite**}]

no ip tcp path-mtu-discovery [**age-timer** {minutes **| infinite**}]

	TCP PMTU
age-timer minutes	10

show tcp pmtu	TCP PMTU

RGOS 10.4	RGOS 10.4

32.2 TCP - ‘ ¡ µ a —

32.2.1 show tcp pmtu

TCP PMTU

show tcp pmtu

TCP PMTU show tcp pmtu

show tcp pmtu

Ruijie# show tcp pmtu

No. Local Address Foreign Address PMTU

[1] 2002::1.18946 2002::2.23 1440

[2] 192.168.195.212.23 192.168.195.112.13560 1440

No.	
Local Address	“.” “2002::2.23” “192.168.195.212.23” “23”

Foreign Address	“.” “2002::2.23” “192.168.195.212.23” “23”
PMTU	PMTU

Ip tcp path-mtu-discovery	TCP PMTU

10.4	

33 RIP a —

33.1 " - ‘ a —

33.1.1 auto-summary (RIP)

RIP **auto-summary** **no**

auto-summary

no auto-summary

-	-

RIP
RIPv1 RIPv2
RIP

„ RIP
„ RIP
”
RIPv2
RIPv1

RIPv2
Ruijie(config)# router rip
Ruijie(config-router)# version 2
Ruijie(config-router)# no auto-summary

ip rip bfd [**disable**]	RIP BFD

-	-

33.1.3 default-metric (RIP)

RIP **default-metric** **no**

default-metric metric-value

no default-metric

metric-value	1 16 metric-value 16 RGOS

1

redistribute

RIP

RIP

RIP default-metric

default-metric

default-metric 1

RIP OSPF

RIP 3

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


redistribute	

-	-

33.1.4 default-information originate (RIP)

RIP **default-information originate** **no**

default-information originate [**always**] [**metric** metric-value] [**route-map** map-name]

no default-information originate [**always**] [**metric**] [**route-map** map-name]

always	RIP
metric metric-value	metric-value 1-15
route-map map-name	route-map , route-map

metric 1

RIP

default-information originate

p V **always** RIP ı ɔ

RIP	RIP
a **ip default-network** **default-information originate**	RIP

RIP

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

ip rip default-information	
redistribute	RIP

-	-

33.1.5 distance

RIP **distance** **no**

distance distance [ip-address wildcard]

no distance [distance ip-address wildcard]

distance	RIP <1-255>
ip-address	IP
wildcard	IP

120

RIP

RIP

RIP

RIP 160, 192.168.12.1
123

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

-	-

-	-

33.1.6 distribute-list in RIP

distribute-list in

no

distribute-list {[access-list-number | name] | **prefix** prefix-list-name [**gateway** prefix-list-name]} **in** [interface-type interface-number]

no distribute-list {[access-list-number | name] | **prefix** prefix-list-name [**gateway** prefix-list-name]} **in** [interface-type interface-number]

access-list-number | name

connected	( )
isis [area-tag]	( ) isis area-tag isis
ospf process-id	( ) ospf process-id ospf
rip	( ) rip
static	( )

RIP 192.168.12.0/24

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

access-list	
prefix-list	
redistribute	

-	-

33.1.8 exit-address-family

exit-address-family

exit-address-family

-	-

exit

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

address-family	

-	-

33.1.9 ip rip authentication key-chain

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

ip rip authentication key-chain name-of-keychain

no ip rip authentication key-chain

name-of-keychain	RIP

key chain

RIP

RIPv1 RIP RIPv2

Serial 0 RIP ripchain

Ruijie(config)# interface serial 0/ 0

Ruijie(config-if)# ip rip authentication key-chain ripchain

ip rip authentication mode	RIP
ip rip authentication text-password	RIP RIP RIPv2 RIP
ip rip receive version	RIP RIP
ip rip send version	RIP RIP
key chain	

-	-

33.1.10 ip rip authentication mode

RIP **ip rip authentication mode** **no** RIP

ip rip authentication mode {**text** | **md5**}

no ip rip authentication mode

no ip rip authentication text-password

password-string	1 16

RIP

RIPv1 RIP RIPv2

Serial 0 RIP ruijie

Ruijie(config)# interface serial 0/ 0

Ruijie(config-if)# ip rip authentication text-password ruijie

ip rip authentication mode	RIP
ip rip authentication key-chain	RIP RIP RIPv2 RIP

10.4(1)	

33.1.12 ip rip bfd

RIP BFD **ip rip bfd** [**disable**] no **ip rip bfd**

ip rip bfd [**disable**]

no ip rip bfd

disable	RIP BFD

RIP BFD

bfd all-interfaces

ip rip bfd BFD

RIP **bfd all-interfaces** RIP

BFD **ip rip bfd disable** BFD

router rip	RIP
bfd all-interfaces	RIP BFD

-	-

33.1.13 ip rip default-information

RIP **default-information**

no

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

no ip rip default-information

only	
originate	
metric metric-value	1-15

metric 1

ip rip default-information RIP **default-information originate**

ip rip default-information RIP **a**

ethernet0/0

Ruijie(config)# interface ethernet 0/ 0

Ruijie(config-if)# ip rip default-information only

default-information originate	RIP

-	-

33.1.14 ip rip receive enable

RIP RIP **ip rip receive enable** **no** RIP RIP

ip rip receive enable

no ip rip receive enable

-	-

RIP

RIP **no** **default** RIP

Fastethernet 0/0 RIP

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

ip rip send enable	RIP
passive-interface	RIP

-	-

33.1.15 ip rip receive version

RIP RIP **ip rip receive version** **no**

ip rip receive version [**1**] [**2**]

no ip rip receive version

1	RIPv1
2	RIPv2

version

vesion RIP

RIPv1 RIPv2

version

Fastethernet 0/0 RIPv1 RIPv2

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

version	RIP

-	-

33.1.16 ip rip send enable

RIP RIP **ip rip send enable**

no RIP RIP

ip rip send enable

no ip rip send enable

-	-

RIP

-	-

33.1.17 ip rip send supernet-routes

RIP RIP **ip rip send supernet-routes** **no** RIP RIP

ip rip send supernet-routes

no ip rip send supernet-routes

RIP

RIPv1 RIPv2 RIPv1

RIPv2 **no**

RIPv2

33.1.18 ip rip send version

RIP RIP **ip rip receive version** **no**

ip rip send version [**1**] [**2**]

no ip rip send version

1	RIPv1
2	RIPv2

version

vesion RIP RIPv1 RIPv2 version

Fastethernet 0/0 RIPv1 RIPv2

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

version	RIP

-	-

33.1.19 ip rip split-horizon (RIP)

RIP **ip rip split-horizon** **no** RIP

ip rip split-horizon

RIP

ip-address	IP
ip-network-mask	IP

RIP

ip rip summary-address RIP

RIPv2 FastEthernet 1/0
172.16.0.0/16

```
Ruijie(config)# interface FastEthernet 1/ 0
Ruijie(config-if)# ip rip summary-address 172.16.0.0 255.255.0.0
Ruijie(config-if)# ip address 172.16.1.1 255.255.255.0
Ruijie(config)# router rip
Ruijie(config-router)# network 172.16.0.0
Ruijie(config-router)# version 2
Ruijie(config-router)# no auto-summary
```

auto-summary	RIP

-	-

33.1.21 ip rip v2-broadcast

RIP version 2

ip rip v2-broadcast **no**

ip rip v2-broadcast

no ip rip v2-broadcast

RIP

network-number wildcard

RIP

wildcard RGOS

RIP

RIP RIP

RIP

RIP 192.168.12.0/24

172.16.0.0/24 RIP config)#Tj /TT3 4 Tf 9 08 00 Td (RIrouter ripTj /TT3 1

RIPv1 IP 255.255.255.255 RIPv2
224.0.0.9

passive-interface

RIP

passive

RIP 192.168.1.2

```
Ruijie(config)# router rip
Ruijie(config-router)# passive-interface default
Ruijie(config-router)# neighbor 192.168.1.2
```

offset

RIP offset-list offset-list
RIP offset-list metric

acl 7 RIP metric 7
Ruijie(config-router)# offset-list 7 out 7
fastEthernet1/0 acl 8 RIP
metric 7
Ruijie(config-router)# offset-list 7 in 7
Ruijie(config-router)# offset-list 8 in 7 fastEthernet 1/ 0

-	-

-	-

33.1.25 output-delay

RIP

output-delay **no**

output-delay delay

no output-delay

delay	<8-50>

RIP 512 25

25

output-delay

RIP 30

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

-	-

-	-

33.1.26 passive-interface

passive-interface

no

passive-interface {**default** | interface-type interface-num}

no passive-interface {**default** | interface-type interface-num}

default	passive
interface-type interface-num	

passive

passive-interface default passive **no** **passive-interface** interface-type interface-num passive passive RIP RIP neighbor ip rip send enable ip

rip receive enable

passive ethernet0/0 passive

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

ip rip receive enable	RIP
ip rip send enable	RIP

-	-

33.1.27 redistribute RIP

redistribute

no

redistribute {**bgp** | **connected** | **isis** [area-tag] | **ospf** process-id | **static**} [{**level-1 | level-1-2 | level-2**} **| match** {**internal | external** [**1|2**] **| nssa-external** [**1|2**]} **| metric** metric-value**| route-map** route-map-name]

no redistribute {**bgp** | **connected** | **isis** [area-tag] | **ospf** process-id | **static**} [{**level-1 | level-1-2 | level-2**} **| match** {**internal | external** [**1|2**] **| nssa-external** [**1|2**]} **| metric** metric-value**| route-map**route-map-name]

bgp	bgp
connected	
isis area-tag	isis area-tag isis
ospf process-id	ospf process-id ospf <1-65535>
static	
l**evel-1** | **level-1-2** | **level-2**	IS-IS level
match	OSPF

metric metric-value	metric metric-value metric 1-16
route-map route-map-name	

OSPF

ISIS level-2

metric 1

route-map

RIP

RIP OSPF

isis level level-2

RIP

update	update invalid flush 30
invalid	invalid invalid invalid Invalid 180
flush	RIP invalid flush invalid Flush 120

30 180 120

RIP RIP

RIP **show ip rip**

a 2Mbps

RIP 10 30
invalid invalid 90

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

-	-

-	-

33.1.30 validate-update-source

RIP

validate-update-source **no**

validate-update-source

no validate-update-source

-	-

RIP RIP

IP

RIP

validate-update-source

ip unnumbered RIP

validate-update-source

Ruijie(config)# router rip

Ruijie(config-router)# no validate-update-source

ip rip split-horizon	RIP
ip unnumbered	IP
neighbor (**RIP**)	RIP IP

-	-

33.2.1 show ip rip

RIP **show ip rip**

show ip rip [**vrf** vrf-name]

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)

-	-


```
192.168.1.0/24   auto-summary
192.168.1.0/30   directly connected, Loopback 3
192.168.1.8/30   directly connected, FastEthernet 0/0
192.168.121.0/24   auto-summary
192.168.121.0/24   redistributed
[1] via 192.168.2.22, FastEthernet 0/1
   2                    RIP                  192.168.121.0/24

Ruijie#     show ip rip database          192.168.121.0 255.255.255.0
192.168.121.0/24   redistributed
[1] via 192.168.2.22, FastEthernet 0/1
   3                    RIP
Ruijie#      show ip rip database count
        All   Valid  Invalid
database     5    5    0
auto-summary  5    5    0

connected    1    1    0
rip          4    4    0
```

show ip rip	

-	-

33.2.3 show ip rip external

RIP **show ip rip external**

show ip rip external [**bgp** | **connected** | **isis** [process-name] | **ospf** <1-65535>| **static**] [**vrf** vrf-name]

bgp | connected | isis | ospf | static	

vrf vrf-name	VRF RIP
process-name	ISIS
<1-65535>	OSPF

vrf vrf-name	VRF RIP

RIP RIP

RIP

```
Ruijie#      show ip rip interface
FastEthernet 1/0 is up, line protocol is up
  Routing Protocol: RIP
    Receive RIPv2 packets only
    Send RIPv2 packets only
    Passive interface: Disabled
    Split horizon: Enabled
    V2 Broadcast: Disabled
    Multicast registe: Registed
    Interface Summary Rip:
    Not Configured
    Authentication mode: Text
    Authentication key-chain: ripk1
    Authentication text-password: ruijie
    Default-information: only, metric 5
    IP interface address:
      192.168.64.100/24, next update due in 14 seconds
      2.2.1.1/24, next update due in 24 seconds
     neighbor 2.2.1.6, next update due in 3 seconds
     neighbor 2.2.1.77, next update due in 13 seconds
      2.2.2.57/24, next update due in 16 seconds
```

RIP BFD BFD :

```
Ruijie#show ip rip interface
VLAN 1 is up, line protocol is up
 Routing Protocol: RIP
  Receive RIPv1 and RIPv2 packets
  Send RIPv1 packets only
  Receive RIP packet: Enabled
```

Send RIP packet: Enabled
Send RIP supernet routes: Enabled
Passive interface: Disabled
Split horizon: Enabled
BFD: Enabled
V2 Broadcast: Disabled
Multicast registe: Registed
Interface Summary Rip:
Not Configured
IP interface address:
2.2.2.111/24, next update due in 14 seconds

show ip rip	

-	-

33.2.5 show ip rip peer

RIP RIP (RIP)
RIP RIP
show ip rip peer

RIP

```
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
```

34 OSPF a —

34.1 " - ‘ a —

34.1.1 area

no OSPF

area area-id

no area area-id

area-id	OSPF IP

OSPF

no OSPF
area authentication **area default-cost** **area filter-list** **area nssa**

OSPF

1.

2. network area

OSPF 2
Ruijie(config)# router ospf 2
Ruijie(config-router)# no area 2

network area	OSPF

10.4(1)	

34.1.2 area authentication

OSPF **area authentication** **no** OSPF

area area-id **authentication** [message-digest]

no area area-id **authentication**

area-id	OSPF IP
message-digest	MD5 message digest 5

RGOS OSPF OSPF message-digest MD5 message-digest OSPF **ip ospf authentication-key** **ip ospf message-digest-key** MD5

OSPF 0 MD5 backbone

```
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
# OSPF
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	OSPF
ip ospf message-digest-key	OSPF MD5
area virtual-link	

area stub	OSPF
area nssa	OSPF NSSA

-	-

-	-

-	-

34.1.5 area nssa

OSPF NSSA **area nssa** **no** NSSA NSSA

area area-id **nssa** [**no-redistribution**] [**default-information-originate** [**metric** value | **metric-type** <1-2>]] [**no-summary**]

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

area-id	NSSA
z **no-redistribution**	NSSA ABR NSSA
z **default-information-originate**	7 LSA NSSA NSSA ABR ASBR
z **metric** value	LSA metric 0-16777214
z **metric-type** <1-2>	LSA E-1 E-2
z **no-summary**	nssa (ABR) summary LSAs Type-3 LSA

NSSA

default-information-originate Type-7 LSA NSSA ABR ASBR ABR Type-7 LSA ASBR (ABR) Type-7 LSA

no-redistribution ASBR OSPF redistribute

NSSA NSSA

RFC1583 RFC1583
cost cost

ABR

advertise not-advertise
cost
OSPF

area range

172.16.16.0/20

```
Ruijie(config)#          router ospf       1
Ruijie(config-router)#          network    172.16.0.0 0.0.15.255          area   0
Ruijie(config-router)#          network    172.16.17.0 0.0.15.255         area   1
Ruijie(config-router)#          area   1   range 172.16.16.0 255.255          . 240.  0
```

discard-route	discard
summary-address	OSPF

-	-

34.1.7 area stub

OSPF **area stub**

no

area area-id **stub** [**no-summary**]

no area area-id **stub** [**no-summary**]

area-id	STUB
no-summary	ABR ABR

OSPF area stub ABR
(LSA) 1 1 LSA 2 2 LSA 3 3
LSA OSPF Ú ʁ

OSPF **area virtual-link** **no**

area area-id **virtual-link** router-id [**authentication** [**message-digest** | **null**]] [**dead-interval** seconds] [**hello-interval** seconds] [**retransmit-interval** seconds] [**transmit-delay** seconds] [[**authentication-key** key] | [**message-digest-key** key-id **md5** key]]

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

area-id	OSPF IP
z router-id	show ip ospf
z **dead-interval** seconds	1-65535
z **hello-interval** seconds	OSPF Hello 1-65535
z **retransmit-interval** seconds	OSPF LSA 1-65535
z **transmit-delay** seconds	OSPF LSA 1-65535 LSA LSA LSA OSPF

z **authentication-key** key

-	-

34.1.9 auto-cost

no

auto-cost [**reference-bandwidth** ref-bw]

no auto-cost [**reference-bandwidth**]

ref-bw	Mbps : 1-4294967

100Mbps

, ,

. ( )

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

ip ospf cost cost cost

10M

```
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	ospf

-	-

34.1.10 bfd all-interfaces (OSPF)

OSPF BFD OSPF **bfd all-interfaces** no

bfd all-interfaces

no bfd all-interfaces

-	-

OSPF Hello OSPF BFD FULL BFD BFD BFD OSPF

ip ospf bfd [**disable**] BFD **bfd all-interfaces**

router ospf process-id [**vrf** vrf-name]	OSPF OSPF
ip ospf bfd [**disable**]	OSPF BFD

-	-

34.1.11 clear ip ospf process

OSPF

clear ip ospf [process-id] **process**

process-id	OSPF OSPF OSPF

RFC2328

OSPF

OSPF 1

Ruijie# clear ip ospf 1 process

-	-

34.1.13 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-type** type] [**route-map** map-name]

OSPF **default-metric**

no

default-metric metric

no default-metric

metric	OSPF 1-16777214

20

default-metric **redistribute**

default-metric **default-information originate** OSPF

OSPF 50

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 192.168.12.0
Ruijie(config-router)# version 2
Ruijie(config-router)# exit
Ruijie(config)# router ospf
Ruijie(config-router)# network 172.16.10.0 0.0.0.255 area 0
Ruijie(config-router)# default-metric 50
Ruijie(config-router)# redistribute rip subnets
```

discard	no	discard

discard-route {**internal**|**external**}

no discard-route {**internal**|**external**}

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

110

110

110

110

OSPF

OSPF

OSPF 160

Ruijie(config)# router ospf 1

Ruijie(config-router)# distance ospf external 160

-	-

-	-

34.1.17 distribute-list in

LSA

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

access-list-number | name	acl
gateway prefix-list-name	gateway
prefix prefix-list-name	prefix-list
interface-type interface-number	LSA

LSA SPF

OSPF

ABR ASBR

```
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
```

distribute-list out	

-	-

34.1.18 distribute-list out

redistribute

distribute-list {[access-list-number | name] | **prefix** prefix-list-name}

bgp | connected | isis

z [area-tag] | **ospf** process-id

	-	-

[**LsdbApproachOverflow | LsdbOverflow | MaxAgeLsa | OriginateLsa**] | **retransmit** [**IfTxRetransmit | VirtIfTxRetransmit**] | **state-change** [**IfStateChange | NbrRestartHelperStatusChange | NbrStateChange | RestartStatusChange | VirtIfStateChange | VirtNbrRestartHelperStatusChange | VirtNbrStateChange**]]

error	error traps error traps **IfAuthFailure** **IfConfigError** **IfRxBadPacket** **VirtIfAuthFailure** **VirtIfConfigError** **VirtIfRxBadPacket**
lsa	lsa traps lsa traps **LsdbApproachOverflow** LSA **LsdbOverflow** LSA **MaxAgeLsa** LSA **OriginateLsa** LSA
retransmit	retransmit traps retransmit traps **IfTxRetransmit** **VirtIfTxRetransmit**
state-change	state-change traps state-change traps **IfStateChange** **NbrRestartHelperStatusChange** GR **NbrStateChange** **RestartStatusChange** GR Restarter **VirtIfStateChange** **VirtNbrRestartHelperStatusChange** GR **VirtNbrStateChange**

traps

snmp-server **snmp-server enable**

traps ospf enable traps ospf trap

MIB TRAP

OSPFv2 12252 78.36 593.9003 Tm[<4721>-6<35420412055F>]TJ/TT1 1

null ,

,

FastEthernet 0/0 OSPF MD5

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

area authentication	OSPF
ip ospf authentication-key	OSPF
ip ospf message-digest-key	OSPF MD5

-	-

34.1.22 ip ospf authentication-key

OSPF **ip ospf authentication-key**

no

ip ospf authentication-key key

no ip ospf authentication-key

Key	8

ip ospf authentication-key OSPF

OSPF

OSPF **area authentication**

, **ip ospf authentication**

,

FastEthernet 0/0 OSPF ospfauth

