

RG-S3750

RGOS 10.2(5)

©2009



RGOS[®]10.2(5)

'

'

'

1.

5

注意、说明

Courier New

5

2.

Arial

[] []

{x|y|...}

[x|y|...]

//

3.

注意

/ 说明 0

CLI

alias

alias

no

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

mode
command-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'

```

Ruijie# **s?**

*s=show show start-chat start-terminal-service

```

EXEC           "sv"   "show version"

```

Ruijie# **s?**

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

Ruijie# **s?**

show start-chat start-terminal-service

```

"ia"   "ip address"

```

Ruijie(config-if)# **ia ?**

A.B.C.D IP address

dhcp IP Address via DHCP

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

```

"ip address"

```

show aliases

```

"def-route"

```

```

"ip route 0.0.0.0 0.0.0.0 192.168.1.1"

```

Ruijie# **configure terminal**

Ruijie(config)# **alias config** def-route ip route 0.0.0.0
0.0.0.0 192.168.1.1

Ruijie(config)# **def-route?**

*def-route="ip route 0.0.0.0 0.0.0.0 192.168.1.1"

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



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

CLI 1 "test" reload

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

1 CLI reload

```
Ruijie> reload ?
```

mode

EXEC

EXEC

Ruijie# **show aliases exec**

exec mode alias:

| | |
|----|---------|
| h | help |
| p | ping |
| s | show |
| u | undebug |
| un | undebug |

| | |
|--------------|--|
| | |
| alias | |

CLI

- ' **disable**
- ' **enable**
- ' **enable password**
- ' **enable secret**
- ' **password**
- ' **login**
- ' **login local**
- ' **login authentication**
- ' **username**
- ' **lock**
- ' **lockable**
- ' **telnet**
- ' **enable service**

disable

disable

disable [*privilege-level*]

privilege-level

/ 说明:

disable

Ruijie# **disable** 10

| | |
|---------------|--|
| | |
| enable | |

enable

enable

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

```

15 security 0 15
password
15 password
security 15 password security
password
security

```

pw10

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

| | |
|------------------------|--|
| | |
| enable password | |

password

```

line line password
no line
password {password | [0|7] encrypted-password}
no password

```

```

password line
0|7 0 7
encrypted-password

```

line

line

line red

```

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

```

line

AAA

username

VTY

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

| | |
|-----------------|--|
| | |
| username | |

login authentication

AAA

AAA

no

login authentication {default | *list-name*}

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

default

list-name

line

AAA

VTY

radius

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

| | |
|----------------------|-----|
| | |
| aaa new-model | AAA |

aaa authentication login

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

| | |
|--------------------|--|
| | |
| login local | |

lock

EXEC

lock

lock

1. lock

2.

Locked

3.

line

lockable

line

```
Ruijie(config-line)# lockable
```

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

```
Ruijie# lock
```

```
Password: <password>
```

```
Again: <password>
```

```
Locked
```

```
Password: <password>
```

```
Ruijie#
```

| | |
|-----------------|--|
| | |
| lockable | |

lockable

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

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>
Ruijie#
```

| | |
|-------------|--|
| | |
| lock | |

telnet

telnet EXEC

telnet

telnet *host* [*port*] [*keyword*]

Host IP

Port TCP 23

Keyword

| /source-interface | telnet |
|--------------------------|--------|

telnet

telnet 192.168.1.11

vlan 1

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

| Show session | TTY |
|---------------------|-----|
| exit | |

enable service

SSH Server/Telnet Server/Web Server/Snmp

Agent

enable service

enable service { **ssh-server** | **telnet-server** | **web-server** | **snmp-agent**}

| ssh-server | SSH Server |
|----------------------|---------------|
| telnet-server | Telnet Server |
| web-server | Http Server |
| snmp-agent | Snmp Agent |

SSH Server

Web

no ip http authentication

ip http authentication local, Web

local

```
Ruijie(Config # ip http authentication local
```

| | |
|-----------------------|--|
| | |
| enable service | |

ip http port

HTTP

ip http port

ip http port *number*

number HTTP Server 80

HTTP

no ip http port

HTTP 8080

```
Ruijie(Config # ip http port 8080
```

| | |
|-----------------------|--|
| | |
| enable service | |

- ' **clock set**
- ' **clock update-calendar**
- ' **exec-timeout**
- ' **hostname**
- ' **session-timeout**
- ' **show clock**
- ' **show cpu**
- ' **show cpu slot**
- ' **show memory**
- ' **show memory slot**
- ' **show running-config**
- ' **show startup-config**
- ' **reload**
- ' **show reload**
- ' **prompt**
- ' **banner motd**
- ' **banner login**
- ' **speed**
- ' **show line**
- ' **write**

clock set

clock set

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

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

clock set

2008 1 30 05 54 43

Ruijie# **clock set** 05:54:43 1 30 2008

Ruijie# **show clock**

05:54:43 CHN-BJ Wed 2008-01-30

| | |
|-------------------|--|
| | |
| show clock | |

clock update-calendar

clock clock privileged EXEC clock
update-calendar clock clock
clock update-calendar

calendar

clock

clock

Ruijie# **clock update-calendar**

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
```

hostname

```
hostname

hostname name

name
63
```

BeiJingAgenda

Ruijie(config)# **hostname** *BeiJingAgenda*
BeiJingAgenda(config)#

session-timeout

LINE
session-timeout **no session-timeout** LINE

session-timeout *minutes* [*seconds*]
no session-timeout

minutes
seconds

0 min

LINE

LINE

LINE

line vty 0 5 30 :

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

show clock

show clock

show clock [detail]

detail

detail

show clock

```
Ruijie# show clock detail
05:54:43 CHN-BJ Wed 2008-01-30
Clock read from calendar wy6n system boot.
```

| | |
|-----------|--|
| | |
| clock set | |

show cpu

CPU

show cpu

CPU

show cpu

```
Ruijie# show cpu
CPU utilization in five seconds: 0%
CPU utilization in one minute : 35%
CPU utilization in five minutes: 33%
NO   5Sec  1Min  5Min  Process
0    0%   0%   0%   LISR INT
1    0%   0%   0%   HISR INT
2    0%   0%   0%   ktimer
3    0%   0%   0%   atimer
4    0%   0%   0%   printk_task
```