```
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
```


router ospf process-id [**vrf** vrf-name]	OSPF OSPF
bfd all-interfaces	OSPF BFD

-	-

34.1.24 ip ospf cost

OSPF OSPF **ip ospf cost**

no

ip ospf cost cost

no ip ospf cost

cost	OSPF

/Bandwidth 100Mbps

OSPF 100Mbps/Bandwidth Bandwidth

bandwidth

OSPF

„ 64K cost 1562

„ E1 cost 48

„ 10M cost 10

„ 100M cost 1

ip ospf cost OSPF

serial 1/0 OSPF 100

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

bandwidth	
show ip ospf	Ospf

-	-

34.1.25 ip ospf database-filter all out

LSA I

-	-

-	-

34.1.26 ip ospf dead-interval

OSPF **ip ospf dead-interval**

no

ip ospf dead-interval seconds

no ip ospf dead-interval

seconds

ip ospf hello-interval	OSPF Hello

-	-

34.1.27 ip ospf disable all

ospf

ip ospf disable all

no ip ospf disable all

-	-

network area

network ospf OSPF

OSPF

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

-	-

-	-

34.1.28 ip ospf hello-interval

OSPF Hello **pf hello-interval no**

ip ospf hello-interval seconds

no ip ospf hello-interval

seconds	OSPF 1-

10

PPP HDLC 10

10

X.25 30

hello hello

llo

serial 1/0 OSPF 15

```
Ruijie(config)#  interface serial 1/0
Ruijie(config-if)#  ip address 172.16.1  55.0
Ruijie(config-if)#  encapsulation ppp
Ruijie(config-if)#  ip ospf hello-interval
```

OSPF MD5 ip ospf message-digest-key
no OSPF MD5

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

no ip ospf message-digest-key

key	16
key-id	1 255

MD5

ip ospf message-digest-key OSPF
OSPF

OSPF **area authentication**
, **ip ospf authentication**
,
RGOS MD5
OSPF MD5

area authentication	OSPF
ip ospf authentication	

-	-

34.1.30 ip ospf mtu-ignore

mtu **no**

ip ospf mtu-ignore

no ip ospf mtu-ignore

-	-

mtu

-	-

34.1.31 ip ospf network

OSPF **ip ospf network** **no**

ip ospf network {broadcast non-broadcast
point-to-multipoint [non-broadcast] point-to-point}
no ip ospf network {broadcast non-broadcast
point-to-multipoint [non-broadcast] point-to-point}

broadcast	OSPF
non-broadcast	OSPF NBMA
point-to-multipoint [non-broadcast]	OSPF , non-broadcast
point-to-point	OSPF

PPP SLIP X.25
NBMA X.25

B7>6<4C0.0038 08 Tc (X.25)253.964 0 Td[<352534B036<268D1124197909B7>6<4C380EEA>652534B0>6<0 1 Tf

OSPF

,

X.25 OSPF

X.25 map Frame-relay map X.25

OSPF X.25

OSPF

”

”

X.25 IP

broadcast

1

```
Ruijie(config)#        interface Serial        1/0
Ruijie(config-if)#          ip address      172.16.24.4 255.255.255.0
Ruijie(config-if)#          encapsulation frame-relay
Ruijie(config-if)#          ip ospf network broadcast
```

2

```
Ruijie(config)#        interface Serial        1/0
Ruijie(config-if)#          ip address      172.16.24.4 255.255.255.0
Ruijie(config-if)#          encapsulation frame-relay
Ruijie(config-if)#         ip ospf network point-to-multipoint
```

3 DR/RDR

DR/BDR

```
Ruijie(config)#        interface Serial        1/0
Ruijie(config-if)#        ip address      172.16.24.4 255.255.255.0
Ruijie(config-if)#          encapsulation frame-relay
Ruijie(config-if)#          ip ospf network broadcast
Ruijie(config-if)#          ip ospf priority          0
```

dialer map ip	IP
frame-relay map	IP DLCI
neighbor OSPF	IP NBMA

X25 map

-	-

34.1.34 ip ospf transmit delay

OSPF LSU **ip ospf transmit delay**
no

ip ospf transmit delay seconds

no ip ospf transmit delay

seconds	OSPF LSU 1-65535

1

LSU LSAs Age
ip ospf transmit delay
LSU
area virtual-link transmit-delay
RGOS Age 3600 LSA
LSA

serial1/ 0 5
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip ospf transmit delay 10

area virtual-link	OSPF

-	-

34.1.35 log-adj-changes

no default

log-adj-changes [**detail**]

no log-adj-changes [**detail**]

detail	

detail Full Full

OSPF

DD

RGOS IP
IP
NBMA
Hello OSPF Hello Hello
OSPF 0 Hello
0 DR/BDR DR/BDR DR/BDR
Hello
, ,
, cost

OSPF IP 172.16.24.2
1 150

```
Ruijie(config)# router ospf 20
Ruijie(config-router)# network 172.16.24.0 0.0.0.255 area 0
Ruijie(config-router)# neighbor 172.16.24.2 priority 1
poll-interval 150
```

ip ospf priority	OSPF
ip ospf network	OSPF

-	-

34.1.38 network area

OSPF OSPF **network area**
no OSPF

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

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

ip-address	IP

wildcard	IP	0	1
area-id	OSPF	OSPF	OSPF

OSPF

no overflow database

<1-4294967294>	LSA
hard | **soft**	hard LSA Ū

external-LSA

external-LSA external-LSA

external-LSA max-dbsize

external-LSA external-LSA wait-time

external-LSA

	OSPF	
	max-dbsize	
a	1	Full
	2	
	3	AS-External-LSA

external lsa 10 overflow overflow

3

Ruijie# config terminal

Ruijie(config)# router ospf 10

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

-	-

-	-

34.1.41 overflow memory-lack

OSPF OVERFLOW no

overflow memory-lack

no overflow memory-lack

no	OSPF OVERFLOW

OSPF OVERFLOW

OSPF OVERFLOW

OSPF OVERFLOW

OSPF NULL

OVERFLOW

clear ip ospf process OSPF OSPF

OVERFLOW

no OSPF OVERFLOW

OSPF

1 OSPF OVERFLOW

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# no overflow memory-lack
```

clear ip ospf process	OSPF
show ip protocols ospf	OSPF

10.3(4b3)	

34.1.42 passive-interface

no

passive-interface [**default** | **type** number]

no passive-interface [**default** | **type** number]

isis [area-tag]	isis area-tag isis
ospf process-id	ospf process-id ospf 1-65535
rip	rip
static	
level-1 | **level-1-2** | **level-2**	IS-IS level level-2 IS-IS
match	OSPF OSPF
metric metric-value	OSPF external 2 LSA metric metric-value metric 0-16777214
metric-type {1|2}	E-1 E-2
route-map route-map-name	
subnets	
tag tag-value	OSPF tag 0-4294967295

OSPF
ISIS level-2

BGP metric 1 LSA metric 20 metric-type E-2
route-map

ASBR OSPF type-5 LSA OSPF
isis level level-2
level level
level 1, level 2 level-1-2
ospf match ospf
match match
no match
route-map route-map match

OSPF ISIS match level route-map

1 **ospf** 2 **isis** isis-001 OSPF

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# redistribute ospf 2 subnets
Ruijie(config-router)# redistribute ospf 2 match external 1 internal
Ruijie(config-router)# redistribute isis isis-001
Ruijie(config-router)# redistribute isis isis-001 level-1
```

2 Show run

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

summary-address	OSPF
default-metric	OSPF

-	-

34.1.44 router ospf

OSPF OSPF router ospf no OSPF

router ospf

router ospf process-id [**vrf** vrf-name]

no router ospf process-id

process-id	OSPF 1
vrf-name	VRF OSPF VRF

OSPF

RGOS10.1 OSPF OSPF

vrf vpn_1 OSPF 10

Ruijie(config)# router ospf 10 vrf vpn_1

show ip protocols	
show ip ospf	ospf

OSPF

NSSA **summary-address** NSSA ABR

4

LSA LSA

CPU LSA

1 RGOS 10.4 timers throttle spf
timers spf 5 10
2 RGOS 10.4 timers throttle spf timers spf
SPF **timers throttle spf** timers
throttle spf

spf-delay spf-holdtime OSPF
CPU

a	timers spf timers throttle spf

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

show ip ospf	ospf
timers throttle spf	SPF timers spf timers throttle spf timers spf

10.1	

34.1.49 timers throttle spf

OSPF SPF SPF
timers throttle spf no

timers throttle spf spf-delay spf-holdtime spf-max-waittime

no timers throttle spf

spf-delay	SPF 1-600000 OSPF SPF spf-delay
spf-holdtime	SPF 1-600000
spf-max-waittime	SPF 1-600000

spf-delay 1000
spf-holdtime 5000
spf-max-waittime 10000

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

a	1 spf-holdtime spf-delay spf-holdtime spf-delay 2 spf-max-waittime spf-holdtime spf-max-waittime spf-holdtime 3 timers throttle spf timers spf 4 timers spf timers throttle spf timers throttle spf

OSPF SPF 5
1000 90000 SPF
5ms 1s 3s 7s 15s 31s 63s 89s 179s 179+90 ……
Ruijie(config)# router ospf 20
Ruijie(config-router)# timers spf 5 1000 90000

show ip ospf	ospf
timers spf	SPF RGOS throttle spf 10.4 SPF timers timers spf

10.4(1)	

This router is an ASBR (injecting external routing information)
SPF schedule delay 5 secs, Hold time between two SPFs 10 secs
LsaGroupPacing: 240 secs
Number of incomming current DD exchange neighbors 0/5
Number of outgoing current DD exchange neighbors 0/5
Number of external LSA 4. Checksum 0x0278E0
Number of opaque AS LSA 0. Checksum 0x000000
Number of non-default external LSA 4
External LSA database is unlimited.
Number of LSA originated 6
Number of LSA received 2
Log Neighbor Adjency Changes : Enabled
Graceful-restart disabled
Graceful-restart helper support enabled
Number of areas attached to this router: 1
Area 0 (BACKBONE)
Number of interfaces in this area is 1(1)
Number of fully adjacent neighbors in this area is 1
Area has no authentication
SPF algorithm last executed 00:01:26.640 ago
SPF algorithm executed 4 times
Number of LSA 3. Checksum 0x0204bf
Area 1 (NSSA)
Number of interfaces in this area is 1(1)
Number of fully adjacent neighbors in this area is 0
Number of fully adjacent virtual neighbors through this area is 0
Area has no authentication
SPF algorithm last executed 02:09:23.040 ago
SPF algorithm executed 4 times
Number of LSA 6. Checksum 0x028638
NSSA Translator State iselected

OSPF BFD , ”BFD enabled”,

Ruijie# show ip ospf
Routing Process "ospf 1" with ID 1.1.1.1
Process uptime is 4 minutes
Process bound to VRF default
Conforms to RFC2328, and RFC1583Compatibility flag isenabled
Supports only single TOS(TOS0) routes
Supports opaque LSA

Supports Graceful Restart
This router is an ASBR (injecting external routing information)
SPF schedule delay 5 secs, Hold time between two SPFs 10 secs
LsaGroupPacing: 240 secs
Number of incomming current DD exchange neighbors 0/5
Number of outgoing current DD exchange neighbors 0/5
Number of external LSA 4. Checksum 0x0278E0
Number of opaque AS LSA 0. Checksum 0x000000
Number of non-default external LSA 4
External LSA database is unlimited.
Number of LSA originated 6
Number of LSA received 2
Log Neighbor Adjency Changes : Enabled
Graceful-restart disabled
Graceful-restart helper support enabled
Number of areas attached to this router: 1
BFD enabled
Area 0 (BACKBONE)
Number of interfaces in this area is 1(1)
Number of fully adjacent neighbors in this area is 1
Area has no authentication
SPF algorithm last executed 00:01:26.640 ago
SPF algorithm executed 4 times
Number of LSA 3. Checksum 0x0204bf
Area 1 (NSSA)
Number of interfaces in this area is 1(1)
Number of fully adjacent neighbors in this area is 0
Number of fully adjacent virtual neighbors through this area is 0
Area has no authentication
SPF algorithm last executed 02:09:23.040 ago
SPF algorithm executed 4 times
Number of LSA 6. Checksum 0x028638
NSSA Translator State iselected

Router ID	
Process uptime	OSPF router-id 0.0.0.0
Bound to VRF	OSPF VRF

Conforms to RFC2328	RFC2328
RFC1583Compatibility flag	RFC1583 RFC2328 ASBR
Support Tos	TOS0
Supports opaque LSA	opaque-LSA
Graceful-restart	RFC3623 Graceful Restart GR Restart
Graceful-restart helper	RFC3623 Graceful Restart GR Help
Router Type	OSPF normal ABR ASBR
SPF Delay	SPF
SPF-holdtime	SPF
LsaGroupPacing	LSA
Incomming current DD exchange neighbors	incomming exstart
Outgoing current DD exchange neighbors	outgoing exstart
Number of external LSA	LSA
External LSA Checksum Sum	LSA
Number of opaque LSA	opaque-LSA
Opaque LSA Checksum Sum	opaque-LSA
Number of non-default external LSA	external-LSA
External LSA database limit	external-LSA
Exit database overflow state interval	overflow
Database overflow state	OSPF overflow
Number of LSA originated	LSA
Number of LSA received	LSA
Log Neighbor Adjency Changes	

Number of interfaces in this area

ABR ASBR OSPF OSPF

show ip route OSPF OSPF

show ip ospf border-routers

Ruijie# show ip ospf border-routers

OSPF internal Routing Table

Codes: i - Intra-area route, I - Inter-area route

i1.1.1.1[2]via10.0.0.1,FastEthernet 0/1,ABR,ASBR,Area0.0.0.1

select

Codes	i I
I	
1.1.1.1	OSPF
[2]	cost
via 10.0.0.1	
FastEthernet 0/1	
ABR, ASBR	ABR ASBR ABR ASBR
Area 0.0.0.1	
select	ASBR select

-	-

-	-

34.2.3 show ip ospf database

OSPF **show ip ospf database**

LSAs

show ip ospf [process-id area-id] **database** [**adv-router** ip-address | {**asbr-summary** | **external** | **network** | **nssa-external | opaque-area | opaque-as | opaque-link | router** | **summary**} [link-state-id] [{**adv-router** ip-address | **self-originate**}] | **database-summary** | **max-age** | **self-originate**]

area-id	
adv-router	
link-state-id	OSPF
self-originate	
max-age	LSA
router	OSPF
network	OSPF
summary	OSPF
asbr-summary	ASBR
external	OSPF
nssa-external	OSPF
opaque-area	LSA
opaque-as	LSA
opaque-link	LSA
database-summary	OSPF LSA

OSPF

OSPF

1 **show ip ospf database**

Ruijie# show ip ospf database

OSPF Router with ID (1.1.1.1) (Process ID 1)

Router Link States (Area 0.0.0.0)

Link ID ADV Router Age Seq# CkSum Link count

1.1.1.1 1.1.1.1 2 0x80000011 0x6f39 2

3.3.3.3 3.3.3.3 120 0x80000002 0x26ac 1

Network Link States (Area 0.0.0.0)

Link ID ADV Router Age Seq# CkSum

192.88.88.27 1.1.1.1 120 0x80000001 0x5366

Summary Link States (Area 0.0.0.0)

Link ID ADV Router Age Seq# CkSum Route

10.0.0.0 1.1.1.1 2 0x80000003 0x350d 10.0.0.0/24

100.0.0.0 1.1.1.1 2 0x8000000c 0x1ecb 100.0.0.0/16

Router Link States (Area 0.0.0.1 [NSSA])

Link ID ADV Router Age Seq# CkSum Link count

1.1.1.1 1.1.1.1 2 0x80000001 0x91a2 1

Summary Link States (Area 0.0.0.1 [NSSA])

Link ID ADV Router Age Seq# CkSum Route

100.0.0.0 1.1.1.1 2 0x80000001 0x52a4 100.0.0.0/16

192.88.88.0 1.1.1.1 2 0x80000001 0xbb2d 192.88.88.0/24

000T-6(0ag0 1.1.1)2 1.1.1.1 (1.1.6(Route)]T1)-6(.1)-102xbb2d 1926088.033c92608E292608

ADV Router	

[redacted]

Network Mask	
TOS	TOS 0
Metric	

3 **show ip ospf database external**

Ruijie# show ip ospf database external

OSPF Router with ID (1.1.1.35) (Process ID 1)

AS External Link States

LS age: 752

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

LS Type: AS-external-|7A

Link State ID: 20.0.0.0 (External Network Number)

Advertising Router: 1.1.1.1

LS Seq Number: 8000000a

Checksum: 0x7627

Length: 36

Network Mask: /24

Metric Type: 2 (Larger than any link state path)

TOS: 0

Metric: 20

Forward Address: 0.0.0.0

External Route Tag: 0

show ip ospf database external

OSPF Router with ID	OSPF
Type-5 AS External Link States	
LS age	
Options	
LS Type	
Link State ID	
Advertising Router	
LS Seq Number	
Checksum	
Length	

TOS	TOS 0
Metric	
Forward Address	IP 0.0.0.0
External Route Tag	32 OSPF OSPF

4 **show ip ospf database networ**k

Ruijie# show ip ospf database network

OSPF Router with ID (1.1.1.1) (Process ID 1)

Network Link States (Area 0.0.0.0)

LS age: 572

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

LS Type: network-LSA

Link State ID: 192.88.88.27 (address of Designated Router)

Advertising Router: 1.1.1.1

LS Seq Number: 80000001

Checksum: 0x5366

Length: 32

Network Mask: /24

Attached Router: 1.1.1.1

Attached Router: 3.3.3.3

show ip ospf database network

OSPF Router with ID	OSPF
Network Link States	
LS age	
Options	
LS Type	
Link State ID	
Advertising Router	
LS Seq Number	
Checksum	
Length	

Network Mask	
Attached Router	

5 **show ip ospf database router**

Ruijie# show ip ospf database router

OSPF Router with ID (1.1.1.1) (Process ID 1)

Router Link States (Area 0.0.0.0)

LS age: 322

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

Flags: 0x3 : ABR ASBR

LS Type: router-LSA

Link State ID: 1.1.1.1

Advertising Router: 1.1.1.1

LS Seq Number: 80000012

Checksum: 0x6d3a

Length: 48

Number of Links: 2

Link connected to: Stub Network

(Link ID) Network/subnet number: 100.0.1.1

(Link Data) Network Mask: 255.255.255.255

Number of TOS metrics: 0

TOS 0 Metric: 0

show ip ospf database router

OSPF Router with ID	OSPF
Router Link States	
LS age	
Options	
Flag	router
LS Type	
Link State ID	
Advertising Router	
LS Seq Number	
Checksum	
Length	
Number of Links	

Link connected to

7 **show ip ospf database nssa-external**

Ruijie# show ip ospf database nssa-external

OSPF Router with ID (1.1.1.1) (Process ID 1)

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

LS age: 1

NSSA:Forward Address	IP 0.0.0.0
External Route Tag	32 OSPF OSPF

8 **show ip ospf database external**

Ruijie# show ip ospf database external

OSPF Router with ID (1.1.1.1) (Process ID 1)

AS External Link States

LS age: 1290

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

LS Type: AS-external-LSA

Link State ID: 20.0.0.0 (External Network Number)

Advertising Router: 1.1.1.1

LS Seq Number: 8000000a

Checksum: 0x7627

Length: 36

Network Mask: /24

Metric Type: 2 (Larger than any link state path)

TOS: 0

Metric: 20

Forward Address: 0.0.0.0

External Route Tag: 0

show ip ospf database external

OSPF Router with ID	OSPF
Type-7 AS External Link States	
LS age	
Options	
LS Type	
Link State ID	
Advertising Router	
LS Seq Number	
Checksum	

Length	
Network Mask	
Metric Type	
TOS	TOS 0
Metric	
Forward Address	IP 0.0.0.0
External Route Tag	32 OSPF OSPF

9 **show ip ospf database database-summary**

Ruijie# show ip ospf database database-summary

OSPF process 1:

Router Link States : 4

Network Link States : 2

Summary Link States : 4

ASBR-Summary Link States : 0

AS External Link States : 4

NSSA-external Link States: 2

show ip ospf database database-summary

OSPF Process	
Router Link	OSPF LSA
Network Link	OSPF LSA
Summary Link	OSPF LSA
ASBR-Summary Link	OSPFASBR LSA
AS External Link	OSPF LSA
NSSA-external Link	,OSPF NSSA LSA

-	-

-	-

34.2.4 show ip ospf interface

OSPF **show ip ospf interface**

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

interface-type	
z interface-number	

OSPF OSPF

show ip ospf interface FastEthernet 1/0

Ruijie# show ip ospf interface fa 1/0

FastEthernet 1/0 is up, line protocol is up

InternetAddress192.88.88.27/24,Ifindex4,Area0.0.0.0,MTU1500

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 Number is 70784

Hello received 1786 sent 1787, DD received 13 sent 8

LS-Req received 2 sent 2, LS-Upd received 29 sent 53

LS-Ack received 46 sent 23, Discarded 1

BFD :

Ruijie# show ip ospf interface fa 1/0

FastEthernet 1/0 is up, line protocol is up

InternetAddress192.88.88.27/24,Ifindex4,Area0.0.0.0,MTU1500

Matching network config: 192.88.88.0/24

Process ID 1, Router ID 1.1.1.1, Network Type BROADCAST, Cost: 1

Transmit Delay is 1 sec, State DR, Priority 1, BFD enabled

Designated Router (ID) 1.1.1.1, Interface Address 192.88.88.27

Backup Designated Router (ID) 3.3.3.3, Interface Address 192.88.88.72

Timer intervals configured,Hello 10,Dead 40,Wait 40,Retransmit 5

Hello due in 00:00:03

Neighbor Count is 1, Adjacent neighbor count is 1

Crypt Sequence Number is 70784

Hello received 1786 sent 1787, DD received 13 sent 8

LS-Req received 2 sent 2, LS-Upd received 29 sent 53

LS-Ack received 46 sent 23, Discarded 1

show ip ospf interface serial 1/0

FastEthernet 0/0 State	UP Down
Internet Address	IP
Area	OSPF
MTU	MTU
Matching network config	OSPF network area
Process ID	
Router ID	OSPF
Network Type	OSPF
Cost	OSPF
Transmit Delay is	OSPF
State	DR/BDR
Priority	

Designated Router(ID)

Neighbor count	
Adjacent neighbor count	Full
Crypt Sequence Number	md5
Hello received send	HELLO
DD received send	DD
LS-Req received send	LS
LS-Upd received send	LS
LS-Ack received send	LS
Discard	

BFD enabled

-	-

-	-

34.2.5 show ip ospf neighbor

OSPF **show ip ospf neighbor**

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

detail	
interface-type interface-number	
neighbor-id	

OSPF

show ip ospf neighbor

Ruijie# show ip ospf neighbor

OSPF process 1, 1 Neighbors, 1 is Full:

Neighbor ID Pri State BFD State Dead Time

Address Interface

3.3.3.3 1 Full/BDR Up 00:00:32

192.88.88.72 FastEthernet 1/0

Ruijie# show ip ospf neighbor detail

Neighbor 3.3.3.3, interface address 192.88.88.72

In the area 0.0.0.0 via interface FastEthernet 1/0

Neighbor priority is 1, State is Full, 11 state changes

DR is 192.88.88.27, BDR is 192.88.88.72

Options is 0x52 (*|O|-|EA|-|-|E|-)

Dead timer due in 00:00:32

Neighbor is up for 05:11:27

Database Summary List 0

Link State Request List 0

Link State Retransmission List 0

Crypt Sequence Number is 0

Thread Inactivity Timer on

Thread Database Description Retransmission off

Thread Link State Request Retransmission off

Thread Link State Update Retransmission off

Thread Poll Timer on

Graceful-restart helper disabled

BFD ” BFDsessionstateup”

Ruijie# show ip ospf neighbor

OSPF process 1, 1 Neighbors, 1 is Full:

Database Summary List 0

Link State Request List 0

Link State Retransmission List 0

Crypt Sequence Number is 0

Thread Inactivity Timer on

Thread Database Description Retransmission off

Thread Link State Request Retransmission off

Thread Link State Update Retransmission off

Thread Poll Timer on

Graceful-restart helper disabled

BFD session state up

Neighbor up time	
Database Summary List	DD
Link State Request List	LS
Link State Retransmission List	
Crypt Sequence Number	MD5
Thread Inactivity Timer	
Thread Database Description Retransmission	DD
Thread Link State Request Retransmission	LS
Thread Link State Update Retransmission	LS
Thread Poll Timer	Poll Timer
Graceful-restart helper	GR Helper

-	-

-	-

34.2.6 show ip ospf route

OSPF

show ip ospf [process-id] **route**[**count**]

process-id	OSPF OSPF
count	OSPF

OSPF count OSPF

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

show ip ospf route

codes	
100.0.0.0/24	
[1]	cost
via	

-	-

-	-

34.2.7 show ip ospf summary-address

OSPF **show ip ospf summary-address**

show ip ospf [process-id] **summary-address**

process-id	OSPF OSPF

NSSA ABR

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

Summary Address	
Summary Mask	
Advertise	
Status	
Aggregated subnets	

-	-

show ip ospf neighbor

show ip ospf virtual-links

Ruijie# show ip ospf virtual-links

Virtual Link VLINK0 to router 1.1.1.1 is up

Transit area 0.0.0.1 via interface FastEthernet 0/1

Local address 10.0.0.37/32

Remote address 10.0.0.27/32

Transmit Delay is 1 sec, State Point-To-Point,

Timer intervals configured,Hello 10,Dead 40,Wait 40,Retransmit 5

Hello due in 00:00:05

Adjacency state Full

Virtual Link VLINK0 to router	
Virtual Link state	.
Transit area	
via interface	
Local address	
Remote Address	
Transmit Delay	
State	
Time intervals configured	Hello Dead Wait Retransmit
Adjacency State	FULL

-	-

-	-

35 Ø Ð M ‘ a —

35.1 " - ‘ a —

35.1.1 distribute-list in

distribute-list in

no

distribute-list {[access-list-number | access-list-name] | **prefix** prefix-list-name [**gateway** prefix-list-name]} **in** [interface-type interface-number]

no distribute-list {[

```
Ruijie(config-router)#          distribute-list          10  in   fastethernet 0/0
Ruijie(config-router)#          no auto-summary
Ruijie(config-router)#           exit
Ruijie(config)#          access-list        10  permit    172.16.0.0 0.0.255.255
```

access-list	
prefix-list	

community-list-name	
community-list-number	
permit	
deny	
community-number	internet local-as no-advertis BGP peers no-export eers 1..255 32

BGP

```
Ruijie(config)#  ip community-list standard  test  deny 10
Ruijie(config)#  ip community-list standard  test2  permit inte
```

Q。

-	-

35.1.4 ip default-network

ip default-network no

ip default-network network

no ip default-network network

network	

0.0.0.0/0

default-network

“*” connected

1 192.168.100.0

```
Ruijie(config)#  ip route  192.168.100.0 255.255.255.0 serial 0/1
Ruijie(config)#  ip default-network  192.168.100.0
```

2 200.200.200.0 200.200.200.0

show ip route	IP

-	-

35.1.5 ip prefix-list

ip prefix-list **no**

ip prefix-list prefix-lis-name [**seq** seq-number] { **deny** | **permit** } ip-prefix [**ge** minimum-prefix-length][**le** maximum-prefix- length]

no ip prefix-list prefix-lis-name[**seq** seq-number] { **deny** | **permit**} ip-prefix [**ge** minimum-prefix- length][**le** maximum-prefix- length]

	prefix-lis-name	
		1 2147483647 ↵ Ś¯
	seq-number	

IP **Deny routes from Net-A**

Ruijie# configure terminal

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

-	-

-	-

35.1.7 ip prefix-list sequence-number

ip prefix-list description **no**

ip prefix-list sequence-number

-	-

Ruijie# configure terminal

Ruijie(config)# ip prefix-list sequence-number

-	-

ip route 0.0.0.0

0.0.0.0 Fastethernet 0/0

Fastethernet 0/0 ARP CPU

172.16.100.0/24

192.168.12.1 115

ip route 172.16.100.0 255.255.255.0 192.168.12.1 115

172.16.100.0/24

fastethernet 0/0

Ruijie(config)# ip route 172.16.100.0 255.255.255.0 fastethernet 0/0 192.168.12.1

show ip route	IP

-	-

ıting

RGOS IP no

ng

uting

1 T8 63.12 Tc961B4.006 Tc 2 Tr 10.02 0 0 10.02 439.33 Tm[<28

RGOS IP

RGOS IP

Ruijie(config)# no ip routing

-	-

-	-

35.1.10 ip static route-limit

ip static route-limit no

ip static route-limit number

no ip static route-limit

number	1-10000

1024

ip static route-limit

show

running-config

900

Ruijie(config)# ip static route-limit 900

Ruijie(config)# no ip static route-limit

-	-

match as-path	AS_PATH
match metric	
match origin	
set as-path prepend	AS_PATH
set comm-list delete	
set community	
set metric	

-	-

35.1.13 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]

interface-type	
interface-number	

match interface

OSPF

RIP RIP

OSPF

route maps

1 **match** 1 **set**

match **set**

OSPF RIP fastethernet 0/0 RIP

```
Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets route-map redrip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match interface fastethernet 0/0
```

match ip address	
match ip next-hop	
match ip route-source	
match metric	
match route-type	
match tag	
set metric	
set metric-type	
set tag	**2 f 142.32**

no match ip address {access-list-number [access-list-number... | access-list-name...] | access-list-name [access-list-number...| access-list-name] | **prefix-list** prefix-list-name [prefix-list-name...]}

access-list-number	1-99 1300-1999 100-199 2000-2699
access-list-name	
prefix-list prefix-list-name	

match ip address

OSPF

RIP RIP

OSPF IP

route maps

1 **match** 1 **set**

match **set**

OSPF RIP 10

RIP OSPF type-1 40

```
Ruijie(config)#          router ospf
Ruijie(config-router)#          redistribute rip subnets route-map          redrip
Ruijie(config-router)#          network     192.168.12.0 0.0.0.255          area 0
Ruijie(config-router)#          exit
Ruijie(config)#          access-list        10   permit     200.168.23.0 0.0.0.255
Ruijie(config)#          route-map     redrip     permit     10
Ruijie(config-route-map)#          match ip address         10
Ruijie(config-route-map)#          set metric        40
Ruijie(config-route-map)#          set metric-type type-1
```

access-list	

match interface

match ip next-hop

OSPF

OSPF

RIP RIP OSPF

IP

route maps

1 **match** 1 **set**

match

-	-

35.1.16 match ip route-source

IP

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...]}

```
Ruijie(config-router)# route-map redrip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# access-list 5 permit host 192.168.100.1
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match ip route-source 5
```

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

-	-

35.1.17 match length

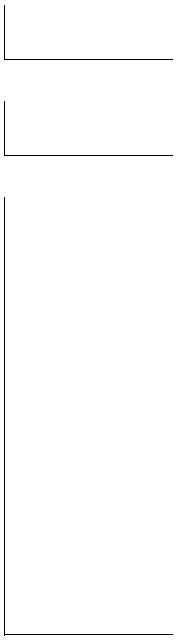
IP **match length**

no

match length min-length max-length

no match length min-length max-length

min-length	IP
max-length	IP


1

	-	-

35.1.18 match metric

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

```
Ruijie(config-route-map)#              exit
Ruijie(config)#          route-map     MAP20 20   permit
Ruijie(config-route-map)#              match origin incomplete
Ruijie(config-route-map)#              set community no-export
```

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

pe

-	-

35.1.20 match route-type

Ъ ц ц

OSPF

RIP RIP

OSPF IP

match tag tag […tag]

no match tag tag […tag]

tag	

set metric-type	
set tag	

RGIOS

OSPF

RIP RIP

OSPF IP

route maps

1 **match** 1 **set**

match **set**

„ sequence-number 10

„ sequence-number

„

OSPF RIP 4 RIP

OSPF type-1 40

40

```
Ruijie(config)#          router ospf
Ruijie(config-router)#   redistribute rip subnets route-map   redrip
Ruijie(config-router)#   network   192.168.12.0 0.0.0.255   area 0
Ruijie(config-router)#   exit
```

35.1.23 set aggregator as

match AS **set aggregator as** **no**

set aggregator as as-num ip_addr

no set aggregator as [as-num ip_addr]

as-number	AS

ip_addr

35.1.24 set as-path prepend

match AS_PATH **set as-path prepend** **no**

set as-path prepend as-number

no set as-path prepend [as-number]

as-number	AS_PATH AS

AS_PATH as-path 15 as

```
Ruijie(config)# route-map set-as-path
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set as-path prepend 100 101 102
```

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

35.1.25 set comm-list delete

match COMMUNITY_LIST community

set comm-list delete **no**

set comm-list community-list-number | community-list-name **delete**

no comm-list community-list-number | community-list-name **delete**

community-list-number	1-99 100-199
community-list-name	80

ip community-list	
match as-path	AS_PATH
match community	
match metric	
match origin	
set as-path prepend	AS_PATH
set comm-list delete	
set local-preference	

G \Á• €0 gð0 aY`ýÞîÂ 1Äp G L0 ` % Mîì WLG•6 ãA’5A<aÍÓ€ 2 û y4{

```
Ruijie(config)#          route-map     SET_COMMUNITY 10 permit
Ruijie(config-route-map)#          match as-path       1
Ruijie(config-route-map)#           set community       109:10
Ruijie(config-route-map)#           exit
Ruijie(config)#          route-map     SET_COMMUNITY 20 permit
Ruijie(config-route-map)#           match as-path       2
Ruijie(config-route-map)#          set community no-export
```

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

-	-

35.1.27 set dampening

match **set dampening**

no

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

no set dampening

half-life	1..45( ) 15
reuse	1..20000 750

35.1.28 set default interface

match

set default interface **no**

set default interface interface-type interface-number […interface-type interface-number]

no set default interface interface-type interface-number […interface-type interface-number]

interface-type	
interface-number	

set default interface

1

down set

set

serial 1/0 500

fastethernet 1/0

```
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip policy route-map smallpak
Ruijie(config-if)# exit
Ruijie(config)# route-map smallpak permit 10
Ruijie(config-route-map)# match length 0 500
Ruijie(config-route-map)# set default interface fastethernet 1/0
```


route-map	

match ip address

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

-	-

35.1.30 set ip default next-hop

match IP **set ip next-hop** **no**

set ip default next-hop ip-address [weight] […ip-address [weight]]

no set ip default next-hop ip-address [weight] […ip-address [weight]]

ip-address	IP
weight	

set WCMP WCMP weight WCMP

set ip default next-hop IP 32 ip address weight 4 nexthop

a	next-hop weight set WCMP WCMP weight nexthop weight 1

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

(nexthop)

1

set

1 1.1.1.1
6.6.6.6 2.2.2.2
7.7.7.7

```
Ruijie(config)# access-list 1 permit ip 1.1.1.1 0.0.0.0
Ruijie(config)# access-list 2 permit ip 2.2.2.2 0.0.0.0
Ruijie(config)# interface async 1
Ruijie(config-if)# ip policy route-map equal-access
Ruijie(config)# route-map equal-access permit 10
Ruijie(config- route-map)# match ip address 1
Ruijie(config-route-map)# set ip default next-hop 6.6.6.6
Ruijie(config)# route-map equal-access permit 20
Ruijie(config-route-map)# match ip address 2
Ruijie(config-route-map) #set ip default next-hop 7.7.7.7
Ruijie(config)# route-map equal-access permit 30
Ruijie(config- route-map)# set default interface null 0
```

route-map	
match ip address	
set default interface	

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

-

-	-

35.1.31 set ip dscp

match DSCP **set ip dscp**

no

set ip dscp dscp_value

no set ip dscp

dscp_value	IP IP DSCP

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

-	-

35.1.32 set vrf

match IP VRF

set vrf **no**

set vrf name

no set vrf name

name	VRF

match IP VRF

1 **set vrf** VRF set VRF
VRF
VRF set
„ **set vrf** VRF
% route-map VRF table vrf-name does not exist.
„ VRF route-map set vrf
% route-map set vrf vrf-name configuration removed from all route-maps.

a

2 **set vrf** **set ip nexthop** **set ip next-hop verify-availability** set vrf **set ip tos** **set ip precedence** **set ip dscp** **set vrf**

„ set ip nexthop set vrf
% route-map can not set vrf .
% Remove other set clauses to set vrf.
„ set vrf set ip nexthop
% route-map can not set next-hop.
% Remove set vrf clause before set ip next-hop.

serial 1/0 10.0.0.0/8
vrf_A 172.16.0.0/16
vrf_B

1 route-map ACL

```
Ruijie(config)# access-list 10 permit 10.0.0.0 0.255.255.255
Ruijie(config)# access-list 20 permit 172.16.0.0 0.0.255.255
```

2 route-map

```
Ruijie(config)# route-map PBR permit 10
Ruijie(config-route-map)# match ip address 10
Ruijie(config-route-map)# set vrf vrf_A
Ruijie(config)# route-map PBR permit 20
Ruijie(config-route-map)# match ip address 20
Ruijie(config-route-map)# set vrf vrf_B
```

3

```
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip policy route-map PBR
```


route-map	
match ip address	
match length	IP
ip vrf receive	vrf_name VRF

RGOS 10.4	RGOS 10.4

35.1.33 set ip next-hop

match IP **set ip next-hop**
no

set ip next-hop ip-address [weight] […ip-address [weight]]

no set ip next-hop ip-address [weight

1

set

serial 1/0 10.0.0.0/8
192.168.100.1 172.16.0.0/16
172.16.100.1

Ruijie(config)# interface serial 1/0

Ruijie(config-if)# ip policy route-map load-balance

load-ba6ria7 load-ba<1417e

load-ba6ria7 load-ba1(93)Tj /TT2 1 Tf 0 Tc 9.581 0 Td ( )Tj /TT4 1 Tf 001 Tc0.8 0 0 T55 T55.377 0 Td (lo

-	-

35.1.34 set ip next-hop verify-availability

IP

	route-map **match ip address**	

```
    precedence    4
Ruijie(config)#       access-list       1 permit      192.168.217.68 0.0.0.0
Ruijie(config)#       route-map     name
Ruijie(config-route-map)#           match ip address        1
Ruijie(config-route-map)#           set ip precedence         4
Ruijie(config)#       interface       FastEthernet      0/0
Ruijie(config-if)#          ip policy route-map           name
```

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 tos	IP tos

-	-

35.1.36 set ip tos

match IP TOS, **set ip tos**

no tos

set ip tos {<0-15> | max-reliability | max-throughput | min-delay | min-monetary-cost | normal }

no set ip tos {<0-15> | max-reliability | max-throughput | min-delay | min-monetary-cost | normal }

-	-

IP TOS IP

IP TOS

fastEthernet 0/0 192.168.217.68

tos 4

Ruijie(config)# access-list 1 permit 192.168.217.68 0.0.0.0

) g i f n o c (e i j i u R 4

35.1.37 set level

match **set level**

no

set level {**level 1**| **level 2** | **level 1-2** | **stub-area** | **backbone**}

no set level

-	-

OSPF RIP backbone

```
Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets route-map redrip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# set level backbone
```

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

-	-

35.1.38 set local-preference

match LOCAL_PREFERENCE **set local-preference** **no**

set local-preference number

no set local-preference

number	0-4294967295

-	-

35.1.39 set metric

match **set metric**

no

set metric [+ metric-value | **-** metric-value | metric-value]

no set metric

+	metric
-	metric
metric-value	

set metric ‘ + ’ ‘ - ’ metric

RIP metric 1-16

OSPF

RIP RIP

OSPF IP

route maps

1 **match** 1 **set**

match **set**

OSPF RIP

40

```
Ruijie(config)#          router ospf
Ruijie(config-router)# r          edistribute rip subnets route-map          redrip
Ruijie(config-router)#          network     192.168.12.0 0.0.0.255          area    0
Ruijie(config-router)#          exit
```

Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# set metric 40

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	

-	-

35.1.40 set metric-type

match **set metric-type**
no

set metric-type type

no set metric-type

OSPF type-2

OSPF

RIP RIP

route maps

1 **match** 1 **set**

match **set**

OSPF RIP type-1

```
Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets route-map redrip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# set metric-type type-1
```

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

-	-

35.1.41 set next-hop

match IP **set next-hop**

no

set next-hop ip-address

no set next-hop ip-address

ip-address	IP

OSPF

RIP RIP

OSPF IP

route maps

1 **match** 1 **set**

match **set**

192.168.1.2

```
Ruijie(config)#  route-map  redrip  permit  10
Ruijie(config-route-map)#  match ip address  1
Ruijie(config-route-map)#  set next-hop  192.168.1.2
```

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	

match **set origin**

no

set origin {**egp** | **igp** | **incomplete**}

no set origin

egp	EGP
igp	IGP
incomplete	

-	-

35.1.43 set originator-id

match **set originator-id**

no

set originator-id ip-addr

no originator-id [ip-addr]

ip-addr	

```
Ruijie(config)# route-map SET_ORIGIN 10 permit
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set originator-id 5.5.5.5
Ruijie(config-route-map)# exit
Ruijie(config)# route-map SET_ORIGIN 20 permit
Ruijie(config-route-map)# match as-path 2
Ruijie(config-route-map)# set originator-id 5.5.5.6
```

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

-	-

35.1.44 set tag

match **set tag** **no**

set tag tag

no set tag

tag	

OSPF RIP 100