```

 5   0%   0%   0%   waitqueue_process
 6   0%   0%   0%   tasklet_task
 7   0%   0%   0%   kevents
 8   0%   0%   0%   snmpd
 9   0%   0%   0%   snmp_trapd
10   0%   0%   0%   mtdblock
11   0%  35%  33%   gc_task
12   0%   0%   0%   Context
13   0%   0%   0%   kswapd
14   0%   0%   0%   bdflush
15   0%   0%   0%   kupdate
16   0%   0%   0%   buffcopy
17   0%   0%   0%   ll_mt
18   0%   0%   0%   ll main process
19   0%   0%   0%   ISDN MAIN
20   0%   0%   0%   tnet
21   0%   0%   0%   Tarptime
22   0%   0%   0%   gra_arp
23   0%   0%   0%   Ttcptimer
24   0%   0%   0%   gk process
25   0%   0%   0%   rl_con
26 100%  65%  67%   idle

```

show cpu

| | |
|---------------------------------|-------|
| | |
| CPU utilization in five seconds | 5 CPU |
| CPU utilization in one minute | 1 CPU |
| CPU utilization in five minutes | 5 CPU |
| NO | |
| Process | |
| 5Sec | 5 CPU |
| 1Min | 1 CPU |
| 5Min | 5 CPU |

| | |
|--|--|
| | |
|--|--|

show cpu slot

CPU

show cpu slot [*slot-number*]

slot-number

CPU

show memory

Ruijie# **show memory**

Physical Memory: 256M total

Image: 78M

Application Memory: 178M (57M used 121M available)

Utilization: 52.7%

show memory

| Physical Memory | |
|--------------------|--|
| Image | |
| Application Memory | used available available |
| Utilization | |

| show memory slot | |
|-------------------------|--|

show memory slot

show memory slot [*slot-number*]

slot-number

1 1

```
Ruijie# show memory slot 1
Physical Memory: 256M total
Image: 45M
Application Memory: 211M (55M used 156M available)
Utilization: 39.1%
```

2

```
ruijie# show memory slot
slot 1 memory information
Physical Memory: 256M total
Image: 45M
Application Memory: 211M (55M used 156M available)
Utilization: 39.1%
slot 3 memory information
Physical Memory: 256M total
Image: 45M
Application Memory: 211M (57M used 154M available)
Utilization: 39.8%
```

| | |
|--------------------|--|
| | |
| show memory | |

show running-config

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

show reload

reload

show

show reload

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

prompt

prompt

no prompt

prompt *string*

string

32

EXEC

rgnos

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

rgnos

banner motd

banner motd

no banner motd

banner motd *c message c*

c

message

Ruijie(config)

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

banner login

banner login

no banner login

banner login *c message c*

c

message

G!5LO) ŪNI μ

```
Ruijie(config)
Ruijie(config)# banner login $ enter your password $
```

speed

```
no speed
speed speed
```

```
Speed                               bps
    9600  19200  38400  57600  115200
    9600
```

9600

57600 bps

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

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
```

write

write

write [memory | network | terminal]

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

memory

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

| | |
|----------------------------|--|
| | |
| show running-config | |
| copy | |

LINE

LINE

line

LINE

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

LINE

LINE VTY 1 3 LINE

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

line vty

VTY

no

VTY

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

VTY 5 0--4

VTY

VTY 20 VTY 0--19

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

VTY 10 VTY 0—9

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

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 |

NONE VTY TTY
default transport input

Line

| | | | |
|-----------------------------|--------------------------------|---------------------|--|
| | Line | VTY | |
| VTY | show running | Line | |
| input | default transport input | no transport | |
| transport input none | LINE | | |

line vty 0 4 telnet

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

| | |
|---------------------|--|
| | |
| show running | |

RGOS10.1

access-class

| | | | |
|---------------------------|------------|------------------------|---------------|
| Line | ACL | access-class | <i>acl-no</i> |
| { in out } | Line | no access-class | |
| <i>access-list-number</i> | {in out} | LINE | ACL |

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

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

Line

LINE

CLI

copy tftp

ping
2 5 100Byte
IP !
. ping
ping
ping
DNS

ping

Ruijie# **ping** 192.168.5.1

| | |
|-------------------|------|
| <i>ip-address</i> | IPv4 |
| <i>number</i> | |

```

3      192.168.110.1    16 msec  12 msec  16 msec
4      * * *
5      61.154.8.129    12 msec  28 msec  12 msec
6      61.154.8.17     8 msec   12 msec  16 msec
7      61.154.8.250    12 msec  12 msec  12 msec
8      218.85.157.222  12 msec  12 msec  12 msec
9      218.85.157.130  16 msec  16 msec  16 msec
10     218.85.157.77   16 msec  48 msec  16 msec
11     202.97.40.65    76 msec  24 msec  24 msec
12     202.97.37.65    32 msec  24 msec  24 msec
13     202.97.38.162   52 msec  52 msec  224 msec
14     202.96.12.38    84 msec  52 msec  52 msec
15     202.106.192.226 88 msec  52 msec  52 msec
16     202.106.192.174 52 msec  52 msec  88 msec
17     210.74.176.158 100 msec 52 msec  84 msec
18     202.108.37.42   48 msec  48 msec  52 msec
Ruijie#

```

```

                                     IP
202.108.37.42                        1 17
4

```

```
Ruijie# traceroute www.ietf.org
```

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

```
< press Ctrl+C to break >
```

```
Tracing the route to 64.170.98.32
```

```

1      192.168.217.1    0 msec  0 msec  0 msec
2      10.10.25.1      0 msec  0 msec  0 msec
3      10.10.24.1      0 msec  0 msec  0 msec
4      10.10.30.1     10 msec  0 msec  0 msec
5      218.5.3.254    0 msec  0 msec  0 msec
6      61.154.8.49    10 msec  0 msec  0 msec
7      202.109.204.210 0 msec  0 msec  0 msec
8      202.97.41.69   20 msec  10 msec  20 msec
9      202.97.34.65   40 msec  40 msec  50 msec
10     202.97.57.222   50 msec  40 msec  40 msec
11     219.141.130.122 40 msec  50 msec  40 msec
12     219.142.11.10   40 msec  50 msec  30 msec
13     211.157.37.14   50 msec  40 msec  50 msec
14     222.35.65.1     40 msec  50 msec  40 msec
15     222.35.65.18    40 msec  40 msec  40 msec
16     222.35.15.109   50 msec  50 msec  50 msec
17     * * *
18     64.170.98.32    40 msec  40 msec  40 msec

```

port

aggregate port **show interfaces** **show**
interfaces aggregateport

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

| | |
|------------------------|--|
| | |
| show interfaces | |

interface fastEthernet

interface fastEthernet *mod-num/port-num*

mod-num/port-num /

no **show interfaces**
show interfaces fastEthernet

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

| | |
|------------------------|--|
| | |
| show interfaces | |

interface giagbitEthernet

interface gigabitEthernet *mod-num/port-num*

mod-num/port-num /

no
show interfaces gigabitEthernet

show interfaces

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

| | |
|------------------------|--|
| | |
| show interfaces | |

interface tenGigabitEthernet

10G

interface tenGigabitEthernet *mod-num/port-num*

mod-num/port-num /

no
show interfaces tenGigabitEthernet

show interfaces

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

medium-type { fiber | copper }
no medium-type

fiber
copper

Ap SVI

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

| | |
|------------------------|--|
| | |
| show interfaces | |

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

show interfaces

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

| | |
|-----------------|--|
| | |
| show interfaces | |

shutdown

no

shutdown
no shutdown

Ap SVI
show interfaces

Ap 1

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

Ap 1

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

| | |
|------------------------|--|
| | |
| clear interface | |
| show interfaces | |