```
Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets route-map redrip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# set tag 100
```

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

set metric-type	

-	-

35.1.45 set weight

match BGP **set weight**

no

set weight number

no set weight

number	0-65535

BGP

neighbor weight

32768

BGP

BGP in 1.1.1.1

100

```
Ruijie(config)# router bgp 1
Ruijie(config-router)# neighbor 1.1.1.1 route-map nei-rmap-in in
Ruijie(config-router)# exit
Ruijie(config)# route-map nei-rmap-in permit 10
Ruijie(config-route-map)# set weight 100
```

match as-path	AS_PATH

match community	
match metric	
match origin	
set community	COMMUNITY
set metric	
set metric-type	

-	-

35.2 ¡ µ - ‘ a —

35.2.1 show ip community-list

show ip community-list [community-list-number|community-list-name]

community-list-number	1-99 100-199
community-list-name	80

Ruijie# show ip community-list
Community-list standard local
permit local-AS
Community-list standard Red-Giant

-	-

35.2.3 show ip route

IP **show ip route**

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

vrf vrf_name	VRF
network	
mask	
count	
protocol	**connected**, **static** **bgp**, **isis**, **ospf**, **rip**
process-id	
weight	

1 **show ip rout**e

```
Ruijie#     show ip rout     e
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

O	C S R RIP B BGP O OSPF i IS-IS
E2	E1 OSPF E2 OSPF N1 OSPF NSSA 1 N2 OSPF NSSA 2 IA OSPF su IS-IS L1 IS-IS 1 L2 IS-IS 2 ia IS-IS
20.0.0.0/8	
[1/0]	
Via 20.0.0.1	IP
00:00:06	
VLAN 1	

2 **show ip route** network

Ruijie# show ip route 30.0.0.0

Routing entry for 30.0.0.0/8

IP

Routing Descriptor
Blocks

Match clauses:

ip address 2

Set clauses:

metric 10

route-map	
Permit	permit
sequence 10	
Match clauses	permit deny set
Set clauses	match

-	-

-	-

36 n j Ç Å % a —

36.1 " - ‘ a —

36.1.1 protected-ports route-deny

no

storm-control {**broadcast** | **multicast** | **unicast**} [{**level** percent | **pps** packets | rate-bps}]

no storm-control {**broadcast** | **multicast** | **unicast**} [{**level** percent | **pps** packets | rate-bps}]

broadcast	
multicast	
unicast	
percent	20 20%
packets	pps packets per second
Rate-bps	
64k-2M	64k
2-100M	1M
100M	8M

show storm-control

GigabitEthernet 1/1

4M

```
Ruijie#  configure terminal
Ruijie(config)#  interface GigabitEthernet  1/1
Ruijie(config-if)#  storm-control multicast  4096
Ruijie(config-if)#  end
```

show storm-control	

-

-	-

36.1.3 switchport protected

no

switchport protected

no switchport protected

-	-

3 **show interfaces**

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

show interfaces	

-

-	-

36.1.4 switchport port-security

no

switchport port-security [**violation** {**protect** | **restrict** | **shutdown**}]

no switchport port-security [**violation**]

port-security	

no

switchport port-security aging {**static** | **time time** }

no switchport port-security aging {**static** | **time** }

Static	
time time	0 1440 0

no switchport port-security aging time
no switchport port-security aging static

show port-security

```
Ruijie(config)#  interface gigabitethernet  1/1
Ruijie(config-if)#  switchport port-security aging time  8
Ruijie(config-if)#  switchport port-security aging  static
```

show port-security	

-	-

36.1.6 switchport port-security binding

-	-

36.1.7 switchport port-security binding interface

IP+ MAC IP

no

[**no**] **switchport port-security binding interface** interface-id mac-address **vlan** vlan_id ipv4-address

[**no**] **switchport port-security binding interface** interface-id ipv4-address | ipv6-address

interface-id	ID

4¥ n Ì$ n\ ð „Å æd” @H è5Ù ™$d

switchport port-security aging	
show port-security	

-	-

36.1.8 switchport port-security maximum

no

switchport port-security maximum value

[**no**] **switchport port-security maximum**

value	1-128

128

128

1 10 2

Ruijie(config)# inter g0/10

Ruijie(config-if)# switchport port-security maximum 2

switchport port-security	
switchport port-security binding	
Switchport port-security mac-address	
switchport port-security aging	

show port-security	

-	-

36.1.9 switchport port-security mac-address

no

[**no**] **switchport port-security mac-address** mac-address [vlan vlan-id]

mac-address	
vlan-id	MAC VID TRUNK vlan-id

1 TRUNK 10 00d0.f800.5555 VID=2

Ruijie(config)# inter g0/10

Ruijie(config-if)# switchport port-security mac-address 00d0.f800.5555 vlan 2

switchport port-security	
switchport port-security binding	
switchport port-security mac-address interface	
switchport port-security aging	

show port-security	

-	-

36.1.10 switchport port-security mac-address interface

no

[**no**] **switchport port-security interface** interface-id **mac-address** mac-address [vlan vlan-id]

interface-id	ID
mac-address	
vlan-id	MAC VID TRUNK vlan-id

1 TRUNK 10 00d0.f800.5555 VID=2

Ruijie(config)# switchport port-security interface g0/10 mac-address 00d0.f800.5555 vlan 2

switchport port-security	
switchport port-security binding	
Switchport port-security mac-address	

switchport port-security aging

show port-security	

-	-

36.1.11 switchport port-security sticky mac-address

Stickk MAC no

[**no**] **switchport port-security mac-address sticky** mac-address [vlan vlan-id]

Sticky MAC no Sticky MAC

[**no**] **switchport port-security mac-address sticky**

mac-address	
vlan-id	MAC VID TRUNK vlan-id

Sticky MAC

1 10 Sticky MAC

```
Ruijie(config)# inter g0/10
Ruijie(config-if)# switchport port-security
Ruijie(config-if)# switchport port-security sticky mac-address
Ruijie(config-if)# end
```

2 TRUNK 10 Sticky 00d0.f800.5555 VID=2

```
Ruijie(config)# inter g0/10
Ruijie(config-if)# no switchport port-security sticky mac-address
00d0.f800.5555 vlan 2
Ruijie(config-if)# end
```

switchport port-security	
switchport port-security binding	
Switchport port-security mac-address	
switchport port-security mac-address interface	
switchport port-security aging	
show port-security	

RGOS 10.4(3)	Sticky MAC 10.4(3)

36.2 ¡ µ - ‘ a —

36.2.1 show storm-control

show storm-control [interface-id]

interface-id	

Ruijie# show storm-control gigabitethernet 1/1

Interface Broadcast Control Multicast Control Unicast Control

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

Gi1/1 Disabled Disabled Disabled

storm-control	

-	-

36.2.2 show port-security

show port-security [**address**] [**interface** interface-id] [**all**]

address	
interface interface-id	
all	

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	

37 802.1X a —

-	-

37.1.2 dot1x auto-req packet-num

no

dot1x auto-req packet-num num

no dot1x auto-req packet-num

num	

num = 0;

show dot1x auto-req

802.1x

```
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	

-	-

37.1.3 dot1x auto-req req-interval

no

dot1x auto-req req-interval interval

no dot1x auto-req req-interval

interval	s

30

37.2.1 dot1x timeout quiet-period

no

dot1x timeout quiet-period seconds

no dot1x timeout quiet-period

seconds	

0 65535 fig)#d( )Tj4TT1 1 9.581725 0 Tno

show dot1x	802.1x

-	-

37.2.2 dot1x timeout re-authperiod

no

dot1x timeout re-authperiod seconds

no dot1x timeout re-authperiod

seconds	0 65535 s

3600

show dot1x 802.1x

1000s

```
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 2Request: 3 times
Filter Non-RG Supp: Disabled
Client Oline Probe: Disabled
Eapol Tag Enable: Disabled
Authorization Mode: Group Server

show dot1x	802.1x

-	-

37.2.3 dot1x timeout server-timeout

no

dot1x timeout server-timeout

```
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
```

3

show dot1x 802.1x

10s

```
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	802.1x

-	-

37.2.5 dot1x timeout tx-period

no

dot1x timeout tx-period seconds

no dot1x timeout tx-period

seconds	0 65535

3

show dot1x 802.1x

10s

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

show dot1x	802.1x

-	-

37.3 dot1x 7 a —

37.3.1 dot1x re-authentication

no

[**no**] **dot1x re-authentication**

-	-

show dot1x 802.1x

```
Ruijie#      configure terminal
Ruijie(config)#          dot1x re-authentication
Ruijie(config)#          end
Ruijie#      show dot1x
802.1X Status:     Enabled
Authentication Mode: EAP-MD5
Authed User Number:  0
Re-authen Enabled:   Enabled
Re-authen Period:    1000 sec
Quiet Timer Period:  1000 sec
```

Tx Timer Period: 10 sec
Supplicant Timeout: 10 sec
Server Timeout: 10 sec
Re-authen Max: 3 times
Maximum Request: 3 times
Filter Non-RG Supp: Disabled
Client Oline Probe: Disabled
Eapol Tag Enable: Disabled
Authorization Mode: Group Server

show dot1x	802.1x

-	-

37.3.2 dot1x reauth-max

no

dot1x reauth-max count

no dot1x reauth-max

count	

3

show dot1x

802.1x

Ruijie# configure terminal
Ruijie(config)# dot1x reauth-max 5

```
Ruijie(config)#          end
Ruijie#      show dot1x
802.1X Status:     Enabled
Authentication Mode: EAP-MD5
Authed User Number:  0
Re-authen Enabled:   Enabled
Re-authen Period:    1000 sec
Quiet Timer Period:  1000 sec
Tx Timer Period:    10 sec
Supplicant Timeout:  10 sec
Server Timeout:     10 sec
Re-authen Max:      5 times
Maximum Request:    3 times
Filter Non-RG Supp:  Disabled
Client Oline Probe:  Disabled
Eapol Tag Enable:    Disabled
Authorization Mode:  Group Server
```


interval	hello
alive	
interval	

Hello 20
250

show dot1x 802.1x

hello 30 , 120

```
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	

-	-

37.4.2 dot1x client-probe enable

[**no**] **dot1x client-probe enable**

-	-

```
Ruijie#      configure termina      l
Ruijie(config)#          dot1x client-probe enable
Ruijie(config)#          end
Ruijie#      show dot1x
802.1X Status:     Enabled
```

37.5.1 dot1x authentication

AAA AAA

no

dot1x authentication {**default** | list-name}

no dot1x authentication {**default** | list-name}

default	
list-name	

AAA AAA

AAA dot1x

group radius

```
Ruijie#      configure terminal
Ruijie(config)#          aaa new-model
Ruijie(config)#          aaa authentication dot1x default group radius
Ruijie(config)#          interface fastEthernet          0/1
Ruijie(config-if)#           dot1x authentication default
Ruijie(config-if)#           end
```

aaa new-model	AAA
aaa authentication dot1x	

-	-

37.5.2 dot1x auth-address-table

num	VLAN , 1-3

3

show dot1x

VLAN

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

show dot1x	802.1x

10.3(5)	

37.5.4 dot1x auth-fail vlan

802.1x vlan

dot1x auth-fail vlan vid

no dot1x auth-fail vlan

vid	vlan vid

vlan

show dot1x interface

802.1x vlan

```
Ruijie# configure terminal
Ruijie(config)# interface fa 0/1
Ruijie(config-if)# dot1x auth-fail vlan 2
Ruijie(config-if)# end
Ruijie#write
```

show dot1x interface	802.1x

10.3(5)	

37.5.5 dot1x auth-mode

802.1x

dot1x auth-mode {**eap-md5** | **chap** | **pap**}

no dot1x auth-mode

eap-md5	802.1x	EAP-MD5
chap	802.1x	CHAP
pap	802.1x	PAP

EAP-MD5

show dot1x 802.1x

802.1x

```
Ruijie#      configure terminal
Ruijie(config)#          dot1x auth-mode chap
Ruijie(config)#          end
Ruijie#
```

show dot1x	802.1x

-	-

37.5.6 dot1x default

802.1x

dot1x default

-	-

show dot1x 802.1x

802.1x

```
Ruijie#      configure terminal
Ruijie(config)#          dot1x default
Ruijie(config)#          end
Ruijie#      end
```

show dot1x	802.1x

-	-

37.5.7 dot1x eapol-tag

EAPOL TAG

dot1x eapol-tag

no dot1x eapol-tag

-	-

show dot1x 802.1x

802.1X tag

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

show dot1x	802.1x

-	-

37.5.8 dot1x mac-auth-bypass

MAC

802.1x

1-65535

show run 802.1x

802.1x MAC

```
Ruijie#      configure terminal
Ruijie(config)#          interface fa          0/1
Ruijie(config-if)#              dot1x mac-auth-bypass timeout-activity 3600
Ruijie(config-if)#              end
Ruijie#write
```

show dot1x port-control interface	802.1x

10.3(5)	

37.5.10 dot1x mac-auth-bypass violation

802.1x MAC

dot1x mac-auth-bypass violation

no dot1x mac-auth-bypass violation

show run 802.1x

802.1x MAC

```
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	802.1x

10.3(5)	

DOT1X DOT1X
DOT1X
no

dot1x max-req count

no dot1x max-req

count	

3

show dot1x 802.1x

802.1x 7

```
Ruijie#      configure terminal
Ruijie(config)#          dot1x max-req      7
Ruijie(config)#          end
Ruijie#
```

show dot1x	802.1x

-	-

37.5.12 dot1x private-supplicant-only

no

dot1x private-supplicant-only

no dot1x private-supplicant-only

-	-

show dot1x private-supplicant-only 802.1x

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

show dot1x private-supplicant-only	

-		-

37.5.13 dot1x port-control auto

no

dot1x port-control auto

no dot1x port-control

-		-

802.1x

show dot1x 802.1x

802.1x

```
Ruijie#  configure terminal
Ruijie(config)#  interface g  0/1
Ruijie(config-if)#  dot1x port-control auto
Ruijie(config-if)#  end
Ruijie#
```

802.1x MAC

و و

{ | {

Ruijie(config-if)# end

Ruijie#

show dot1x port-control	802.1x
Show running-config	

-	-

37.5.15 dot1x stationarity enable

802.1x

802.1X

dot1x stationarity enable

no dot1x stationarity enable

-	-

802.1x

Ruijie# configure terminal

Ruijie(config)# dot1x stationarity enable

Ruijie(config)# end

Ruijie#

-	-

-	-

37.5.16 dot1x redirect url

802.1x
URL URL http://
http://ruijie.net/web http:// https://
url url no
url

dot1x redirect url [url-string]

[**no**] **dot1x redirect url**

url-string	URL

1 ruijie.net/web
Ruijie(config)# dot1x redirect url http://ruijie.net/web

dot1x redirect for special tcp-destination port	ip ip web
dot1x redirect time-out	
dot1x redirect num for special source-ip	
show dot1x	dot1x

-	-

37.5.17 dot1x redirect for special tcp-destination port

ip ip web 80 8080
16 TCP

-	-

37.5.18 dot1x redirect time-out

( ), 3 1-10 no

dot1x redirect time-out port time-out-interval

no dot1x redirect time-out port

time-out-interval	

3

1 5

Ruijie(config)# dot1x redirect time-out 5

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

-	-

37.5.19 dot1x redirect num for special source-ip

1 1-10 no

dot1x redirect num for special source-ip num

no dot1x redirect num for special source-ip

num	

1

1 3

Ruijie(config)# dot1x redirect num for special source-ip 3

dot1x redirect url	
dot1x redirect for special tcp-destination port	ip ip web
dot1x redirect time-out	
show dot1x	dot1x

-	-

37.6 dot1x ¡ µ a —

37.6.1 show dot1x

802.1x

show dot1x

802.1X

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

-	-

37.6.2 show dot1x auth-address-table

802.1X

show dot1x auth-address-table[T d

dot1x auth-mode	802.1x
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	

-	-

37.6.3 show dot1x auto-req

802.1x

show dot1x auto-req

-	-

Ruijie# show dot1x auto-req
Auto-Req: Disabled
User-Detect : Enabled
Packet-Num : 0
Req-Interval: 30 Seconds

dot1x auth-mode	802.1x
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	

-	-

-

37.6.4 show dot1x private-supplicant-only

show dot1x private-supplicant-only

Ruijie# show dot1x private-supplicant-only
private-supplicant-only:: disabled
Ruijie#

-	-

Ruijie# show dot1x max-req
max-req: 2 times
Ruijie#

dot1x auth-mode	802.1x

37.6.6 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

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

dot1x timeout tx-period	

-	-

37.6.7 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	802.1x
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	

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	

-	-

37.6.9 show dot1x reauth-max

show dot1x reauth-max

-	-

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

Ruijie#

dot1x auth-mode	802.1x
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	

-	-

37.6.10 show dot1x summary

802.1X

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	802.1x
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	

-	-

37.6.11 show dot1x user id

802.1X

show dot1x user id <id>

id	show summary id

Ruijie# show dot1x user id 1
User name: caikov
id: 1
Type: static
Mac address is 0013.2049.8272
Vlan id is 217
Access from port Gi0/13
User ip address is 192.168.217.64
Max user number on this port is 6000
COS on this port is 5
Up-bandwidth is 1024 kbps
Down-bandwidth is 1024 kbps
Authorization vlan is dep7
Authorization seesion time is 1000000 seconds
Authorization ip address is 192.168.217.64
Start accounting
Permit proxy user
Permit dial user
IP privilige is 2

dot1x auth-mode	802.1x
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	

-	-

37.6.12 show dot1x timeout

802.1X

show dot1x timeout quiet-period

show dot1x timeout re-authperiod

show dot1x timeout server-timeout

show dot1x timeout supp-timeout

show dot1x timeout tx-period

-	-

```
quiet-period: 60 sec
Ruijie#
```

-	-

Ruijie# configure terminal
Ruijie(config)# dot1x redirect

Ruijie# configure terminal
Ruijie(config)# http redirect 172.16.0.1
Ruijie(config)# end

show http redirect	HTTP
http redirect homepage	

10.2(5)	

37.7.3 http redirect direct-site

no

http redirect direct-site ip-address [ip-mask] [**arp**]

no http redirect direct-site ip-address [ip-mask] [**arp**]

ip-address	IP
ip-mask	IP
arp	ARP CHECK ARP **arp**

802.1x

50

IP 172.16.0.1

Ruijie# configure terminal

Ruijie(config)# http redirect direct-site 172.16.0.1

show http redirect	HTTP

10.2(5)	

37.7.4 http redirect homepage

no

http redirect homepage url-string

no http redirect homepage

url-string	url-string “http://” “https://” 255

www.su-download.net/

Ruijie# configure terminal

Ruijie(config)# http redirect homepage www.su-download.net/

show http redirect	HTTP

10.2(5)	

37.7.5 http redirect port

HTTP **http redirect port** **no**

http redirect port port-num

no http redirect port port-num

-	-

80 HTTP

HTTP

HTTP

80 HTTP

PC HTTP

10 80

PC 8080 HTTP

```
Ruijie# configure terminal
Ruijie(config)# http redirect port 8080
```


10.2(5)	

37.7.6 http redirect session-limit

HTTP

HTTP **no** HTTP

3

http redirect session-limit session-num [**port** port-session-num]

no http redirect session-limit

session-num	HTTP 1-255
port-session-num	HTTP 1-300

HTTP 255

HTTP 300

HTTP TCP

HTTP

HTTP HTTP

HTTP 1

HTTP 4

Ruijie# configure terminal

Ruijie(config)# http redirect session-limit 4

show http redirect	HTTP

10.2(5)	

37.7.7 http redirect timeout

no

3

http redirect timeout seconds

no http redirect timeout

seconds	1-10

3

38 AAA a —

38.1 - ‘ a —

38.1.1 aaa authentication dot1x

AAA 802.1X **aaa authentication dot1x** 802.1Xno 6[illegible]8/T

aaa authentication dot1x {d

no aaa authentication dot1

/TT0 1]TJ/C2_0 1 Tf0 Tc

default

method	

local [illegible]

aaa new-model	AAA
dot1x authentication	802.1X
username	

[redacted]

-

38.1.2 aaa authentication enable

AAA Enable **aaa authentication enable** Enable no

aaa authentication enable default method1 [method2...]

no aaa authentication enable default

default

AAA Enable RADIUS

RADIUS

Ruijie(config)# aaaauthenticationenabledefaultgroupradiuslocal

AAA AAA Login
aaa authentication login Login

Login Login

list-1 AAA Login
RADIUS RADIUS

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

aaa new-model	AAA
username	
login authentication	Login

-	-

38.1.4 aaa authentication ppp

AAA PPP **aaa authentication ppp** PPP
no

aaa authentication ppp {**default** | list-name} method1 [method2...]

no aaa authentication ppp {**default** | list-name}

default	PPP
list-name	PPP
method	“ local none group ” 4

local

	RADIUS
group	TACACS+

Login

Login

Login Login

list-1 AAA Login

VTY 0 - 4

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

aaa new-model	AAA
username	
login authentication	Login

-	-

38.2 Ñ ã - ‘ a —

38.2.1 aaa authorization commands

NAS CLI AAA

aaa authorization commands no AAA

aaa authorization commands level {**default** | list-name} method1 [method2...]

no aaa authorization commands level {**default** | list-name}

level	0~15
default	
list-name	
method	“ none group ” 4
none	
group	TACACS+

AAA

RGOS Ό

AAA

aaa authorization config-commands no AAA

aaa authorization config-commands

no aaa authorization config-commands

-	-

no

Ruijie(config)# aaa authorization config-commands

aaa new-model	AAA
aaa authorization commands	AAA

-	-

38.2.3 aaa authorization console

AAA **aaa authorization console** no AAA

aaa authorization console

no aaa authorization console

-	-

RGOS

Ruijie(config)# aaa authorization console

aaa new-model	AAA
aaa authorization commands	AAA
authorization commands	

-	-

38.2.4 aaa authorization exec

AAA NAS CLI Exec

aaa authorization exec no AAA Exec

aaa authorization exec {**default** | list-name} method1 [method2...]

no aaa authorization exec {**default** | list-name}

default	Exec
list-name	Exec
method	“ local none group ” 4

local	
none	
group	RADIUS TACACS+

AAA Exec

RGOS NAS CLI CLI 0~15
Login Exec Exec
CLI
Exec Exec

RADIUS Exec
Ruijie(config)# aaa authorization exec default group radius

default	Network
method	“ none group ” 4
none	
group	RADIUS TACACS+

AAA Network

RGOS PPP SLIP

RADIUS TACACS+

RADIUS

Ruijie(config)# aaa authorization network default group radius

aaa new-model	AAA
aaa accounting	AAA
aaa authentication	AAA
username	

-	-

38.2.6 authorization commands

authorization

Exec **authorization exec**
no Exec

authorization exec {**default** | list-name}

no authorization exec

default	Exec
list-name	Exec

AAA Exec

Exec
Exec
Exec Exec

exec-1 Exec RADIUS
none VTY 0 – 4

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

aaa new-model	AAA
aaa authorization commands	AAA Exec

-	-

38.3 š Ë - ‘ a —

38.3.1 aaa accounting commands

-	-

38.3.2 aaa accounting exec

NAS **aaa accounting exec** no Exec

aaa accounting exec {**default** | list-name} **start-stop** method1 [method2...]

no aaa accounting exec {**default** | list-name}

default	Exec
list-name	Exec
method	“ **none** **group** ” 4
none	
group	RADIUS TACACS+

RGOS Exec

none Exec

NAS CLI Start

aaa new-model	AAA
aaa authentication	AAA
accounting commands	Exec

-	-

38.3.3 aaa accounting network

aaa accounting network no

aaa accounting network {**default** | list-name} **start-stop** method1 [method2...]

no aaa accounting network {**default** | list-name}

default	Network
list-name	
start-stop	
method	4
none	
group	RADIUS TACACS+

RGOS **start-stop**

RADIUS

Ruijie(config)# aaa accounting network default start-stop group radius

aaa new-model	AAA
aaa authorization network	AAA
aaa authentication	AAA
username	

-	-

38.3.4 aaa accounting update

aaa accounting update

no

aaa accounting update

no aaa accounting update

-	-

AAA AAA

Ruijie(config)# aaa new-model
Ruijie(config)#

aaa new-model	AAA
aaa accounting network	

-	-

38.3.5 aaa accounting update periodic

aaa accounting update periodic

-	-

38.3.6 accounting commands

accounting commands

no

accounting commands level {**default** | list-name}

no accounting commands level

level	0~15
default	
list-name	

cmd 15 TACACS+ none VTY 0 – 4

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

aaa new-model	AAA
aaa accounting commands	AAA

-	-

38.3.7 accounting exec

Exec **accounting exec**
no Exec

accounting exec {**default** | list-name}

no accounting exec

default	Exec
list-name	Exec

Exec
Exec
Exec Exec

exec-1 Exec RADIUS
none VTY 0 – 4

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

aaa new-model	AAA
aaa accounting commands	AAA Exec

-	-

38.4 n 7 ` AAA û ` - ‘ a —

38.4.1 aaa domain

no

aaa domain {**default** | domain-name}

no aaa domain {**default** | domain-name}

default	
domain-name	

AAA default

domain-name

32

Ruijie(config)# aaa domain ruijie.com

Ruijie(config-aaa-domain)#

aaa new-model	AAA
aaa domain enable	AAA
show aaa domain	

38.4.2 aaa domain enable

AAA

AAA no

aaa domain enable

no aaa domain enable

ruijie.com 20

```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)# access-limit 20
```

Network

Network

Ruijie(config)# aaa domain

aaa new-model	AAA
aaa domain enable	AAA
show aaa domain	

-	-

38.4.6 authorization network

Network no

authorization network {**default** | list-name}

no authorization network

default	
list-name	

default

Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)# authorization network default

aaa new-model	AAA
aaa domain enable	AAA
show aaa domain	

-	-

38.4.7 state

no

state {**block** | **active**}

no state

block	
active	

Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)# state block

aaa new-model	AAA
aaa domain enable	AAA
show aaa domain	

-	-

38.4.8 show aaa domain

show aaa domain [**default** | domain-name]

default	
domain-name	

domain.com

38.4.9 username-format

NAS no

username-format {**without-domain** | **with-domain**}

no username-format

aaa group server {**radius** | **tacacs+**} name

no aaa group server {**radius** | **tacacs+**} name

name	“ radius ” “ tacacs+ ” RADIUS TACACS+

AAA

vrf_name	vrf

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

aaa group server	aaa
show aaa group	aaa

-	-

38.5.4 show aaa group

AAA

show aaa group

-	-

Login

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

Show running-config	
Show aaa lockout	login

-	-

38.6.2 aaa local authentication lockout-time

login

aaa local authentication lockout-time lockout-time

lockout-time	1~2147483647

15

login

Ruijie# configure terminal
Ruijie(config)# a aa local authentication lockout-time 5

Show running-config	
Show aaa lockout	login

-	-

38.6.3 aaa new-model

RGOS AAA **aaa new-model** AAA **no** AAA

aaa new-model

no aaa new-model

-	-

AAA

AAA AAA **aaa new-model** AAA AAA AAA AAA

AAA

Ruijie(config)# aaa new-model

aaa authentication	
aaa authorization	
aaa accounting	

-	-

38.6.4 clear aaa local user lockout

clear aaa local user lockout {**all** | **user-name** <word>}

<word>	ID

Ruijie# clear aaa local user lockout all

EXEC

-	-

-	-

38.6.6 show aaa method-list

AAA

show aaa method-list

-	-

AAA

AAA

```
Ruijie#      show aaa method-list
Authentication method-list
aaa authentication login default group radius
aaa authentication ppp default group radius
aaa authentication dot1x default group radius
```

aaa authentication dot1x san-f local group angel group rain none

aaa authentication enable default group radius

Accounting method-list

aaa accounting network default start-stop group radius

Authorization method-list

aaa authorizating network default group radius

aaa authentication	
aaa authorization	
aaa accounting	

-	-

38.6.7 show aaa user lockout

show aaa user lockout {**all** | **user-name** <word>}

<word>	ID

Ruijie# show aaa user lockout all

show running-config	

show aaa lockout	login

-	-

39 SSH a —

39.1 SSH " - ‘ a —

39.1.1 crypto key generate

crypto key generate {**rsa | dsa**}

rsa	RSA
dsa	DSA

SSH Server

SSH Server SSH
enable service ssh-server SSH Server SSH 1 RSA SSH 2 RSA DSA RSA SSH1 SSH2 DSA SSH2

a	**no crypto key generate** **crypto key zeroize**

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

show ip ssh	SSH Server
crypto key zeroize {**rsa	dsa**}	DSA RSA SSH Server

RGOS10.1

retry times	

3 **no ip ssh authentication-retries**

SSH Server SSH Server

show ip ssh 3

SSH

SSH VTY SSH

Ruijie# show ssh

-	-

RGOS10.1

-	-

40 CPU ł a —

40.1 " - ‘ a —

40.1.1 cpu-protect type packet-type pps pps_value

CPU

cpu-protect type { **arp** | **bpdu** | **dhcp** | **ipv6mc** | **igmp** | **rip** | **ospf** | **vrrp** | **pim** | **ttl1** | **unknown-ipmc** | **dvmrp** | …} **pps** pps_value

pps_value	

CPU 1000

CPU BPDU

Ruijie(config)# cpu-pr type bpdu pps 100

Set packet type bpdu pps 100 .

cpu-protect type packet-type pri pri_num	CPU

3 ‘Hʀ Λ Ş ƀ ! ś Ş #

CPU

cpu-protect type { **arp** | **bpdu** | **dhcp** | **ipv6mc** | **igmp** | **rip** | **ospf** | **vrrp** | **pim** | **ttl1** | **unknown-ipmc** | **dvmrp** | …} **pri** pri_num

pri_num	ID 0 7

0

BPDU 7

Ruijie(config)# cpu-protect type bpdu pri 7

Set packet type bpdu pri 7.

cpu-protect type packet-type pps pps_value	

-	-

40.2 ¡ µ - ‘ a —

40.2.1 show cpu-protect mboard

CPU

show cpu-protect mboard

CPU

slot_num	1-16

41 DoS ｜ a —

41.1 " - ‘ a —

41.1.1 ip deny invalid-l4port

no

ip deny invalid-l4port

no ip deny invalid-l4port

no ip deny invalid-tcp

-	-

TCP

1 TCP

Ruijie(config)# ip deny invalid-tcp

2 TCP

Ruijie(config)# no ip deny invalid-tcp

show ip deny invalid-tcp	TCP

-	-

41.1.3 ip deny land

Land **no** Land

ip deny land

no ip deny land

Land

1 Land

Ruijie(config)# ip deny land

2 Land

Ruijie(config)# no ip deny land

show ip deny land	Land

-

-	-

41.2.2 show ip deny invalid-tcp

TCP

show ip deny invalid-tcp

-	-

Ruijie# show ip deny invalid-tcp
DoS Protection Mode State
---------- -----
protect against invalid tcp attack On

(**no**) **ip deny invalid-tcp**	TCP

-	-

41.2.3 show ip deny land

Land

show ip deny land

-	-

Ruijie# show ip deny land
DoS Protection Mode State
------------------------------ -----
protect against land attack On

(**no**) **ip deny land**	Land

-	-

42 DAI a —

42.1 s ä ‘ ž G VLAN DAI q 3 ¿ _ Ÿ a —

42.1.1 ip arp inspection vlan

vlan-id VLAN DAI no vlan-id VLAN DAI vlan-id VLAN DAI

ip arp inspection vlan vlan-id

no ip arp inspection vlan [vlan-id]

vlan-id	vlan

VLAN DAI

DAI

VLAN 1 ARP

Ruijie(config)# ip arp inspection

Ruijie(config)# ip arp inspection vlan 1

show ip arp inspection vlan	VLAN DAI

42.2 • j Ç ¾ î ¶ ð " a —

42.2.1 ip arp inspection trust

ip arp inspection trust no

ip arp inspection trust

no ip arp inspection trust

-	-

ARP DAI
ARP

NFPP( ) NFPP
DAI **show ip arp inspection interface**

gigabitEthernet 0/19

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

	$ È ñ 0A Xÿ– ö !sC–næXAÈ â

VLAN DAI ARP
ARP DHCP Snooping .
DHCP Snooping DHCP
Snooping

43 ½ ‘ arp Z , a —

43.1 ½ ‘ar p Z , " a —

43.1.1 anti-arp-spoofing ip

arp no

anti-arp-spoofing ip ip-address

no anti-arp-spoofing ip ip-address

Ip-address	IP

show anti-arp-spoofing

Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# anti-arp-spoofing ip 192.168.1.1

show anti-arp-spoofing	arp

44 IP Source Guard a —

44.1 IP Source Guard æ e a —

44.1.1 ip source binding

IP **no**

[**no**] **ip source binding** mac-address **vlan** vlan-id ip-address **interface** interface-id

mac-address	MAC
vlan-id	vlan id
ip-address	IP
interface-id	

IP Source Guard DHCP

1

```
Ruijie#  configure terminal
Ruijie(config)#  ip source binding  0000.0000.0001  vlan  1  1.1.1.1
interface FastEthernet  0/1
Ruijie(config)#  end
Ruijie#  show ip source binding
MacAddress  IpAddress Lease(sec)  Type  VLAN Interface
------------- --------- ----------  ----  ---- ------------
0000.0000.0001 1.1.1.1  infinite  static  1 FastEthernet 0/1
Total number of bindings: 1
```


show ip source binding	IP

-	-

44.2 IP Source Guard Ç f ´ a —

44.2.1 ip verify source

IP Source Guard **no**

-	-

44.3.2 show ip verify source

IP Source Guard

show ip verify source [**interface** interface-id]

interface-id	

interface IP Source Guard

"IP source guard is not configured on the interface FastEthernet 0/10"

IP Source Guard (**mode**)

- **inactive-no-snooping-vlan** DHCP Snooping
- **inactive-trust-port** DHCP Snooping
- **active** DHCP Snooping

```
Ruijie #       show ip verify source
Interface Filter-type Filter-mode Ip-address Mac-address   VLAN
--------- ----------- ----------- ---------- -------------- ----
FastEthernet 0/3   ip       active     3.3.3.3                1
FastEthernet 0/3   ip       active     deny-all
FastEthernet 0/4   ip+mac   active     4.4.4.4   0000.0000.0001  1
FastEthernet 0/4   ip+mac   active     deny-all
```

ip verify source	IP Source Guard

-	-

45 NFPP a —

45.1 " $ + q 3 m « Ö Û Ú - ‘ a —

45.1.1 cpu-protect sub-interface {manage|protocol|route} pps

cpu-protect sub-interface {manage **|**protocol **|**route **} pps** pps_vaule

cpu-protect sub-interface {manage|protocol|route} **percent** percent_vaule

percent_vaule	1 100

(Manage) 30
(Route) 25
(Protocol) 45

Ruijie(config)# cpu-protect sub-interface manage percent 60

cpu-protect sub-interface { manage | protocol | route } **pps**	

-	-

45.3 ARP ¦ ^ | " - ‘ a —

45.3.1 arp-guard attack-threshold

arp-guard attack-threshold {**per-src-ip** | **per-src-mac** | } pps

per-src-ip	IP
per-src-mac	MAC
per-port	

pps	[1,9999]

IP MAC 8
200

NFPP

Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard attack-threshold per-src-ip 2
Ruijie(config-nfpp)# arp-guard attack-threshold per-src-mac 3
Ruijie(config-nfpp)# arp-guard attack-threshold per-port 50

nfpp arp-guard policy	
show nfpp arp-guard summary	
show nfpp arp-guard hosts	
clear nfpp arp-guard hosts	

-	-

45.3.2 arp-guard enable

ARP

arp-guard enable

-	-

ARP

NFPP

Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard enable

nffp arp-guard enable	ARP
show nfpp arp-guard summary	

-	-

45.3.3 arp-guard isolate-period

arp-guard isolate-period {seconds | **permanent**}

seconds	0 [30, 86400]
permanent	

0

NFPP

Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard isolate-period 180

nfpp arp-guard isolate-period	
show nfpp arp-guard summary	

-	-

45.3.4 arp-guard monitor-period

arp-guard monitor-period seconds

seconds	[180, 86400]

600

NFPP

” 0

0

”

Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard monitor-period 180

show nfpp arp-guard summary	
show nfpp arp-guard hosts	
clear nfpp arp-guard hosts	

-	-

45.3.5 arp-guard monitored-host-limit

arp-guard monitored-host-limit number

number	1 4294967295

1000

NFPP

1000

1000 “ %ERROR The value that you configured is smaller than current monitored hosts 1000 please clear a part of monitored hosts. ”

“ % NFPP_ARP_GUARD-4-SESSION_LIMIT: Attempt to exceed limit of 1000 monitored hosts. ”

Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard monitored-host-limit 200

show nfpp arp-guard summary	

-	-

45.3.6 arp-guard rate-limit

arp-guard rate-limit {per-src-ip | per-src-mac | per-port} pps

per-src-ip	IP
per-src-mac	MAC
per-port	
pps	[1,9999]

IP MAC 4
100

NFPP

Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard rate-limit per-src-ip 2
Ruijie(config-nfpp)# arp-guard rate-limit per-src-mac 3
Ruijie(config-nfpp)# arp-guard rate-limit per-port 50

nfpp arp-guard policy	
show nfpp arp-guard summary	

NFPP

10 15 ARP MAC IP
MAC IP IP

Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard scan-threshold 20

nfpp arp-guard scan-threshold	
show nfpp arp-guard summary	
show nfpp arp-guard scan	ARP
clear nfpp arp-guard scan	ARP

-	-

45.3.8 clear nfpp arp-guard hosts

clear nfpp arp-guard hosts [**vlan** vid] [**interface** interface-id] [ip-address | mac-address]

vid	
interface-id	
ip-address	IP
mac-address	MAC

seconds	0 [30, 86400] 0
permanent	

permanen-sT6rc-in/C2_0 1 Tf0 Tc 15.461790115 Td[<3501542615F21A303FE4812464CTT0 1 Tf( )Ti01 Tc84
permashowrp-guT6ard-suT6mmary/C2_0 1 Tf0 Tc 15.466.95803 952 Td[<197901DB9699F542e1F5105B

```
Ruijie(config)#          interface      G 0/1
Ruijie(config-if)#           nfpp   arp-guard policy          per-src-ip      2 10
Ruijie(config-if)#           nfpp   arp-guard policy per-src-mac              3 10
Ruijie(config-if)#           nfpp   arp-guard policy per-port             50 100
```

arp-guard attack-threshold	
arp-guard rate-limit	
show nfpp arp-guard summary	
show nfpp arp-guard hosts	
clear nfpp arp-guard hosts	

10.4	

45.3.13 nfpp arp-guard scan-threshold

nfpp arp-guard scan-threshold pkt-cnt

pkt-cnt	[1,9999]

ARP ARP

Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp arp-guard scan-threshold 20

arp-guard scan-threshold	
show nfpp arp-guard summary	
show nfpp arp-guard scan	ARP
clear nfpp arp-guard scan	ARP

10.4

45.4 DHCP ¦ ^ | " - ‘ a —

45.4.1 dhcp-guard attack-threshold

dhcp-guard attack-threshold { **per-src-mac** | **per-port**} pps

per-src-mac	MAC
per-port	
pps	[1,9999]

MAC 10 300

NFPP

Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard attack-threshold per-src-mac 15
Ruijie(config-nfpp)# dhcp-guard attack-threshold per-port 200

nfpp dhcp-guard policy	
show nfpp dhcp-guard summary	
show nfpp dhcp-guard hosts	
clear nfpp dhcp-guard hosts	

-	-

45.4.2 dhcp-guard enable

DHCP

dhcp-guard enable

-	-

DHCP config)#13542>TT5 DHCP9.62.0203 Tnfpp13542>TT4 1 Tf 119.62.- 14 Tr01C4Ruijie(config-nfpp)#13542>T

NFPP

-	-

45.4.3 dhcp-guard isolate-period

dhcp-guard isolate-period {seconds | **permanent**}

seconds	0 [30, 86400] 0
permanent	

0

8"¯Á•´ã NFPP

= Ŗ

NFPP

1000

1000 “ %ERROR The value that you configured is smaller than current monitored hosts 1000 please clear a part of monitored hosts. ”

“ % NFPP_DHCP_GUARD-4-SESSION_LIMIT: Attempt to exceed limit of 1000 monitored hosts. ”

Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard monitored-host-limit 200

show nfpp dhcp-guard summary	

-	-

45.4.6 dhcp-guard rate-limit

dhcp-guard rate-limit { **per-src-mac** | **per-port**} pps

per-src-mac	MAC
per-port	
pps	[1,9999]

MAC 5 150

NFPP

Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard rate-limit per-src-mac 8
Ruijie(config-nfpp)# dhcp-guard rate-limit per-port 100

nfpp dhcp-guard policy	
show nfpp dhcp-guard summary	

-	-

show nfpp dhcp-guard hosts	

-	-

45.4.8 nfpp dhcp-guard enable

DHCP

nfpp dhcp-guard enable

-	-

DHCP

DHCP DHCP