/ 说明:

no shutdown

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 | |

duplex

no

duplex {auto | full | half}

no duplex

auto

full

half

show interfaces

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

| | |
|------------------------|--|
| | |
| show interfaces | |

flowcontrol

no

flowcontrol {auto | off | on}

no flowcontrol

auto
off
on

show interfaces

1/1

```
Ruijie(config)# interface gigabitethernet 1/1  
Ruijie(config-if)# flowcontrol on
```

| | |
|------------------------|--|
| | |
| show interfaces | |

mtu

mtu

Mtu num

num 64 9216(65536)

1500

mtu

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

| | |
|-----------------|--|
| | |
| show interfaces | |

carrier-delay

```
no carrier-delay
no carrier-delay [ seconds ]
no carrier-delay

seconds 0 60

2

DCD DCD Down Up
DCD

DCD

5

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

clear counters

clear counters [*interface-id*]

interface-id

show interfaces

clear counters

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

| | |
|------------------------|--|
| | |
| show interfaces | |

clear interface

clear interface *interface-id*

interface-id

Aggregate port Switch Port,L2 Aggregate port ,Routed port,L3
shutdown **no shutdown**

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

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 |

| | Trunk | VLAN | vlan-list |
|---------------------|---------------------------|------------------|-----------|
| | VLAN | VLAN | VLAN |
| | VLAN ID | VLAN ID | |
| | - | 10-20 | , |
| | | 1-10,20-25,30,33 | |
| allowed vlan | allB4C6814D402C80F56>. ID | | |
| <i>vlan-list</i> | | | |

Protected is disabled
Vlan lists is
1,3-4094



show interfaces

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

line-detect

line-detect

line-detect

line-detect

```
Ruijie(config)#interface gigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)#line-detect
```

```
Interface : GigabitEthernet 0/1
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
```

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

show interfaces

Ruijie# **show interfacesgigabitEthernet 0/1 switchport**

Aggregate Port

port-group

Aggregate Port no
Aggregate Port

port-group *port-group-number*

no port-group

Aggregate Port

| | |
|--------------------------|----------------------------------|
| | |
| <i>port-group-number</i> | Aggregate Port Aggregate Port |

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

no aggregateport load-balance

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

MAC

86

29

show aggregateport load-balance

| | |
|-----------------------------------|----|
| aggregateport load-balance | AP |
|-----------------------------------|----|

VLAN

name

VLAN

no

name *vlan-name*

no name

| | |
|------------------|------|
| | |
| <i>vlan-name</i> | VLAN |

VLAN

VLAN

show vlan

vlan

switch port access

switch port access VLAN
switchport access vlan VLAN

switch port trunk VLAN
 VLAN VLAN VLAN trunk port
switchport trunk
 VLAN

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

| | |
|--------------------------|---|
| | |
| switchport access | statics accessport VLAN |
| switchport trunk | trunkport native VLAN Trunk VLAN |

switchport access

access port VLAN
no VLAN

switchport access vlan *vlan-id*

no switchport access vlan

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

switchport trunk

```

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

VLAN all Native VLAN VLAN 1

Native VLAN

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

VLAN

Trunk VLAN 1 4094
 Trunk VLAN VLAN
 Trunk

show interfaces switchport

show vlan

VLAN

show vlan [id *vlan-id*]

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

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

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

| name | VLAN |
|-------------|------|

VLAN

| | |
|--------------------------|------|
| switchport access | Vlan |
|--------------------------|------|

Super-vlan

supervlan

VLAN **supervlan**

supervlan

no supervlan

no subvlan [*vlan-id-list*]

| | |
|---------------------|---|
| | A6\$2A át-r\$ H .Dq g , 'ná!WWTG"B VADDq {r\$ H Fq g ,•0 Rh...!Vr\$!™D0 I |
| <i>Vlan-id-list</i> | VLAN subvlan ID, vlan |

VLAN

no subvlan

end

Ctrl+C

exit

Ruijie(config)#

show supervlan

SuperVLAN SubVLAN

show supervlan

show supervlan id *vlan-id*

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

Ruijie# **show supervlan**

Protocol VLAN

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

protocol-vlan ipv4 addr mask addr vlan id

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

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

```
show protocol-vlan ipv4
```

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

```
no protocol-vlan ipv4
```

RGOS10.1

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

profile

num profile
type

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

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

RGOS10.1

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

show protocol-vlan

show protocol-vlan

Protocol VLAN

show vlan protocol-vlan

Ruijie# **show protocol-vlan**

RGOS10.1

PrivateVLAN

- ' **private-vlan type**
- ' **private-vlan association**
- '

private-vlan association

secondary VLAN primary VLAN

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

no private-vlan association

svlist secondary VLAN list

no primary VLAN secondary VLAN

Primary VLAN

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

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

show vlan private-vlan

RGOS10.1

private-vlan mapping

secondary VLAN SVI

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

no private-vlan mapping

svlist secondary VLAN list

no

Primary VLAN

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

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


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

switchport private-vlan mapping

private VLAN secondary VLAN

switchport private-vlan mapping *p_vid* {*svlist*|add** *svist* |**remove** *svlist*}**

no switchport private-vlan mapping

p_vid primary VID
svlist secondary VLAN list
no secondaryVLAN

secondary VLAN

VLAN

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport mode private-vlan
promiscuous
Ruijie(config-if)# switchport private-vlan mapping 22
add 23-25
```

Private VLAN

switchport mode hybrid

switchport mode hybrid

no switchport mode

hybrid

no hybrid

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

RGOS10.1

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

switchport hybrid allowed vlan

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

vlist

no switchport hybrid allowed vlan

hybrid

no hybrid

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

RGOS10.1


```
Ruijie# show frame-tag tpid
Port      tpid
-----  -
Gi0/3     0x9100
```

show frame-tag tpid

RGOS10.1

inner-priority-trust enable

```
          /          tag          tag
inner-priority-trust enable
no inner-priority-trust enable

no          tag          tag
```

```
Ruijie(config)# interface gigabitEthernet 0/2
Ruijie(config-if)# inner-priority-trust enable
```

show inner-priority-trust

RGOS10.1 S37

```
' show frame-tag tpid
' show inner-priority-trust
```

show frame-tag tpid

private VLAN

show frame-tag tpid [[

MAC

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

mac-address-table aging-time

no

mac-address-table aging-time *seconds*

no mac-address-table aging-time

seconds

300

show mac-address-table aging-time

show mac-address-table dynamic

MAC

clear mac-address-table filtering

clear mac-address-table filtering [**address** *mac-addr*

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

mac-address-table static

no

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

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

| | |
|---------------------|---------------------|
| | |
| <i>mac-addr</i> | MAC |
| <i>vlan-id</i> | VLAN |
| <i>interface-id</i> | (AggregatePort) |