```
Ruijie(config)#          interface G0/1
Ruijie(config-if)#           nfpp    dhcp-guard enable
```

dhcp-guard enable	DHCP
show nfpp dhcp-guard summary	

10.4	

45.4.9 nfpp dhcp-guard isolate-period

nfpp dhcp-guard isolate-period {seconds | **permanent**}

seconds	0 [30, 86400] 0
permanent	

Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp dhcp-guard isolate-period 180

dhcp-guard isolate-period	
show nfpp dhcp-guard summary	

10.4	

45.4.10 nfpp dhcp-guard policy

nfpp dhcp-guard policy { **per-src-mac** | **per-port**} rate-limit-pps attack-threshold-pps

Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp dhcp-guard policy per-src-mac 3 10
Ruijie(config-if)# nfpp dhcp-guard policy per-port 50 100

dhcp-guard attack-threshold	
dhcp-guard rate-limit	
show nfpp dhcp-guard summary	
show nfpp dhcp-guard hosts	
clear nfpp dhcp-guard hosts	

10.4	

45.5 ICMP ¦ ^ l " - ‘ a —

45.5.1 icmp-guard attack-threshold

icmp-guard attack-threshold { **per-src-ip** | **per-port**} pps

NFPP

nffp icmp-guard enable	ICMP
show nfpp icmp-guard summary	

-	-

45.5.3 icmp-guard isolate-period

icmp-guard isolate-period {seconds | **permanent**}

seconds	0 [30, 86400] 0
permanent	

0

NFPP

Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard isolate-period 180

nfpp icmp-guard isolate-period	
show nfpp icmp-guard summary	

-	-

45.5.4 icmp-guard monitor-period

icmp-guard monitor-period seconds

seconds	[180, 86400]

600

NFPP

” 0

0

”

Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard monitor-period 180

show nfpp icmp-guard summary	
show nfpp icmp-guard hosts	
clear nfpp icmp-guard hosts	

-	-

45.5.5 icmp-guard monitored-host-limit

icmp-guard monitored-host-limit number

number	1 4294967295

1000

NFPP

pps	[1,9999]

IP 900 1000

NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard rate-limit per-src-ip 500
Ruijie(config-nfpp)# icmp-guard rate-limit per-port 800
```

nfpp icmp-guard policy	
show nfpp icmp-guard summary	

-	-

45.5.7 icmp-guard trusted-host

icmp-guard trusted-host ip mask

no icmp-guard trusted-host {**all |** ip mask}

ip	IP
mask	IP
all	no

CPU ICMP CPU

500

Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guardtrusted-host 1.1.1.0255.255.255.0

show nfpp icmp-guard trusted-host

nfpp icmp-guard policy	
show nfpp icmp-guard hosts	

-	-

45.5.9 nfpp icmp-guard enable

ICMP

nfpp icmp-guard enable

-	-

ICMP

ICMP ICMP

```
Ruijie(config)#          interface G0/1
Ruijie(config-if)#           nfpp    icmp-guard enable
```

icmp-guard enable	ICMP
show nfpp icmp-guard summary	

10.4	

45.5.10 nfpp icmp-guard isolate-period

nfpp icmp-guard isolate-period {seconds | **permanent**}

Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp icmp-guard policy per-src-ip 5 10
Ruijie(config-if)# nfpp icmp-guard policy per-port 100 200

icmp-guard attack-threshold	
icmp-guard rate-limit	
show nfpp icmp-guard summary	
show nfpp icmp-guard hosts	
clear nfpp icmp-guard hosts	

10.4	

45.6 IP ½ A M " - ‘ a —

IP

„ ip-guard attack-threshold
„ ip-guard enable
„ ip-guard isolate-period
„ ip-guard monitor-period
„ ip-guard monitored-host-limit
„ ip-guard rate-limitt
„ ip-guard scan-threshold
„ ip-guard trusted-host
„ clear nfpp ip-guard hosts
„ nfpp ip-guard enable
„ nfpp ip-guard isolate-period
„ nfpp ip-guard policy

„ nfpp ip-guard scan-threshold

a	IP IP IP IP IP IP IP CPP CPU Protect Policy IP IP

45.6.1 ip-guard attack-threshold

ip-guard attack-threshold {**per-src-ip** | **per-port**} pps

per-src-ip	IP
per-port	
pps	[1,9999]

IP 20 200

NFPP

Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard attack-threshold per-src-ip 2
Ruijie(config-nfpp)# ip-guard attack-threshold per-port 50

45.6.2 ip-guard enable

IP

ip-guard enable

-	-

IP

NFPP

Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard enable

nffp ip-guard enable	IP
show nfpp ip-guard summary	

10.4	

45.6.3 ip-guard isolate-period

ip-guard isolate-period {seconds | **permanent**}

seconds	0 [30, 86400]
permanent	

0

NFPP

[redacted]

[redacted]

Ruijie(config)# nfpp

Ruijie(config-nfpp)# ip-guard isolate-period 180

nfpp ip-guard isolate-period	
show nfpp ip-guard summary	

Ruijie(config-nfpp)# ip-guard monitor-period 180

show nfpp ip-guard summary	
show nfpp ip-guard hosts	
clear nfpp ip-guard hosts	

10.4	

45.6.5 ip-guard monitored-host-limit

ip-guard monitored-host-limit number

number	1 4294967295

1000

NFPP

1000

show nfpp ip-guard summary	

10.4	

45.6.6 ip-guard rate-limit

ip-guard rate-limit {per-src-ip | per-port} pps

per-src-ip	IP
per-port	
pps	[1,9999]

IP 20 100

NFPP

Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard rate-limit per-src-ip 2
Ruijie(config-nfpp)# ip-guard rate-limit per-port 50

nfpp ip-guard policy	
show nfpp ip-guard summary	

10.4	

45.6.7 ip-guard scan-threshold

NFPP

CPU IP CPU

500

1.1.1.0/24

Ruijie(config)# nfpp

Ruijie(config-nfpp)#ip-guard trusted-host 1.1.1.0 255.255.255.0

show nfpp ip-guard trusted-hosts	

10.4	

45.6.9 clear nfpp ip-guard hosts

clear nfpp ip-guard hosts [**vlan** vid] [**interface** interface-id] [ip-address]

vid	
interface-id	
ip-address	IP

VLAN 1 g 0/1

Ruijie# clear nfpp ip-guard hosts vlan 1 interface g0/1

ip-guard attack-threshold	
nfpp ip-guard policy	
show nfpp ip-guard hosts	

10.4	

45.6.10 nfpp ip-guard enable

IP

nfpp ip-guard enable

-	-

IP

IP

Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp ip-guard enable

ip-guard enable	IP
show nfpp ip-guard summary	

10.4	

45.6.11 nfpp ip-guard isolate-period

nfpp ip-guard isolate-period {seconds | **permanent**}

seconds	0 [30, 86400] 0
permanent	

per-port	
rate-limit-pps	1 9999
attack-threshold-pps	1 9999

Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp ip-guard policy per-src-ip 2 10
Ruijie(config-if)# nfpp ip-guard policy per-port 50 100

ip-guard attack-threshold	
ip-guard rate-limit	
show nfpp ip-guard summary	
show nfpp ip-guard hosts	
clear nfpp ip-guard hosts	

10.4	

45.6.13 nfpp ip-guard scan-threshold

nfpp ip-guard scan-threshold pkt-cnt

pkt-cnt	[1,9999]

IP ARP

Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp ip-guard scan-threshold 20

ip-guard scan-threshold	
show nfpp ip-guard summary	

10.4	

45.7 ND ¦ ^ | " - ‘ a —

45.7.1 nd-guard attack-threshold

nd-guard attack-threshold per-port {**ns-na** | **rs** | **ra-redirect**} pps

ns-na	
rs	
ra-redirect	
pps	[1,9999]

0 Ä

Ruijie(config)# nfpp
Ruijie(config-nfpp)# nd-guard attack-threshold per-port ns-na 20
Ruijie(config-nfpp)# nd-guard attack-threshold per-port rs 10
Ruijie(config-nfpp)# nd-guard attack-threshold per-port ra-redir
ect 10

nfpp nd-guard policy	
show nfpp nd-guard summary	

10.4	

45.7.2 nd-guard enable

ND

nd-guard enable

-	-

ND

NFPP

Ruijie(config)# nfpp
Ruijie(config-nfpp)# nd-guard enable

nffp nd-guard enable	ND
show nfpp nd-guard summary	

10.4	

45.7.3 nd-guard rate-limit

nd-guard rate-limit per-port {**ns-na** | **rs** | **ra-redirect**} pps

ns-na	
rs	
ra-redirect	
pps	[1,9999]

/ 15

15 / 15

NFPP

```
Ruijie(config)#          nfpp
Ruijie(config-nfpp)#     nd-guard rate-limit     per-port     ns-na 10
Ruijie(config-nfpp)#     nd-guard rate-limit     per-port     rs 5
Ruijie(config-nfpp)#     nd-guard rate-limit     per-port     ra-redirect     5
```

nfpp nd-guard policy	
show nfpp nd-guard summary	

10.4	

45.7.4 nfpp nd-guard enable

ND

nfpp nd-guard enable

-	-

ND

ND

Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp nd-guard enable

nd-guard enable	ND
show nfpp nd-guard summary	

10.4	

45.7.5 nfpp nd-guard policy

nfpp nd-guard policy per-port {**ns-na** | **rs** | **ra-redirect**} rate-limit-pps attack-threshold-pps

ns-na	
rs	
ra-redirect	

rate-limit-pps	1 9999
attack-threshold-pps	1 9999

ND snooping

ND snooping ND snooping
ND guard 800
900
ND guard ND snooping
ND snooping

```
Ruijie(config)#          interface       G 0/1
Ruijie(config-if)#       nfpp    nd-guard policy         per-port        ns-na 50 100
Ruijie(config-if)#       nfpp    nd-guard policy per-port                rs    10 20
Ruijie(config-if)#       nfpp    nd-guard policy per-port                ra-redirect     1020
```

nd-guard attack-threshold	
nd-guard rate-limit	
show nfpp nd-guard summary	

10.4	

45.8 NFPP " - ‘ a —

45.8.1 clear nfpp log

NFPP

clear nfpp log

-	-

Ruijie# clear nfpp log

32 log-buffer entries were cleared.

show nfpp log	NFPP

10.4	

45.8.2 log-buffer entries

NFPP

log-buffer entries number

number	[0,1024]

256

NFPP

NFPP 50

```
Ruijie(config)#  nfpp
Ruijie(config-nfpp)#  log-buffer entries  50
```

log-buffer logs number_of_message **interval** length_in_seconds	NFPP
show nfpp log	NFPP

10.4	

45.8.3 log-buffer logs

NFPP

log-buffer logs number_of_message **interval** length_in_seconds

number_of_message	0-1024 0
length_in_seconds	0-86400 1 0 number_of_message length_in_seconds 0 number_of_message /length_in_second

number_of_message 1 length_in_seconds 30

NFPP

```
Ruijie(config)#  nfpp
Ruijie(config-nfpp)#  log-buffer logs  2 interval  12
```

log-buffer entries number	NFPP
show nfpp log summary	NFPP

10.4	

45.8.4 logging

NFPP VLAN

logging vlan vlan-range

logging interface interface-id

show nfpp log summary	NFPP

10.4	

45.8.5 show nfpp log

NFPP

show nfpp log summary

NFPP

show nfpp log buffer [**statistics**]

statistics	NFPP

”-”

%NFPP_ARP_GUARD-4-DOS_DETECTED: Host<IP=N/A,MAC=0000.0000.0004,port=Gi4/1,VLAN=1> was detected.(2009-07-01 13:00:00)

NFPP

```
Ruijie#  show nfpp log summary
Total log buffer size : 10
Syslog rate : 1 entry per 2 seconds
Logging:
  VLAN  1-3, 5
  interface Gi 0/1
  interface Gi 0/2
```

NFPP

```
Ruijie#    show nfpp log buffer statistics
There are 6 logs in buffer.
```

NFPP

```
Ruijie#    show nfpp log buffer
Protocol VLAN  Interface IP address MAC address    Reason
 Timestamp
------- ---- --------  --------- -----------    ------
 ---------
ARP    1    Gi0/1    1.1.1.1    -         DoS
2009-05-30 16:23:10
ARP    1    Gi0/1    1.1.1.1    -         ISOLATED
2009-05-30 16:23:10
ARP    1    Gi0/1    1.1.1.2    -         DoS
2009-05-30 16:23:15
ARP    1    Gi0/1    1.1.1.2    -         ISOLATE_FAILED
2009-05-30 16:23:15
ARP    1    Gi0/1    -      0000.0000.0001 SCAN
2009-05-30 16:30:10
ARP    -    Gi0/2    -      -          PORT_ATTACKED
2009-05-30 16:30:10
```

Protocol

- ARP ARP
- IP IP
- ICMP ICMP
- DHCP DHCP
- NS-NA ND
- RS ND
- RA-REDIRECT ND

Reason 5

- DoS
- ISOLATED
- ISOLATE_FAILED
- SCAN
- PORT_ATTACKED

2 “ remain-time(seconds) ”

Ruijie# show nfpp arp-guard hosts

If column 1 shows '*', it means "hardware do not isolate user" .

Ruijie# show nfpp arp-guard scan statistics
ARP scan table has 4 record(s).

“ ARP 4 ”

Ruijie# show nfpp arp-guard scan
VLAN interface IP address MAC address timestamp
---- -------- ---------- ----------- ----------
1 Gi0/1 N/A 0000.0000.0001 2008-01-23 16:23:10
2 Gi0/2 1.1.1.1 0000.0000.0002 2008-01-23 16:24:10
3 Gi0/3 N/A 0000.0000.0003 2008-01-23 16:25:10
4 Gi0/4 N/A 0000.0000.0004 2008-01-23 16:26:10
Total 4 record(s)

“ timestamp ” ARP “ 2008-01-23 16:23:10 ”
2008 1 23 16 23 10 ARP

Ruijie# show nfpp arp-guard scan vlan 1 interface G 0/1 0000.0000.0001
VLAN interface IP address MAC address timestamp
---- -------- ---------- ----------- ----------
1 Gi0/1 N/A 0000.0000.0001 2008-01-23 16:23:10
Total 1 record(s)

arp-guard scan-threshold	
nfpp arp-guard scan-threshold	
clear nfpp arp-guard scan	ARP

-	-

45.9.3 show nfpp arp-guard summary

show nfpp arp-guard summary

arp-guard rate-limit	
arp-guard scan-threshold	
nfpp arp-guard enable	ARP
nfpp arp-guard isolate-period	
nfpp arp-guard policy	
nfpp arp-guard scan-threshold	

-	-

45.10

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

100 20 120

120 100 20

“ remain-time(seconds) ”

Ruijie# **show nfpp dhcp-guard hosts**

If column 1 shows '*', it means "hardware failed to isolate host".

VLAN	interface	MAC address	remain-time(seconds)
1	gi0/2	0000.0000.0001	10
*2	gi0/1	0000.0000.0002	20

Total 2 host(s)

clear nfpp dhcp-guard hosts	

10.4	

45.10.2 show nfpp dhcp-guard summary

show nfpp dhcp-guard summary

-	-

Ruijie# show nfpp dhcp-guard summary

Format of column Rate-limit and Attack-threshold is per-src-ip /per-src-mac/per-port.

Interface	Status	Isolate-period	Rate-limit	Attack-threshold
Global	Enable	300	-/5/150	-/10/300
Gi 0/1	Enable	180	-/6/-	-/8/-
Gi 0/2	Disable	200	-/5/30	-/10/50

show nfpp icmp-guard hosts [**statistics** | [[**vlan** vid] [**interface** interface-id] [ip-address]]]

statistics	
vid	
interface-id	
ip-address	IP

Ruijie#**show nfpp icmp-guard hosts statistics**

success fail total

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

100 20 120

“ 120 100 20 ”

Ruijie# **show nfpp icmp-guard hosts**

If column 1 shows '*', it means "hardware failed to isolate host".

VLAN interface IP address remain-time(s)

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

1 Gi0/1 1.1.1.1 110

2 Gi0/2 1.1.2.1 61

Total 2 host(s)

clear nfpp icmp-guard hosts	

10.4	

icmp-guard rate-limit	
nfpp icmp-guard enable	ICMP
nfpp icmp-guard isolate-period	
nfpp icmp-guard policy	

10.4	

45.11.3 show nfpp icmp-guard trusted-host

show nfpp icmp-guard trusted-host

-	-

Ruijie# show nfpp icmp-guard trusted-host
IP address mask
--------- ------
1.1.1.0 255.255.255.0
1.1.2.0 255.255.255.0
Total 2 record(s)

icmp-guard trusted-host	

10.4	

45.12 IP ½ A M ¡ µ - ‘ a —

- **„ show nfpp ip-guard hosts**
- **„ show nfpp ip-guard summary**
- **„ show nfpp ip-guard trusted-host**

45.12.1 show nfpp ip-guard hosts

show nfpp ip-guard hosts [**statistics** | [[**vlan**

----	--------	----------	--------	----------
1	Gi0/1	1.1.1.1	ATTACK	110

1 Interface Global

2 Status

3 Rate-limit IP / MAC /
Attack-threshold " - "

ip-guard attack-threshold	
ip-guard enable	IP
ip-guard isolate-period	
ip-guard monitor-period	
ip-guard monitored-host-limit	
ip-guard rate-limit	
nfpp ip-guard enable	IP
nfpp ip-guard isolate-period	
nfpp ip-guard policy	

10.4	

45.12.3 C25.605 -0.006 Td Tm[0A51>64B8095A09C6]2 TjET6dTow ( )]TJCTc 0 trust

```
Ruijie#      show nfpp ip-guard trusted-host
IP address    mask
---------     ------
1.1.1.0      255.255.255.0
1.1.2.0      255.255.255.0
Total    2 record(s)
```

ip-guard trusted-host	

10.4	

cos cos	cos (0-7)
cos inner cos	tag cos
icmp-type	ICMP 0-255
icmp-code	ICMP 0-255
icmp-message	ICMP
operator port[port]	Operator lt- eq- gt- neq- range- port
src-mac-addr	
dst-mac-addr	
VID vid	vlan id
VID inner vid	tag vid
ethernet-type	0x
match-all tcpf	tcp flag
text	
in	
out	
{rule mask offset}+	rule mask offset “+”

AA AA AA AA AA AA BB BB BB BB BB BB CC CC DD DD

DD DD EE FF GG HH HH HH II II JJ KK LL LL MM MM

NN NN OO PP QQ QQ RR RR RR RR SS SS SS SS TT TT

UU UU VV VV VV VV WW WW WW WW XY ZZ aa aa bb bb

A	MAC	0	O	TTL	34
B	MAC	6	P		35
C		12	Q	IP	36
D	VLAN tag	14	R	ip	38

	E	DSAP( )	18	S	ip	42
	F	SSAP( )	19	T	TCP	46
	G	Ctrl	20	U	TCP	48
	H	Org Code				

destination-mac-address | **any**}][**precedence** precedence] [**tos** tos] [**fragments**] [**range** lower upper] [**time-range** time-range-name]

„ Ethernet-type cos

access-list id {**deny** | **permit**} {ethernet-type| **cos** [out][**inner** in]} [**VID** [out][**inner** in]] {**s**ource source-wildcard | **host** source | **any**} {**host** source-mac-address | **any** } {destination destination-wildcard | **host** destination | **any**} {**host** destination-mac-address | **any**} [**time-range** time-range-name]

„ Protocol

access-list id {**deny** | **permit**} **protocol** [**VID** [out][**inner** in]] {source source-wildcard | **host** source | **any**} {**host** source-mac-address | **any** }{destination destination-wildcard | **host** destination | **any**} {**host** destination-mac-address | **any**} [**precedence** precedence] [**tos** tos] [**fragments**] [**range** lower upper] [**time-range** time-range-name]

„ Expert

Internet Control Message Protocol (ICMP)

access-list id {**deny** | **permit**}[**VID** [out][**inner** st source-wildcard

Permit	
Source	
source-wildcard	0.255.0.32
protocol	IP EIGRP GRE IPINIP IGMP NOS OSPF ICMP UDP TCP IP IP 0-255 ICMP/TCP/UDP
Destination	
destination-wildcard	

fprecedence

precedence 0-7

range y [,X ¯ 0Ã · Ë8× È

lower	
upper	

time-range-name	
tos y [,X á u2O _	
tos 0-15	
icmp-type	ICMP 0-589255
icmp-code	ICMP 0-255
icmp-message	ICMP
operator lt- eq- gt- neq- range-	
port [port]	range
host source-mac-address	
host destination-mac-address	
VID vid ûuXd	
ethernet-type	
tcp-flag	tcp flag

ACL

fragm.589C.6651s

- general-parameter-problem
- host-isolated
- host-precedence-unreachable
-

„ cmd
„ daytime
„ discard
„ domain
„ echo
„ exec
„ finger
„ ftp
„ ftp-data
„ gopher
„ hostname
„ ident
„ irc
„ klogin
„ kshell
„ login
„ nntp
„ pim-auto-rp
„ pop2
„ pop3
„ smtp
„ sunrpc
„ syslog
„ tacacs
„ talk
„ telnet
„ time
„ uucp
„ whois
„ www

UDP UDP

„ biff
„ bootpc
„ bootps
„ discard
„ dnsix
„ domain
„ echo

„ isakmp
„ mobile-ip
„ nameserver
„ netbios-dgm
„ netbios-ns
„ netbios-ss
„ ntp
„ pim-auto-rp
„ rip
„ snmp
„ snmptrap
„ sunrpc
„ syslog
„ tacacs
„ talk
„ tftp
„ time
„ who
„ xdmcp

Ethernet-type

„ aarp
„ arp
„ appletalk
„ decnet-iv
„ diagnostic
„ etype-6000
„ etype-8042
„ lat
„ lavc-sca
„ mop-console
„ mop-dump
„ mumps
„ netbios
„ vines-echo
„ xns-idp

1 IP

IP 192.168.1.64 - 192.168.1.127

ACL

ACL

[sn] **deny protocol** [[**VID** [out][**inner** in]]] {source source-wildcard | **host** source | **any**} {**host** source-mac-address | **any** } {destinationdestination-wildcard | **host** destination | **any**} {**host** destination-mac-address | **any**} [**precedence** precedence] [**tos** tos] [**fragments**] [**range** lower upper] [**time-range** time-range-name]

c) expert

„ **Internet Control Message Protocol** (ICMP)

[sn] **deny icmp** [[**VID** [out][**inner** in]]] {source source-wildcard | **host** source | **any**} {**host** source-mac-address | **any**} {destination destination-wildcard | **host** destination | **any**} {**host** destination-mac-address | **any**} [icmp-type] [[icmp-type [icmp-code]] | [icmp-message]] [**precedence** precedence] [**tos** tos] [**fragments**] [**time-range** time-range-name]

„ **Transmission Control Protocol** (TCP)

[sn] **deny tcp** [[**VID** [out][**inner** in]]]{source source-wildcard | **host** Source | **any**} {**host** source-mac-address | **any** } [operator **port** [port]] {destination destination-wildcard | **host** destination | **any**} {**host** destination-mac-address | **any**} [operator **port** [port]] [**precedence** precedence] [**tos** tos] [**fragments**] [**range** lower upper] [**time-range** time-range-name] [**match-all** tcp-flag]

„ **User Datagram Protocol** (UDP)

[sn] **deny udp** [[**VID** [out][**inner** in]]]{source source –wildcard | **host** source | **any**} {**host** source-mac-address | **any** } [operator **port** [port]] {destination destination-wildcard | **host** destination | **any**}{**host** destination-mac-address | **any**} [operator **port** [port]] [**precedence** precedence] [**tos** tos] [**fragments**] [**range** lower upper] [**time-range** time-range-name]

„ **Address Resolution Protocol** (ARP)

[sn] **deny arp** {**vid** vlan-id}[source-mac-address source-wildcard |**host** source-mac-address | **any**] [**host** destination –mac-address | **any**] {sender-ip sender-ip–wildcard | **host** sender-ip | **any**} {sender-mac sender-mac-wildcard | **host** sender-mac | **any**} {target-ip target-ip–wildcard | **host** target-ip | **any**}

„ **User Datagram Protocol** (UDP)

[sn] **deny udp** {source-ipv6-prefix/prefix-length | **host** source-ipv6-address | **any**} [operator **port** [port]] {destination-ipv6-prefix /prefix-length | **host** destination-ipv6-address | **any**}[operator **port** [port]] [**dscp** dscp] [**flow-label** flow-label] [**fragments**] [**range** lower upper] [**time-range** time-range-name]

Sn	ACL
prefix-length	
dscp	
dscp	0-63.
flow-label	

```
10 deny host 0013.0049.8272 any aarp
Ruijie(config-mac-nacl)#
```

id	Expert 2700-2899
name	Expert
in	
out	

Expert ACL

ACL **show access-group**

access-list accept_00d0f8xxxxxx_only Gigabit 1
Ruijie(config)# interface GigaEthernet 0/1
Ruijie(config-if)# expertaccess-groupaccept_00d0f8xxxxxx_onlyin

show access-group	ACL

V10.0	V10.0

46.1.4 expert access-list

ACL **no** ACL

expert access-list extended {id | name}

no expert access-list extended {id | name}

Id	Expert 2700-2899
name	ACL

Expert ACL

show expert access-lists

1 ACL

```
Ruijie(config)# expert access-list extended exp-acl
Ruijie(config-exp-nacl)# show expert access-lists
expert access-list extended exp-acl
Ruijie(config-exp-nacl)#
```

2 ACL

```
Ruijie(config)# expert access-list extended 2704
Ruijie(config-exp-nacl)# show expert access-lists
expert access-list extended 2704
Ruijie(config-exp-nacl)#
```

show expert access-lists	

V10.0	V10.0

46.1.5 ip access-group

ip access-group no

ip access-group {id | name} {**in** | **out**}

no ip access-group { id | name} {**in** | **out**}

id	IP 1-199 1300-2699
name	IP
in	
out	

ACL

ip access-group

fastEthernet0/0 120

```
Ruijie(config)#  interface fastEthernet  0/0
Ruijie(config-if)#  ip access-group  120 in
```

access-list	
show access-lists	
show ip access-list	IP 1300 – 2699 3000

V10.0	(V

46.1.6 ip access-list

IP ACL1IP ACL

id	IP 1-99 1300-1999 -
name	IP

ACL

ACL ACL

deny **permit** **show ip access-lists** ACL

1 ACL

```
Ruijie(config)# ip access-list standard std-acl
Ruijie(config-std-nacl)# show ip access-lists
ip access-list standard std-acl
Ruijie(config-std-nacl)#
```

2 ACL

```
Ruijie(config)# ip access-list extended 123
Ruijie(config-ext-nacl)# show ip access-lists
ip access-list extended 123
```

show ip access-lists	IP

V10.0	V10.0

46.1.7 ip access-list resequence

ip ACL IPV6 ACL

no

ip access-list resequence {id | name} **start-sn inc-sn**

no ip access-list resequence {id | name}

Id	ACL
name	ACL
start-sn	
inc-sn	

start-sn 10

inc-sn 10

show access-lists

ACL

```
Ruijie#      show access-lists
ip access-list standard 1
10 permit host 192.168.4.12
20 deny any any
Ruijie#      config
Ruijie(config)#          ip access-list resequence              1 21 43
Ruijie(config)#          exit
Ruijie#     show access-lists
ip access-list standard 1
21 permit host 192.168.4.12
64 deny any any
```

show access-lists	

V10.0	V10.0

46.1.8 list-remark text

ACL **no**

list-remark text

Text	

ACL

ACL

```
Ruijie#      ip access-list extended              102
Ruijie(config-ext-nacl)#              list-remark       t hisaclistofilterthehost
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)#
```

ACL

Ruijie(config-mac-nacl)# show mac access-lists
mac access-list extended 704

show mac access-lists	mac

show access-lists	
ip access-list	ip ACL
ipv6 access-list	IPV6 ACL

deny

[**precedence** precedence] [**tos** tos] [**fragments**] [**range** lower upper] [**time-range** time-range-name]

3) MAC

[sn] **permit** {**any** | **host** source-mac-address} {**any** | **host** destination-mac-address} [ethernet-type][**cos** [out] [**inner** in]]

4) Expert

[sn] **permit** [**protocol** | [ethernet-type][**cos** [out] [**inner** in]]] [**VID** [out][**inner** in]] {source source-wildcard | **host** source | **any**} {**host** source-**mac**-address | **any** } {destination destination-wildcard | **host** destination | **any**} {**host** destination-mac-address | **any**} [**precedence** precedence] [**tos** tos][**fragments**] [**range** lower upper] [**time-range** time-range-name]

Ethernet-type cos

[sn] **permit** {ethernet-type| **cos** [out] [**inner** in]} [**VID** [out][**inner** in]] {source source-wildcard | **host** source | **any**} {**host** source-mac-address | **any** } {destination destination-wildcard | **host** destination | **any**} {**host** destination-mac-address | **any**} [**time-range** time-range-name]

Protocol

[sn] **permit protocol** [**VID** [out][**inner** in]] {source source-wildcard | **host** Source | **any**} {**host** source-mac-address | **any** } {destination destination-wildcard | **host** destination | **any**} {**host** destination-mac-address | **any**} [**precedence** precedence] [**tos** tos] [**fragments**] [**range** lower upper] [**time-range** time-range-name]

Expert

„ **Internet Control Message Protocol** (ICMP)

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

„ **Transmission Control Protocol** (TCP)

[sn] **permit tcp** [**VID** [out][**inner** in]]{source source-wildcard | **host** Source | **any**} {**host** source-mac-address | **any** } [operator **port** [port]] {destination destination-wildcard | **host** destination | **any**} {**host** destination-mac-address | **any**} [operator **port** [port]] [**precedence** precedence] [**tos** tos] [**fragments**] [**range** lower upper] [**time-range** tos

[**precedenceprecedence**] [**tos** tos] [**fragments**] [**range** lower upper] [**time-range** time-range-name]

„ **Address Resolution Protocol** (ARP)

[sn] **permit arp** {**vid** vlan-id**}** [**host** source-mac-address | **any**] [**host** destination –mac-address | **any**] {sender-ip sender-ip–wildcard | **host** sender-ip | **any**} {sender-mac sender-mac-wildcard | **host** sender-mac | **any**} {target-ip target-ip–wildcard | **host** target-ip | **any**}

„ **Internet Control Message Protocol** (ICMP)

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

„ **Transmission Control Protocol** (TCP)

[sn] **permit tcp** {source-ipv6-prefix / prefix-length | **host** source-ipv6-address | **any**} [operator **port** [port]] {destination-ipv6-prefix / prefix-length | **host** destination-ipv6-address | **any**} [operator **port** [port]] [**dscp** dscp] [**flow-label** flow-label] [**fragments**] [**range** lower upper] [**time-range** time-range-name] [**match-all** tcp-flag]

„ **User Datagram Protocol** (UDP)

[sn] **permit udp** {source-ipv6-prefix / prefix-length | **host** source-ipv6-address | **any**} [operator **port** [port]] {destination-ipv6-prefix / prefix-length | **host** destination-ipv6-address | **any**} [operator **port** [**port**]] [**dscp** dscp] [**flow-label** flow-label] [**fragments**] [**range** lower upper] [**time-range** time-range-name]

deny	-

ACL

ACL ACL

1 Expert Extended ACL ACL IP 192.168.4.12 MAC 001300498272 TCP

```
Ruijie(config)# expert access-list extended exp-acl
Ruijie(config-exp-nacl)# permit tcp host 192.168.4.12 host 0013.0049.8272 any any
Ruijie(config-exp-nacl)# deny any any any any
```

```
Ruijie(config-exp-nacl)#              show access-lists
expert access-list extended exp-acl
10 permit tcp host 192.168.4.12 host 0013.0049.8272 any any
20 deny any any any any
Ruijie(config-exp-nacl)#
   2          IP       ACL                          IP     192.168.4.12                TCP
       100                          1
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)#
   3          MAC       ACL                          MAC     0013.0049.8272
            100                                1
Ruijie(config)#          mac access-list extended            702
Ruijie(config-mac-nacl)#              permit host       0013.0049.8272      any aarp
Ruijie(config-mac-nacl)#              show access-lists
mac access-list extended
10 permit host 0013.0049.8272 any aarp               702
Ruijie(config-mac-nacl)#              exit
Ruijie(config)#          interface gigabitethernet              1/1
Ruijie(config-if)#             mac access-group       702   in
   4          ip        ACL                          IP     192.168.4.12
       1
Ruijie(config)#          ip access-list standard             std-acl
Ruijie(config-std-nacl)#              permit host       192.168.4.12
Ruijie(config-std-nacl)#              show access-lists
ip access-list standard std-acl
10 permit host 192.168.4.12
Ruijie(config-std-nacl)#              exit
Ruijie(config)#          interface gigabitethernet              1/1
Ruijie(config-if)#             ip access-group        std-acl      in
   5          IPV6      ACL                          IP     192.168.2.0 TC 6/T<788.1 T0 Te 83.87.0
```

Ruijie(config)

```
Ruijie(config-ipv6-nacl)#              11 permit      ipv6
host ::192.168.4.12          any
Ruijie(config-ipv6-nacl)#              show access-lists
ipv6 access-list extended v6-acl
11 permit ipv6 host ::192.168.4.12 any
Ruijie(config-ipv6-nacl)#              exit
```

ACL

acl id name ACL

Ruijie# show access-lists n_acl
ip access-list standard n_acl
Ruijie# show access-lists 102
ip access-list extended 102
Ruijie# show access-lists
ip access-list standard n_acl
ip access-list extended 101
mac access-list extended mac-acl
expert access-list extended exp-acl

ip access-list	IP ACL
mac access-list	MAC ACL
expert access-list	Expert ACL

V10.0	V10.0

Ruijie# show expert access-group interface gigabitethernet 0/2
expert access-group ee in
Applied On interface GigabitEthernet 0/2.

expert access-list	Expert ACL

V10.0	V10.0

46.2.4 show ip access-group

IP ACL

show ip access-group[**interface** <interface>]

<interface>	

I

V10.0	V10.0

46.2.5 show mac access-group

MAC

show mac access-group[**interface** <interface>]

<interface>	

MAC ACL MAC ACL

Ruijie# show mac access-group interface gigabitethernet 0/3
mac access-group mm in
Applied On interface GigabitEthernet 0/3.

mac access-list	MAC ACL

V10.0	V10.0

47 VACL a —

47.1 " - ‘ a —

Vlan access map map_name map_sn map map

1 **vlan access map** map map_sn map map map map_sn 10

2 map_sn **vlan access map** map_name Map_name map

3 map_sn **vlan access map** map map map map map map

4 map 6553 map

47.1.1 action forward/drop/redirect

map actions vacl no map actions forward

action forward

no action forward

map actions vacl no map actions forward

action drop

no action drop

map actions vacl no map actions forward

action redirect { **GigabitEthernet** | **Aggregateport** | **FastEthernet** } { **port_id** }

no action redirect{**GigabitEthernet** | **Aggregateport** | **FastEthernet** } {port_id }

map forward map

vacl

a	+	acl,	8	acl

„ map ip acl map acl

„ map 8 acl

„ map acl

„ map ace acl acl

„ map ip acl (mac acl)
ip acl (mac acl) ip acl (mac acl)
ip acl (mac acl)

„ map ip acl (mac acl)
mac acl (ip acl) ip acl (mac
acl) mac acl (ip acl)

map_name	map	100
map_sn	map	[0 - 65535]

vlan access map

Ruijie(config)# vlan access-map ddd 20

Ruijie(config-access-map)#

-	-

-	-

47.1.4 vlan filter

map vlan map vlan

no

vlan filter map_name **vlan-list** vlan_id

no vlan filter map_name **vlan-list** vlan_id

map_name	map
vlan_id	vlan id

vlan access map vlan vlan vlan
filter aa vlan-list 1-33 map 1-33 vlan

map ff vlan access map vlan 5
Ruijie(config)# vlan filter ff vlan-list 5

action: forward
Vlan access-map aa 20
match ip address: 10, 20, 30, sp1, sp2, 60, 50, 80,
action: drop
Vlan access-map dd 20
match mac address: 710, 720, m1, 760,
action: forward
Ruijie(config)#

2 **show vlan access map** { map_name }

Ruijie(config)# show vlan access-map dd
Vlan access-map dd 20
match mac address: 710, 720, m1, 760,
action: forward
Ruijie(config)#

-	-

-	-

47.2.2 show vlan filter

map vlan

show vlan filter

-	-

Show vlan filter access-map aa

```
Ruijie(config)#          show vlan filter
VLAN Map aa
Configured on VLANs: 1, 5, 6,
Ruijie(config)#
```

show vlan filter access-map map_name	map vlan
show vlan filter vlan vlan_id	vlan map

-	-

48 QOS a—

48.1 ì˜ "

QoS QoS

„ 1 policy-map

„ policy-map class-map

„ class-map 1 ACL ACL ACE

„ ACE “ ACL”

QoS Policy Map

QoS

QoS Policy Map Off

QOS

CoS	0
	8
	WRR
QueueWeight	1:1:1:1:1:1:1:1
WRR Weight Range	1:15
DRR Weight Range	1:15
	No Trust

Cos

CoS	
0	1
1	2
2	3
3	4
4	5
5	6

CoS to DSCP

CoS	DSCP
0	0
1	8
2	16
3	24
4	32
5	40
6	48
7	56

IP-Precedence to DSCP

IP-Precedence to DSCP

IP-Precedence	DSCP
0	0
1	8
2	16
3	24
4	32
5	40
6	48
7	56

DSCP to CoS

DSCP to CoS

DSCP	CoS
0	0
8	1
16	2
24	3
32	4
40	5
48	6
56	7

48.2 " - ‘ a —

48.2.1 class maps

ACL

ip access-list {**extended** | **standard**} { acl-id | acl-name }

mac access-list extended {acl-id | acl-name}

expert access-list extended {acl-id | acl-name}

access-list acl-id ACL

class map class map

[**no**] **class-map** class-map-name

class map

[**no**] **match access-group** acl-name| acl-id

acl-name	ACL
acl-id	ACL id
class-map-name	class map
no class-map class-map-name	class map
no match access-group acl-name| acl-id	

1 MAC ACL, me

Ruijie(config)# mac access-list extended me

2 ACL

Ruijie(config-ext-macl)# permit hos t 1111.2222.3333 any

3 ACL

Ruijie(config-ext-macl)# exit

4 class-map, cm

```
Ruijie(config)#          class-map cm
   5          ACL
Ruijie(config-cmap)#          match access-group me
   6          class-map
Ruijie(config-cmap)#          exit
```

show mac access-lists	-
show ip access-lists	-
show class-map	-

-	-

48.2.2 drr-queue bandwidth

DRR

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	-

-	-

48.2.3 interface rate-limit

rate-limit {**input** | **output**} bps burst-size

no rate-limit

input	
output	
bps	
burst-size	(Kbyte)dscp-list
no	

Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# rate-limit input 1000000 4096

show mls qos interface	-

-	-

48.2.4 mls qos cos

CoS

mls qos cos default-cos

no mls qos cos

default-cos	0 7
no	

CoS 0

Ruijie(config)# interface gigabitethernet 1/ 1
Ruijie(config-if)# mls qos cos 7

show mls qos interface interface-id	-

-	-

48.2.5 mls qos map cos-dscp

CoS DSCP

mls qos map cos-dscp dscp1...dscp8

no mls qos map cos-dscp

dscp	
no	

Ruijie(config)# mls qo map cos-dscp 8 10 16 18 24 26 32 34

show mls qos maps	dscp-cos maps,dscp-cos maps ip-prec-dscp maps

-	-

48.2.6 mls qos map dscp-cos

DSCP CoS

mls qos map dscp-cos dscp-list to cos

no mls qos map dscp-cos

-	-

show mls qos maps dscp-cos maps,dscp-cos maps ip-prec-dscp maps

mls qos scheduler [**sp** | **rr** | **wrr** | **drr**]

no mls qos scheduler

ip-precedence	Qos IP-PRE
no	

Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mls qos trust cos

show mls qos interface interface-id	-

-	-

48.2.10 policy maps

policy map policymap

[**no**] **policy-map** policy-map-name

policy map class-map ,

[**no**] **class** class-map-name

IP ipdscp IP

set ip dscp new-dscp

no set ip dscp

police rate-bps burst-byte[**exceed-action** {**drop** | **dscp** dscp-value}]

no police

policy-map-name	policymap
no policy-map policy-map-name	policy map

class-map-name	class map
no class class-map-name	
new-dscp	DSCP
rate-bps	kbps
burst-byte	kbyte
drop	
dscp-value	DSCP