```

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

```

```

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 | |

mac-address-table filtering

no

```

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

```

```

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

```

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

mac-address-table notification

MAC **no**

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

no mac-address-table notification [interval | history-size]

| | |
|----------------------------------|----------|
| | |
| interval 1 | MAC Trap |
| history-size <i>value</i> | MAC 50 |

1

50

MAC

Trap

snmp-server

enable traps mac-notification

MAC

Trap

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

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

snmp trap mac-notification

MAC

no

snmp trap mac-notification {added | removed}

no snmp trap mac-notification {added | removed}

| added | |
|----------------|--|
| removed | |

show mac-address-table notification interface

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

Ruijie(config-if)# **snmp trap mac-notification added**

| | |
|--|-----|
| | |
| mac-address-table notification | MAC |
| show mac-address-table notification | MAC |

address-bind

ip mac .

address-bind *ip-address mac-address*

no address-bind *ip-address*

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

address-bind ip-address

address-bind *ip-address mac-address*

no address-bind *ip-address*

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

```

IP          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 | |

address-bind uplink

```

ip          mac          .

```

address-bind uplink *intf-id*

no address-bind uplink *intf-id*

MAC

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

IP IP MAC IP
MAC IP MAC IP
(

Ruijie(config)# **address-bind install**

| show address-bind uplink | |
|----------------------------------|--|
| show address-bind summary | |

RGOS10.1

address-bind ipv6-mode

ip IP

address-bind ipv6-mode compatible

address-bind ipv6-mode loose

address-bind ipv6-mode strict

:

Ipv4

IPV6

IP 192.168.5.2 00d0.f822.33aa
IPV6

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

```
' show mac-address-table address  
' show mac-address-table aging-time  
' show mac-address-table count  
' show mac-address-table dynamic  
' show mac-address-table filtering  
' show mac-address-table interface  
' show mac-address-table notification  
' show mac-address-table static  
' show mac-address-table vlan  
' show address-bind  
' show address-bind summary  
' show address-bind [ip-address ip | mac-address mac]
```

show mac-address-table address

MAC

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

| | |
|-------------------------|------------|
| | |
| address mac-addr | MAC |

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

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

| | |
|---|------|
| | |
| 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 | |

show mac-address-table aging-time

show mac-address-table aging-time

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

| | |
|-------------------------------------|--|
| | |
| mac-address-table aging-time | |

show mac-address-table count

show mac-address-table count

```
Ruijie# show mac-address-table count
Dynamic Address Count : 51
Static Address Count : 0
Filter Address Count : 0
Total Mac Addresses : 51
Total Mac Address Space Available: 8139
```

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

show mac-address-table dynamic

```
show mac-address-table dynamic [address mac-addr] [interface
interface-id] [vlan vlan-id]
```

| | |
|---------------------|-----------------|
| | |
| <i>mac-addr</i> | MAC |
| <i>vlan-id</i> | VLAN |
| <i>interface-id</i> | (AggregatePort) |

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

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

| | |
|--|--|
| | |
| clear mac-address-table dynamic | |

show mac-address-table filtering

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

| | |
|--|--|
| | |
|--|--|

mac-addr

Ruijie# **show mac-address-table filtering**

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

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

show mac-address-table interface

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

| | |
|---------------------|------------------|
| | |
| <i>interface-id</i> | (AggregatePort) |
| <i>vlan-id</i> | VLAN |

Ruijie# **show mac-address-table interface**

gigabitethernet 1/1

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

| | |
|--|--|
| | |
|--|--|

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

show mac-address-table notification

MAC

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

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

MAC

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

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

```
Ruijie# show mac-address-table notification history
```

```

History Index : 0
MAC Changed Message :
Operation:ADD Vlan : 1 MAC Addr: 00f8.d012.3456
GigabitEthernet 3/1
    
```

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

show mac-address-table static

```

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

| | |
|---------------------|-----------------|
| | |
| <i>mac-addr</i> | MAC |
| <i>vlan-id</i> | VLAN |
| <i>interface-id</i> | (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 vlan

VLAN

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

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

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

| | |
|---|--|
| 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 | |

show address-bind

show address-bind

```
Ruijie# show address-bind
Total Bind Addresses in System : 2
IP Address      Binding MAC Addr
-----
3.3.3.3         00d0.f811.1112
3.3.3.4         00d0.f811.1117
```

| | |
|--------------|--|
| | |
| address-bind | |

show address-bind summary

address-bind install

show address-bind summary

```
Ruijie# show address-bind summary
Total Bind Addresses in System : 0
Max Bind Addresses limit in System : 1000
System Address bind status:SUCCESS
```

| | |
|--------------|--|
| | |
| address-bind | |

show address-bind [ip-address *ip* | mac-address *mac*]

IP MAC

show address-bind [ip-address *ip* | mac-address *mac*]

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

| address-bind | |
|--------------|--|

DHCP Snooping

DHCP snooping

DHCP snooping

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

ip dhcp snooping

DHCP Snooping

no

DHCP snooping

[no] ip dhcp snooping

DHCP snooping

DHCP snooping

show ip dhcp snooping

DHCP snooping

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

```
Ruijie# show ip dhcp snooping

Switch DHCP snooping status  ENABLE
Verification of hwaddr field status  DISABLE
DHCP snooping database write-delay time: 0 seconds
DHCP snooping option 82 status: ENABLE
DHCP snooping Support Bootp bind status: ENABLE
Interface                      Trusted
-----
FastEthernet0/11                yes
```

| | |
|------------------------------|---------------|
| | |
| show ip dhcp snooping | DHCP snooping |

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
-----
FastEthernet0/11                yes
    
```

| | |
|------------------------------|---------------|
| | |
| show ip dhcp snooping | DHCP snooping |

ip dhcp snooping verify mac-address

```

MAC
no          MAC
    
```

[no] ip dhcp snooping verify mac-address

```

MAC          DHCP CLIENT
MAC          DHCP CLIENT MAC
MAC

DHCP        MAC
    
```

```

Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping verify mac-address
Ruijie(config)# end
    
```

```
Ruijie# show ip dhcp snooping

Switch DHCP snooping status  ENABLE
Verification of hwaddr field status  DISABLE
DHCP snooping database write-delay time: 0 seconds
DHCP snooping option 82 status: ENABLE
DHCP snooping Support Bootp bind status: ENABLE
Interface                      Trusted
-----                      -
FastEthernet0/11                yes
```

| | |
|------------------------------|---------------|
| | |
| show ip dhcp snooping | DHCP snooping |

ip dhcp snooping binding

```
DHCP snooping
no
```

```
[no] ip dhcp snooping binding mac-address vlan vlan-id ip
ip-address interface interface-id
```

```
mac-address          MAC
vlan-id              VLAN
ip-address           IP
interface-id
```

```
DHCP                      DHCP snooping
```

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping binding 00d0.f801.0101
```

```

vlan 1 ip 192.168.4.243 interface fastethernet 0/1
Ruijie(config)# end
Ruijie# show ip dhcp snooping binding
Total number of bindings: 1
MacAddress IpAddress Lease Type VLAN Interface
-----
00d0.f801.0101 192.168.1.1 - static 1 fastethernet 0/1
    
```

| | |
|--------------------------------------|---------------|
| | |
| show ip dhcp snooping binding | DHCP snooping |

ip dhcp snooping information option

```

DHCP          option82
              no
    
```

[no] ip dhcp snooping information option

```

DHCP          option82      DHCP
DÀ4^ãYQ,qM@iÀ          option82
    
```

```

DHCP snooping Support Bootp bind status: ENABLE
Interface                Trusted
-----                -----
FastEthernet0/11        yes
    
```

| | |
|------------------------------|---------------|
| | |
| show ip dhcp snooping | DHCP snooping |

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
    
```

```

                DB g                FLASH
    
```

DHCP Snooping

```
DHCP snooping option 82 status: ENABLE
DHCP snooping Support Bootp bind status: ENABLE
Interface                               Trusted
-----                               -
FastEthernet0/11                        yes
```

DHCP snooping

DHCP snooping

ip dhcp snooping trust

ip dhcp snooping address-bind

ip dhcp snooping trust

```
DHCP snooping          TRUST
                        no          UNTRUST
```

[no] ip dhcp snooping trust

UNTRUST

```
TRUST          DHCP          TRUST
DHCP          DHCP          UNTRUST
```

```
fastethernet 0/1 TRUST
```

```
Ruijie# configure terminal
```

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

```
Ruijie(config-if)# ip dhcp snooping trust
```

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

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

```
Switch DHCP snooping status  ENABLE
```

```
Verification of hwaddr field status  DISABLE
```

```
DHCP snooping database write-delay time: 0 seconds
```

```
DHCP snooping option 82 status: ENABLE
```

```
DHCP snooping Support Bootp bind status: ENABLE
```

```
Interface          Trusted
```

```
-----          -----
```

```
FastEthernet0/11          yes
```

| | |
|------------------------------|---------------|
| | |
| show ip dhcp snooping | DHCP snooping |

ip dhcp snooping address-bind

no

[no] ip dhcp snooping address-bind

| Snooping | MAC | IP | IP VLAN ID | DHCP |
|----------|-----|----|---------------|------|
|----------|-----|----|---------------|------|

fastethernet 0/1

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip dhcp snooping address-bind
Ruijie(config-if)# end
```

DHCP snooping

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

show ip dhcp snooping

DHCP Snooping

show ip 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
-----                               -
FastEthernet0/11                        yes
```

| | |
|--|-------------------|
| | |
| ip dhcp snooping | DHCP snooping |
| ip dhcp snooping verify mac-address | DHCP snooping mac |
| ip dhcp snooping write-delay | flash |

DHCP snooping

DHCP snooping

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

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

IGMP Snooping

```
profile deny
```

```
profile
```

```
profile range  
profile profile
```

```
profile  
deny permit
```

```
224.2.2.2 profile :
```

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

```
Ruijie(config-profile)#
```

profile

```

profile
profile profile range
profile profile
deny profile
permit
    
```

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 | |

range

```

profile profile range
no Ì,Ì G Q , Ð Ì,Ì G Q , Ð
    
```

224.2.2.2~224.2.2.244 profile :

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

| | |
|------------------------|----------------|
| | |
| ip igmp profile | profile |
| deny | profile deny |
| permit | profile permit |

ip igmp profile

profile-number igmp profile

```
ip igmp profile profile-number
no ip igmp profile profile-number
```

profile-number profile 1-65535

profile

1 profile profile

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

| | |
|--|--|
| | |
|--|--|

| | |
|--|---------|
| range | profile |
| ip igmp snooping filter <i>profile-num</i> | |

ip igmp snooping filter

profile no profile

ip igmp snooping filter *profile-number*

no ip igmp snooping filter *profile-number*

disable

IGMP Snooping
VLAN

VLAN

igmp snooping ivgl

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

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

ip igmp snooping limit-ipmc vlan server

IP

ip igmp snooping

IP

ip

```
Ruijie(config)# ip igmp snooping limit-ipmc vlan 1
address 224.0.0.1 server 192.168.4.243
```

| | |
|--|----------|
| | |
| ip igmp snooping source-check default-server | IP IP |

ip igmp snooping max-groups

```

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

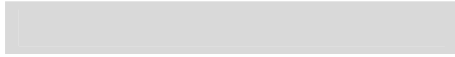
number 0 – 4294967294

```

IGMP Report

0/1 100

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



profile-num profile

profile

profile

profile

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

| | |
|---|--|
| | |
| ip igmp snooping vlan mrouter interface | |

ip igmp snooping vlan mrouter learn pim-dvmrp

IGMP query/dvmrp PIM

ip igmp snooping vlan mrouter

learn no

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

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

vid

vlan id

igmp snooping

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

| ip igmp snooping vlan <i>vid</i> mrouter learn pim-dvmrp | |
|---|--|

ip igmp snooping dyn-mr-aging-time

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

time

ip igmp snooping vlan static interface

```

igmp snooping
IGMP
snoping vlan static interface          no          ip igmp
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
interface fastEthernet 0/1
    
```

| | |
|---|--|
| | |
| ip igmp snooping vlan mrouter interface | |

ip igmp snooping fast-leave enable

```

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

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

disable

fast-leave

IGMP leave

igmp snooping fast-leave

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

```
Ruijie(config)#
```


MSTP

spanning-tree

MSTP

no

MSTP

spanning-tree

MSTP

no

spanning tree

spanning-tree [**forward-time** *seconds*

```
Ruijie(config)# spanning-tree
BridgeForwardDelay
Ruijie(config)# spanning-tree forward-time 10
```

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

spanning-tree bpdupfilter

```
BPDU filter enabled
disabled BPDU filter
spanning-tree bpdupfilter [enabled | disabled]
```

```
enabled BPDU filter
Disabled BPDU filter
```

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

```
show spanning-tree interface STP
```

spanning-tree bpduguard

```
BPDU Guard enabled
disabled BPDU Guard
```

spanning-tree bpduguard [enabled | disabled]

| | |
|-----------------|------------|
| enabled | BPDU Guard |
| disabled | BPDU Guard |

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

show spanning-tree interface STP

spanning-tree link-type

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

```
show spanning-tree interface STP
```

spanning-tree max-hops

| Count | BPDU Instance | BPDU Region | Max-hops |
|-------|---------------|-------------|----------|
| | | no | |

```
spanning-tree max-hops hop-count
```

```
no spanning-tree max-hops
```

| | | | |
|------------------|------|--|------|
| <i>hop-count</i> | BPDU | | 1 40 |
|------------------|------|--|------|

| | |
|------------------|----|
| <i>hop-count</i> | 20 |
|------------------|----|