1 policy map, po

```
Ruijie(config)# policy-map po
```

2 class-map cm

```
Ruijie(config-pmap)# class cm
```

3 dscp 10

```
Ruijie(config-pmap-c)# set ip dscp 10
```

4 1M, 4096k, dscp 16

```
Ruijie(config-pmap-c)# police 1000000 4096 exceed-action dscp 16
```

show policy-map	-

-	-

48.2.11 priority-queue

[**no**] **priority-queue**

priority-queue	SP
no priority-queue	WRR

WRR

Ruijie(config)# no priority-queue

show mls qos queueing	-

Ruijie(config)# priority-queue cos-map 1 0 1

show mls qos queueing	-

-	-

48.2.13 service-policy

policy map

service-policy {**input** | **output**} policy-map-name

no service-policy {**input** | **output**}

policy-map-name	policymap
no	policy map

Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# service-policy input po

show mls qos interface	-

-	-

48.2.14 wrr-queue bandwidth

WRR

wrr-queue bandwidth weight1 ... weightn

no wrr-queue bandwidth

weight1...weightn	n n
no	

weight1: ...: weightn = 1:..:1

Ruijie(config)# wrr-queue bandwidth 1 2 3 4 5 6 7 8

Ruijie# show class-map

-	-

-	-

48.3.2 show policy-map

QoS policy map [class class-name]

show policy-map [policy-name [**class** class-name]]

policy-name	policy name
class-name	class map

policy name

Ruijie# show policy-map

-	-

-	-

48.3.3 show mls qos interface

QoS

show mls qos interface interface-id [**policers**]

Ruijie# show mls qos maps

-	-

-	-

48.3.5 show mls qos queueing

QoS (cos-to-queue map,wrr weight,drr weight)

show mls qos queueing

-	-

Ruijie# show mls qos queueing

-	-

-	-

48.3.6 show mls qos rate-limit

show mls qos rate-limit [**interface** interface-id]

interface	interface-id rate-limit

Ruijie# show mls qos scheduler

49 Voice VLAN a —

49.1 " - ‘ a —

49.1.1

show voice vlan	Voice VLAN

10.4	

49.1.2 voice vlan aging

Voice VLAN **no**

voice vlan aging minutes

no voice vlan aging

	.00[(no Td( )Tj/0229.251 0 Td29Voic

49.1.3 voice vlan cos

Voice VLAN CoS **no**

voice vlan cos cos-value

no voice vlan cos

cos-value	Voice VLAN CoS

cos-value 6

Voice VLAN CoS DSCP

1 Voice VLAN CoS 5
Ruijie(config)# voice vlan cos 5

show voice vlan	Voice VLAN

10.4	

49.1.4 voice vlan dscp

Voice VLAN DSCP **no**

voice vlan dscp dscp-value

no voice vlan dscp

	dscp-value	Voice VLAN DSCP
	dscp-value 46	
	Voice VLAN CoS DSCP	

1 Voice VLAN DSCP

Uplink Voice VLAN

1 OUI 0012.3400.0000 Voice VLAN Company A

```
Ruijie(config)# voice vlan mac-address 0012.3400.0000 mask
ffff.ff00.0000 description Company A
```

a	1 Voice VLAN Voice VLAN Voice VLAN 2 native VLAN Voice VLAN 3 Trunk Port/Hybrid Port VLAN Voice VLAN VLAN Voice VLAN Voice VLAN Voice VLAN
	1 Voice VLAN Voice VLAN 2 Voice VLAN Voice VLAN

1 FastEthernet 0/1 Voice VLAN

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-vlan)# voice vlan mode auto
```

show voice vlan	Voice VLAN Voice VLAN

10.4	

49.1.8 voice vlan security enable

Voice VLAN **no**

voice vlan security enable

no voice vlan security enable

Voice VLAN

Voice VLAN Voice VLAN

1 Voice VLAN

```
Ruijie(config)#          show voice vlan
Voice VLAN status: ENABLE        //Voice VLAN
Voice VLAN ID: 2              //Voice VLAN ID
Voice VLAN security mode: Security  //
Voice VLAN aging time: 5 minutes    //
Voice VLAN cos: 6             //                    CoS
Voice VLAN dscp: 46           //                    DSCP
Current voice vlan enabled port mode: //            Voice VLAN
PORT              MODE
-----------------------------------------------------
Fa0/1             Auto
```

voice vlan vlan-id	Voice VLAN VLAN Voice VLAN
voice vlan aging minutes	Voice VLAN
voice vlan cos cos-value	Voice VLAN CoS
voice vlan dscp dscp-value	Voice VLAN DSCP
voice vlan enable	Voice VLAN
voice vlan mode auto	Voice VLAN
voice vlan security enable	Voice VLAN

10.4	

49.2.2 show voice vlan oui

OUI OUI

show voice vlan oui

OUI

1 Voice VLAN OUI

```
Ruijie(config)#          show voice vlan oui
OUI         Mask         Description
--------------- --------------- ---------------
0001.e300.0000 ffff.ff00.0000 Siemens phone
0003.6b00.0000 ffff.ff00.0000 Cisco phone
0004.0d00.0000 ffff.ff00.0000 Avaya phone
0060.b900.0000 ffff.ff00.0000 Philips/NEC phone
00d0.1e00.0000 ffff.ff00.0000 Pingtel phone
00e0.7500.0000 ffff.ff00.0000 Polycom phone
00e0.bb00.0000 ffff.ff00.0000 3com phone
```

show voice vlan oui

OUI	OUI MAC
Mask	OUI OUI
Description	OUI

voice vlan mac-address mac-addr **mask** oui-mask **[description** text**]**	Voice VLAN OUI

50 , ì 0 o æ _ Ÿ ¹ f ´ " a —

50.1 " - ‘ a —

50.1.1 rgos-security compatible

RGOS **rgos-security compatible** RGOS no

rgos-security compatible

no rgos-security compatible

RGOS

a

1 RGOS

Ruijie(config)# no gos-security compatible

10.4	

51 VRRP a —

51.1 " - ‘ a —

51.1.1 vrrp authentication

VRRP **no**

vrrp group authentication string

no vrrp Td [po vrrp autio

51.1.2 vrrp description

VRRP **no**

vrrp group **description** text

no vrrp group description

group	VRRP

vrrp group **ip** ipaddress [**secondary**]

no vrrp group **ip** ipaddress [**secondary**]

group	VRRP
ipaddress	IP
secondary	IP

VRRP

secondary IP

VRRP

group	VRRP
level	VRRP

VRRP VRRP VRRP
100

VRRP

VRRP 1 254
vrrp 1 priority 254

Ruijie(config-if)# **vrrp** group **ip** ipaddress [**secondary**]	VRRP IP
Ruijie(config-if)# **vrrp** group **preempt** [**delay** seconds]	VRRP

VRRP VRRP
VRRP

VRRP 4
vrrp 1 timers advertise 4

Ruijie(config-if)# **vrrp** group **ip** ipaddress [**secondary**]	VRRP IP
Ruijie(config-if)# **vrrp group timers learn**	

-	-

51.1.7 vrrp timers learn

no

vrrp group **timers learn**

no vrrp group **timers learn**

group	VRRP

VRRP VRRP

VRRP
VRRP VRRP Master
VRRP
Master VRRP

VRRP 1

vrrp 1 timers learn

Ruijie(config-if)# **vrrp** group **ip** ipaddress [**secondary**]	VRRP IP
Ruijie(config-if)# **vrrp** group **timers advertise** [**msec**] interval	VRRP

	*ü
-	-

RGOS 10.4	-

51.2 VRRP ³ Å 0 a —

51.2.1 debug vrrp

VRRP VRRP VRRP **no**

debug vrrp

no debug vrrp

-	-

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#

Ruijie# **debug vrrp errors**	VRRP
Ruijie# **debug vrrp events**	VRRP

Ruijie# **debug vrrp state**	VRRP

-	-

51.2.3 debug vrrp events

VRRP no

debug vrrp events

no debug vrrp events

-	-

VRRP

VRRP

```
Ruijie#      debug vrrp events
Ruijie#
VRRP: Grp 1 Event - Advert higher or equal priority
VRRP: Grp 1 Event - Advert higher or equal priority
VRRP: Grp 1 Event - Advert higher or equal priority
```


VRRP

show vrrp [**brief** | group]

brief	VRRP

group

```
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
```


Virtual MAC address is 0000.5e00.0101
Advertisement interval is 3 sec
Preemption is enabled
min delay is 0 sec
Priority is 100
Master Router is 192.168.201.213 , pritority is 120
Master Advertisement interval is 3 sec
Master Down interval is 9 sec
FastEthernet 0/0 - Group 2
State is Master
Virtual IP address is 192.168.201.2 configured
Virtual MAC address is 0000.5e00.0102
Advertisement interval is 3 sec
Preemption is enabled
min delay is 0 sec
Priority is 120
Master Router is 192.168.201.217 (local), priority is 120
Master Advertisement interval is 3 sec
Master Down interval is 9 sec

Ruijie(config-if)# **vrrp** group **ip** ip address [**secondary**]	VRRP IP

-	-

52 RLDP a —

52.1 " - ‘ a —

52.1.1 rldp detect-interval

RLDP

rldp detect-interval interval

no rldp detect-interval

interval	2-15

3

stp × stp

5s :

Ruijie(config)# rldp detect-interval 5

rldp detect-max	

-	-

52.1.2 rldp detect-max

RLDP

rldp detect-max num

no rldp detect-max

num	, 2-10

2

5

Ruijie(config)# rldp detect-max

RLDP RLDP

Ruijie(config)# rldp enable

rldp port	RLDP

-	-

52.1.4 rldp port

rldp

rldp port {unidirection-detect | bidir

Ruijie(config)# interface fas 0/1
Ruijie(config-if)# rldp port loop-detect block

rldp enable	rldp

-	-

52.1.5 rldp reset

rldp shutdown **disable** rldp

rldp reset

-	-

Ruijie# rldp reset

rldp enable	Rldp

-	-

52.2 ¡ µ 0 ³ Å a —

52.2.1 show rldp

rldp

show rldp [**interface** interface-id]

Interface-id	

EXEC

-	-

-	-

53 TPP a —

53.1 " - ‘ a —

53.1.1 topology guard

topology guard

no

[**no**] **topology guard**

no

[**no**] **tp-guard port enable**

tpp

p

54 3 Ñ , Ä a —

54.1 " - ‘ a —

54.1.1 cd

cd [filesystem:][directory]

filesystem	“ ”

directory

54.1.2 copy

copy source-url destination-url

source-url	URL

```
Ruijie#    copy    tftp://192.168.201.54/rgos.bin flash:/
   2                  tftp
Ruijie#    copy    flash:/rgos.bin tftp://192.168.201.54/rgos.bin
   3            xmodem
Ruijie#      copy    xmodem: flash:/config.text
   4                     U
Ruijie#    copy    flash:/config.text usb0:/config.text
   5
Ruijie#    copy flash:/config.text slave:/config.text
   6                flash             sd
Ruijie#    copy flash:/rgos.bin sd0:/rgos.bin
   7                U                 sd
Ruijie#    copy usb0:/config.text sd0:/config.text
   8                sd                U
Ruijie#    copy sd0:/config.text usb0:/config.text
```

del	
rename	
dir	

GÄÅÈ58@UÅC2,D1á(1 56D4 3@Ý)7XE)aU2ã)EfHXRsd7 1U2@dFHXD314@306.8210.5 118.8/TD009.006B

url URL flash:/ usb0:/ usb1:/ slave:/ url

a .

1 tmpfile

Ruijie# delete tmpfile

2 rgos.bin.bak

Ruijie# delete slave:/rgos.bin.bak

3 sd aaa.bin

Ruijie# delete sd0:/aaa.bin

copy	
dir	

a .

1

```
Ruijie#      dir slave0:/
Directory of slave:/
  Mode Link    Size         MTime Name
-------- ---- --------- ------------------- ------------------
         1 10838016 2008-01-01 00:01:53 rgos.bin
         1    399 2008-01-01 00:01:37 config.text
         1    399 2008-01-01 00:17:58 cfg.txt
-----------------------------------------------------------------
3 Files (Total size 11210782 Bytes), 0 Directories.
Total 33030144 bytes (31MB) in this device, 20463616 bytes (19MB)
available.
```


54.1.5 mkdir

mkdir directory

directory	

54.1.6 rename

rename url1 url2

url1	URL
url2	URL

usb0/1, flash, slave

1 log.txt , config.txt

```
Ruijie# rename tmp/log.txt ../config.txt
```

2 log.txt usb0

```
Ruijie# rename slave:/log.txt usb0:/log.txt
```

3 log.txt log.txt.bak

```
Ruijie# rename log.txt log.txt.bak
```

4 sd rgos.bin flash

```
Ruijie# rename sd0:/rgos.bin flash:/rgos_bak.bin
```

5 U test.txt sd

```
Ruijie# rename usb0:/test.txt sd0:/test2.txt
```

del	
copy	

54.1.7 rmdir

rmdir directory

directory	,

	,
	tmp Ruijie# rmdir tmp

mkdir	

54.2 ¡ µ - ‘ a —

54.2.1 pwd

pwd

1

```
Ruijie#      pwd
flash:/
```

cd	

54.2.2 show file systems

show file systems

1

Ruijie#**show file systems**

55 ,Ä•8 "

55.1 CPU F Ñ ¡a —

55.1.1 cpu-log

5	0%	0%	0%	waitqueue_process
6	0%	0%	0%	tasklet_task
7	0%	0%	0%	kevents
8	0%	0%	0%	snmpd
9	0%	0%	0%	snmp_trapd
10	0%	0%	0%	mtdblock
11	0%	0%	0%	gc_task
12	0%	0%	0%	Context
13	0%	0%	0%	kswapd
14	0%	0%	0%	bdflush
15	0%	0%	0%	kupdate
16	0%	3%	1%	ll_mt
17	0%	0%	0%	ll main process
18	0%	0%	0%	bridge_relay
19	0%	0%	0%	d1x_task
20	0%	0%	0%	secu_policy_task
21	0%	0%	0%	dhcpa_task
22	0%	0%	0%	dhcpsnp_task
23	0%	0%	0%	igmp_snp
24	0%	0%	0%	mstp_event
25	0%	0%	0%	GVRP_EVENT
26	0%	0%	0%	rldp_task
27	0%	2%	1%	rerp_task
28	0%	0%	0%	reup_event_handler
29	0%	0%	0%	tpp_task
30	0%	0%	0%	ip6timer
31	0%	0%	0%	rtadvd
32	0%	0%	0%	tnet6
33	2%	0%	0%	tnet
34	0%	0%	0%	Tarptime
35	0%	0%	0%	gra_arp
36	0%	0%	0%	Ttcptimer
37	8%	1%	0%	ef_res
38	0%	0%	0%	ef_rcv_msg
39	0%	0%	0%	ef_inconsistent_daemon
40	0%	0%	0%	ip6_tunnel_rcv_pkt
41	0%	0%	0%	res6t
42	0%	0%	0%	tunrt6
43	0%	0%	0%	ef6_rcv_msg

44	0%	0%	0%	ef6_inconsistent_daemon
45	0%	0%	0%	imid
46	0%	0%	0%	nsmd
47	0%	0%	0%	ripd
48	0%	0%	0%	ripngd
49	0%	0%	0%	ospfd
50	0%	0%	0%	ospf6d
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_deamon
63	0%	3%	1%	track_daemon
64	0%	0%	0%	pbr_guard
65	0%	0%	0%	vrrpd
66	0%	0%	0%	psnpd
67	0%	0%	0%	igsnpd
68	0%	0%	0%	coa_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

BGP,OSPF,RIP,LDP,PIM,ISIS

1 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	

10.3(4b3)	

56 , Ä a —

56.1 " - ‘ a —

56.1.1 clear logging

clear logging

more flash:filename

Filename	

FLASH ”//f2/” ”//f3/’

FLASH

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:	FLASH

-	-

56.1.3 logging buffered

A

level	0 7

4k Bytes

7

show logging

clear logging

FLASH

Syslog Server

8

-	-

56.1.4 logging console

no

logging console level

no logging console

level	0 7 1

Debugging (7)

show logging

6

Ruijie(config)# logging console informational

logging on	

show logging

56.1.5 logging count

no

logging count

no logging count

-	-

no logging count

Ruijie(config)# logging count

show logging count	
show logging	

-	-

56.1.6 logging facility

no

(23)

logging facility facility-type

no logging facility

facility-type	

Syslog kernel

Ruijie(config)# logging facility kern

logging console	

-	-

56.1.7 logging file flash

FLASH FLASH

no

logging file flash:filename [max-file-size] [level]

no logging file

logging console	
logging monitor	VTY (telnet)
logging trap	Syslog Server

-	-

56.1.10 logging rate-limit

no

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

no logging rate-limit

number	1—10000
all	0—7
console	
except	error(3) error
severity	0—7

debug 10 wauTT1 1 Tf0 Tr 10.5 0 0 10.

logging on	
show logging	
logging trap	syslog server

-	-

56.1.12 logging source interface

no

logging source interface interface-type interface-number

no logging source interface

interface-type	
interface-number	

Syslog Server IP / Z¾Ìà³ YÚê%B EîE› Dç•Hš ÿ ¢ ¾±‡œL

-	-

56.1.14 logging trap

Syslog Server

no Syslog Server

logging trap level

no logging trap

level

56.1.15 service sequence-numbers

no

service sequence-numbers

no service sequence-numbers

-	-

1

Ruijie(config)# service sequence-numbers

logging on	
service timestamps	

-	-

56.1.16 service sysname

no

service sysname

no service sysname

message-type	log debug log 0 6 debug 7
uptime	* * * * 07:00:10:41
datetime	Jul 27 16:53:07
msec	

year

2007 Jul 27 16:53:07

VTY VTY

no

terminal monitor

terminal no monitor

-	-

VTY

VTY VTY

VTY

Ruijie# terminal monitor

-	-

-	-

56.2 ¡ µ - ‘ a —

56.2.1 show logging

show logging

-	-

show logging

```
Ruijie#      show logging
Syslog logging: enabled
Console logging: level debugging, 4 messages logged
Monitor logging: level informational, 0 messages logged
Buffer logging: level debugging, 6 messages logged
Timestamp debug messages: datetime
Timestamp log messages: disabled
Sequence log messages: enable
```

Buffer logging	
Timestamp debug messages	Debug
Timestamp log messages	Log
Sequence log messages	
Trap logging	Syslog Server
Log Buffer	

logging on	
clear logging	

-	-

56.2.2 show logging count

show logging count

-	-

logging count **show logging count**

show logging

show logging count

```
Ruijie#      show logging count
Module Name  Message Name Sev Occur    Last Time
==========================================SYS
```

CONFIG_I 5 1 Jul 6 10:29:57

----------SYS TOTAL 1

logging count

57 USB a —

57.1 " - ‘ a —

CLI USB

57.1.1 show usb

USB

show usb

-	-

USB

USB

Ruijie# show usb

Device: Mass Storage:
ID: 0
URL prefix: usb0
Disk Partitions:
usb0(type:FAT32)

Size : 131,072,000B(125MB)
Available size 1,260,020B 1.2MB

Mass Storage Device

URL	U U
Size	U

-	-

10.4(1)	SD
10.4(2b4)	SD usb

57.1.2 usb remove

usb remove device-id

device-id	USB ID show usb

USB

USB

USB

Ruijie# usb remove 0

OK, now you can pull out the device 0.

*Jan 1 00:18:16: %USB-5- USB_DISK_REMOVED: USB Disk <Mass Storage> has been removed from USB port 0!

USB

-	-

10.4(1)	SD
10.4(2b4)	SD usb

58 p ? • 8 a —

58.1 " - ‘ a —

58.1.1 device-priority

device-priority [member] priority


```
Ruijie#      show member
Member Mac Address   Priority Software Version
HardwareVersion Description
------ --------- ------- ---------- ---------  --------
1 00d0.f810.3323 1 RGOS 10.1.00(2),Release(12889) 1.0 SWITCH
2 00d0.f822.33aa 1 RGOS 10.1.00(2),Release(12889) 1.0 SWITCH
3 00d0.f822.33ae 1 RGOS 10.1.00(2),Release(12889) 1.0 SWITCH
4 00d0.f822.33b0 1 RGOS 10.1.00(2),Release(12889) 1.0 SWITCH
5 00d0.f822.33b2 1 RGOS 10.1.00(2),Release(12889) 1.0 SWITCH
6 00d0.f824.23b4 1 RGOS 10.1.00(2),Release(12889) 1.0 SWITCH
7 00d0.f833.44b4 1 RGOS 10.1.00(2),Release(12889) 1.0 SWITCH
8 00d0.f855.33ae 1 RGOS 10.1.00(2),Release(12889) 1.0 SWITCH
```

-	-

-	-

59.1.2 show fans

show fans

1

```
Ruijie# show fans
Device : M7806-FAN I Temperature:30c
                Item    State   speed(0-4)
              -------  -------- ---------------
                   1    stop     --
                   2    error    --
                   3    work      3
                   4    work      5
                   5    work      1
```

Temperature	
Item	
State	stop error work
speed(0-5)	0-4 0 4

10.4(2b2)	