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

| | | |
|--------------|----------|----|
| MST Instance | Max-hops | 10 |
|--------------|----------|----|

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

```
show spanning-tree mst
```

```
show spanning-tree MSTP
```

spanning-tree mode

STP no

spanning-tree mode [stp | rstp | mstp]

no spanning-tree mode

stp Spanning tree protocol(IEEE 802.1d)

rstp Rapid spanning tree protocol(IEEE 802.1w)

mstp Multiple spanning tree protocol(IEEE 802.1s)

MSTP

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

show spanning-tree

spanning-tree mst configure

no MST MSTP Region
name revision vlan map

spanning-tree mst configuration

no spanning-tree mst configuration

instance vlan Vlan Instance 0
name
revision 0

```

end                               Ctrl+C
exit

MST

instance instance-id vlan vlan-range Vlan MST Instance
instance-id 0 64 vlan 1 4095 vlan-range
vlan VLAN ID VLAN ID
VLAN ID instance 10 vlan 2,3,6-9
VLAN 2 3 6 7 8 9 Instance 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
```

spanning-tree mst cost

```
Instance no
```

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

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

```
instance-id Instance 0 64
```

```
cost 1 200 000 000
```

```
Instance-ID 0
```

```
Interface
```

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

cost

Instance 3

400

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

```
Ruijie(config-if)# spanning-tree mst 3 cost 400
```

```

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

```

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

```

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

```

spanning-tree mst priority

Instance no

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

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

```

instance-id Instance      0 64
priority                0, 4096,8192, 12288, 16384, 20480,
24576, 28672, 32768, 36864, 40960, 45056, 49152,53248, 57344
61440    16                4096

```

```

instance-id      0
priority         32768

```

Instance 20 8192

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

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

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

spanning-tree reset

```
spanning-tree           no  
spanning-tree reset
```


spanning-tree portfast

```
Portfast disabled
Portfast
spanning-tree portfast [disabled]
disabled Portfast
```

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

```
show spanning-tree interface STP
```

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

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

spanning-tree portfast default

Portfast no
Portfast

spanning-tree portfast default

no spanning-tree portfast default

Portfast

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

```
show spanning-tree interface STP
```

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
```

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
```

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
```

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
```

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
```

spanning-tree guard none

guard

no

guard

```
spanning-tree guard none
```

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

guard

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

spanning-tree autoedge

Autoedge

disabled

Autoedge

```
spanning-tree autoedge [disabled]
```

disabled

Autoedge


```
Ruijie(config)# clear spanning-tree detected-protocols
```

```
show spanning-tree interface           STP
```

spanning-tree compatible enable

MSTI

```
spanning-tree compatible enable
```

```
no spanning-tree compatible enable
```

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

show spanning-tree

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

```
summary          MSTP      instance  
Inconsistentports                block  
forward-time      BridgeForwardDelay  
hello-time        BridgeHelloTime  
max-age           BridgeMaxAge  
max-hops          instance  
tx-hold-count     TxHoldCount  
pathcost method
```

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

```
spanningtree pathcost method  
spanning-tree forward-time      BridgeForwardDelay  
spanning-tree hello-time        BridgeHelloTime  
spanning-tree max-age           BridgeMaxAge  
spanning-tree max-hops          instance  
spanning-tree tx-hold-count     TxHoldCount
```

show spanning-tree interface

STP

show spanning-tree interface *interface-id*

Instance

| | |
|--------|--|
| switch | |
|--------|--|

switch port routed port SPAN SPAN disabled port

SPAN

show monitor SPAN

| | |
|------|----|
| SPAN | 1. |
| 1 | 1 |
| 8 | |

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

| | |
|---------------------|------|
| | |
| show monitor | SPAN |

show monitor

SPAN

show monitor [*session session_number*]

SPAN

session *session_number* 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 |
|------------------------|------|

IP

- ' ip address
- ' ip unnumbered

ip address

IP no IP

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

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



IP

255.0.0.0


```

' arp
' arp retry
' arp trusted
' arp unresolved
' arp gratuitous-send
' arp timeout
' ip proxy-arp
' service trustedarp

```

arp

```

no ARP IP MAC
no ARP MAC IP MAC
arp ip-address MAC-address type [ alias ]
no arp ip-address MAC-address type [ alias ]

```

| <i>ip-address</i> | MAC | IP | |
|--------------------|-------------|------|----|
| <i>MAC-address</i> | | 48 | |
| <i>type</i> | ARP arpa | | |
| alias | arp | RGOS | IP |

ARP

```

RGOS ARP 32 IP 48
MAC

```

clear arp-cache ARP

ARP ARP

arp 1.1.1.1 4e54.3800.0002 arpa ARP

| | |
|-----------------|-----|
| | |
| clear arp-cache | ARP |

arp retry interval

2 ARP arp no IP
1 ARP

arp retry interval *seconds*

no arp retry interval

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

ARP 1

ARP ARP ARP

ARP 30s
arp retry interval 30

| | |
|--------------------------------------|-----|
| | |
| Arp retry times <i>number</i> | ARP |

arp retry times

```

                    arp                    IP
                    ARP                    no
5 ARP

```

arp retry times *number*

no arp retry times

| | |
|---------------|-------------------------------|
| | |
| <i>number</i> | ARP <1-100> 1 ARP 1 ARP |

```

                    ARP                    ARP                    5

```

```

                    ARP
                    ARP
ARP

```

```

                    ARP
arp retry times 1
                    ARP                    1
arp retry times 2

```

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

arp trusted NUM

ARP

no

arp trusted *number*

no arp trusted

hF(REbDbáDba>hFB4701144D18215750PL590Tf(a)6A05C807e5i02cE/1a

IP

GSN ARP

ARP

ARP

500

```
arp unresolved 500
```

arp gratuitous-send interval

```
arp no
```

```
arp gratuitous-send interval seconds
```

```
no arp gratuitous-send
```

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

ARP

ARP

SVI 1

ARP

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

SVI 1

ARP

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

arp timeout

```

ARP      ARP
no

```

arp timeout *seconds*

no arp timeout

| | |
|----------------|-----------|
| | |
| <i>seconds</i> | 0-2147483 |

3600

```

ARP      IP      MAC      ARP
      ARP
ARP

```

FastEthernet 0/1

ARP

120

```

interface fastEthernet 0/1
arp timeout 120

```

| | |
|------------------------|-----|
| | |
| clear arp-cache | ARP |
| show interface | |

ip proxy-arp

```

no      ARP      ip proxy-arp
      ARP

```

ip proxy-arp
no ip proxy-arp

10.2 3

ARP

IP ARP
IP MAC

ARP

ARP

service trustedarp

config
service trustedarp

s32

ip directed-broadcast

IP ip
directed-broadcast no
ip directed-broadcast [*access-list-number*]
no ip directed-broadcast

| | |
|--|--|
| | |
|--|--|

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

IP

IP

```
' clear arp-cache
' show arp
' show arp counter
' show arp timeout
' clear ip route
' show ip arp
' show ip interface
```

clear arp-cache

```
ARP ARP IP
clear arp-cache
```

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

ARP

注意:

```
RNFP(Ruijie Network Foundation Protection, )
clear arp mac ( IP) ARP
ARP 1s
```

ARP

```
clear arp-cache
```

```
          ARP    1.1.1.1
```

```
clear arp-cache 1.1.1.1
```

```

arpa VLAN 1
Internet 192.168.195.65 0 0018.8b7b.713e
arpa VLAN 1
Internet 192.168.195.64 0 0018.8b7b.9106
arpa VLAN 1
Internet 192.168.195.63 0 001a.a0b5.3990
arpa VLAN 1
Internet 192.168.195.62 0 001a.a0b5.0b25
arpa VLAN 1
Internet 192.168.195.5 -- 00d0.f822.33b1
arpa VLAN 1

```

ARP

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

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

```

show arp 192.168.195.0 255.255.255.0

```

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

```

VLAN 1

show arp 001a.a0b5.378d

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

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
ARP
```

show arp timeout

ARP

show arp timeout

show arp timeout

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

ARP
```

clear ip route

```
IP          IP
clear ip route

clear ip route { * | networ* | f..P8pIU0D
```

show ip arp

ARP

show ip arp

show ip arp

```
Ruijie# show ip arp
Protocol Address      Age(min)Hardware      Type
Interface
Internet 192.168.7.233    23      0007.e9d9.0488  ARPA
FastEthernet 0/0
Internet 192.168.7.112   10      0050.eb08.6617  ARPA
FastEthernet 0/0
Internet 192.168.7.79    12      00d0.f808.3d5c  ARPA
FastEthernet 0/0
```

| | |
|-----------|------|
| | “_” |
| Hardware | IP |
| Type | ARPA |
| Interface | IP |

show ip interface

IP

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

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

RGOS

RGOS

RGOS

UP

UP

show ip interface

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

| | |
|------------------------------|-----------|
| | |
| IP interface state is: | "UP" |
| IP interface type is: | |
| IP interface MTU is: | MTU |
| IP address is: | IP |
| IP address negotiate is: | IP |
| Forward direct-boardcast is: | |
| ICMP mask reply is: | ICMP |
| Send ICMP redirect is: | ICMP |
| Send ICMP unreachableled is: | ICMP |
| DHCP relay is: | DHCP |
| Fast switch is: | IP |
| Route horizontal-split is: | |
| Help address is: | helper IP |
| Proxy ARP is: | ARP |
| Outgoing access list is | |
| Inbound access list is | |

show ip redirects**show ip redirects****show ip redirects**

```
Ruijie# show ip redirects  
Default Gateway: 192.168.195.1
```

| | |
|---------------------------|--|
| | |
| ip default-gateway | |

IP

IP

IP

- ' **ip mask-reply**
- ' **ip mtu**
- ' **ip redirects**
- ' **ip source-route**
- ' **ip unreachable**

ip mask-reply

RGOS

ICMP
ip mask-reply

ICMP

ip mtu

IP MTU ip mtu
no
ip mtu bytes
no ip mtu

| | |
|-------|---------------|
| | |
| bytes | IP 68~1500 |

mtu

IP IP MTU RGOS
IP MTU

RGOS IP IP IP
RFC 791
ICMP

RGOS IP

IP

no ip source-route

ip unreachable

RGOS ICMP ip
unreachables no ICMP
ip unreachables
no ip unreachables

RGOS

ICMP

RGOS
ICMP

ICMP

FastEthernet 0/1 ICMP

interface fastEthernet 0/1

IP

no ip unreachablees

DHCP

DHCP

DHCP

- ' **bootfile**
- ' **client-identifier**
- ' **client-name**
- ' **default-router**
- ' **dns-server**
- ' **domain-name**
- ' **hardware-address**
- ' **host**
- ' **ip address dhcp**
- ' **ip dhcp excluded-address**
- ' **ip dhcp ping packet**
- ' **ip dhcp ping timeout**
- ' **ip dhcp pool**
- ' **lease**
- ' **netbios-name-server**
- ' **netbios-node-type**
- ' **network** DHCPn 0s ~~0E0~~ Td.002os-node-type
 - ' **lea2_1** 1 Tf0 Tc 0 Tw -2.011 -1.731 Td<007A>Tj/TT0 1 Tf0.749 0 Td()Tj/TT

| | |
|------------------|--|
| | |
| <i>file-name</i> | |

DHCP

DHCP

DHCP

TFTP

DHCP

next-server

router.conf

bootfile router.conf

| | |
|---------------------|------------|
| | |
| ip dhcp pool | DHCP DHCP |
| next-server | DHCP IP |

client-identifier

DHCP

DHCP

client-identifier

no

client-identifier *unique-identifier*

no client-identifier

| | |
|--------------------------|--|
| | |
| <i>unique-identifier</i> | DHCP 0100.d0f8.2233.b467.6967.6162.6974.4574.686 5.726e.6574.302f.31 |

DHCP

| | DHCP | DHCP | IP | MAC |
|-----|------|----------------|----|-----------------|
| 0/1 | MAC | 00d0.f822.33b4 | | GigabitEthernet |

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

DHCP

DHCP

DHCP

DHCP

DHCP DHCP DHCP
DHCP IP

192.168.12.1

default-router 192.168.12.1

| | |
|---------------------|--------------|
| | |
| ip dhcp pool | DHCP DHCP |

dns-server

DHCP DNS DHCP
dns-server no DNS

dns-server { *ip-address* [*ip-address2...ip-address8*] |
use-dhcp-client *interface-type interface-number* }

no dns-server

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

DNS

DHCP

DNS
DNS

DHCP
DNS

RGOS

DHCP
DHCP

DNS

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 |

DHCP
no

DHCP
no

domain-name

DHCP

i-net.com.cn

domain-name i-net.com.cn

| | | |
|---------------------|------|------|
| | | |
| dns-server | DHCP | DNS |
| ip dhcp pool | DHCP | DHCP |

hardware-address

DHCP

DHCP

hardware-address no

hardware-address *hardware-address type*

no hardware-address

| | | |
|-------------------------|---|-----|
| | | |
| <i>hardware-address</i> | DHCP | MAC |
| <i>type</i> | DHCP ± ethernet ± ieee802 ± 1 10M ethernet ± 6 IEEE 802 | |

ethernet

DHCP

DHCP

ethernet MAC 00d0.f838.bf3d
 hardware-address 00d0.f838.bf3d

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

host

DHCP IP DHCP DHCP
host no DHCP IP

host *ip-address* [*netmask*]
no host

| <i>ip-address</i> | DHCP IP |
|-------------------|---------|
| <i>netmask</i> | DHCP |

IP

DHCP

IP

A

0Tr &011 0 Td()1Tc4.171 0 Td<02D7>Tj/TT0 1 Tf10 Td5(B)Tj/C2_0 1 Tf0.92 0 Td[<324F0D

```

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 |

ip address dhcp

```

PPP HDLC FR 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
RGOS PPP FR HDLC dhcp
    
```

```

FastEthernet 0 IP
    
```

```

interface fastEthernet 0
ip address dhcp
    
```

| dns-server | DHCP DNS |
|---------------------|---------------|
| ip dhcp pool | DHCP DHCP |

ip dhcp excluded-address

IP

DHCP

DHCP

| | |
|---------------------|------|
| network DHCP | DHCP |
|---------------------|------|

ip dhcp ping packet

DHCP
ip dhcp ping packet

ping
no

ip dhcp ping packet [*number*]
no ip dhcp ping packet

| | |
|--|--|
| | |
|--|--|



no lease

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

DHCP

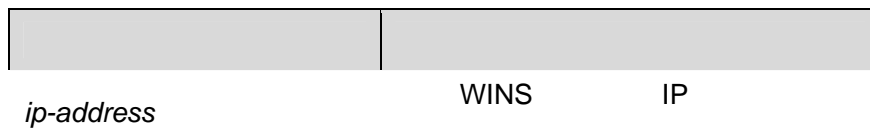
DHCP

DHCP

DHCP

DHCP p• If -€'o'14 „"S OP R@bP%!

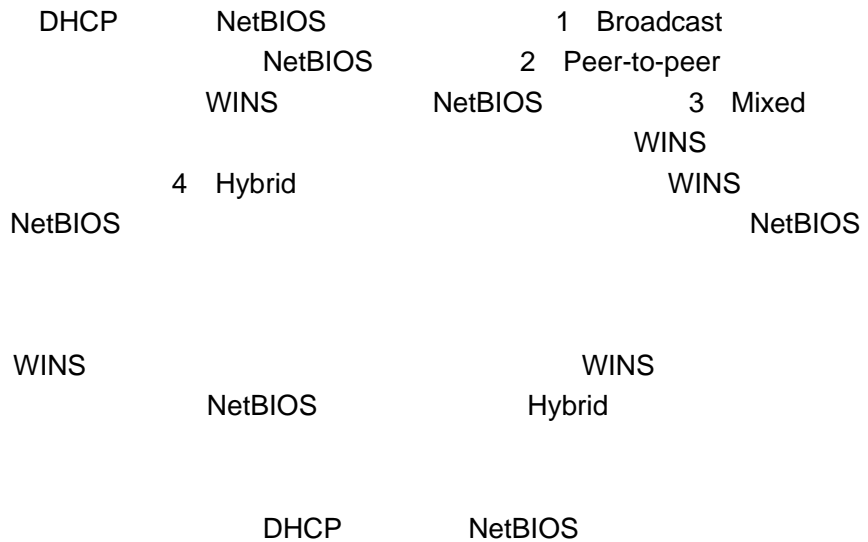
no netbios-name-server



| | | | |
|-------------|---------|--------|--------|
| | | | |
| <i>type</i> | NetBIOS | | |
| | | | 0~FF |
| | ± | 1 | b-node |
| | ± | 2 | p-node |
| | ± | 4 | m-node |
| | ± | 8 | h-node |
| | ± | | b-node |
| | ± | | p-node |
| ± | | m-node | |
| ± | | h-node | |

NetBIOS

DHCP



`netbios-node-type h-node`

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

next-server

DHCP

DHCP

next-server no**next-server** *ip-address* [*ip-address2...ip-address8*]**no next-server**

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

DHCP

DHCP

DHCP

192.168.12.4

next-server 192.168.12.4

| bootfile | DHCP |
|------------------------|-----------|
| ip dhcp pool | DHCP DHCP |
| ip help-address | Helper |
| option | RGOS DHCP |

option

```

DHCP          DHCP          option
no            option

option code { ascii string | hex string | ip ip-address }
no option

```

| <i>code</i> | DHCP |
|----------------------|-------|
| <i>ascii string</i> | ASCII |
| <i>hex string</i> | |
| <i>ip ip-address</i> | IP |

```

DHCP          TCP/IP
DHCP          option
              DHCP          312 option
DHCP          DHCP
DHCP option   RFC 2131

              19          DHCP
              IP          0          IP          1          IP
              DHCP          IP

option 19 hex 1

              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 |

service dhcp

dhcp DHCP **service**
 no DHCP

service dhcp
no service dhcp

DHCP

DHCP IP DNS
 DHCP DHCP DHCP
 DHCP DHCP DHCP

 DHCP

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

clear ip dhcp binding

DHCP

clear ip dhcp binding

```
clear ip dhcp binding { * | ip-address }
```

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

```

DHCP          DHCP          DHCP          DHCP          DHCP
dhcp pool    DHCP          DHCP          DHCP          DHCP          DHCP          DHCP          DHCP          DHCP

```

```

IP          192.168.12.100  DHCP
clear ip dhcp binding 192.168.12.100

```

| | |
|--|--|
| | |
|--|--|

| | |
|-----------------------------|------|
| show ip dhcp binding | DHCP |
|-----------------------------|------|

clear ip dhcp conflict

DHCP

clear ip dhcp conflict

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

| | |
|-------------------|------|
| | |
| * | DHCP |
| <i>ip-address</i> | IP |

DHCP

ARP ping DHCP
clear ip dhcp conflict

```
clear ip dhcp conflict *
```

| | |
|-----------------------------|------|
| | |
| ip dhcp ping packets | DHCP |

IP

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 |

debug ip dhcp client

DHCP Client

debug ip dhcp client

debug ip dhcp client

no debug ip dhcp client

dhcp client

dhcp

debug ip dhcp client

debug ip dhcp server

DHCP Server

debug ip dhcp server

debug ip dhcp server

no debug ip dhcp server

dhcp server

dhcp

debug ip dhcp server

show dhcp lease

DHCP

EXEC

show dhcp lease

show dhcp lease

IP IP
IP IP

show dhcp lease

Ruijie# **show dhcp lease**

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

Temp sub net mask: 255.255.255.0

2.[(Gse)T: 6 Tsecs, R6()enewal: 3 Tsecs, Rebind195 Twsecs

show ip dhcp binding

```

Ruijie# show ip dhcp binding
IP address      Client-Id/      Lease expiration  Type
                Hardware address
192.168.1.2    00d0.f866.4777  IDLE              Manual

```

| | DHCP | IP |
|--------------------------------|--------|-------------------|
| IP address | DHCP | IP |
| Client-Id/ Hardware address | DHCP | client identifier |
| Lease expiration | IDLE | Infinite DHCP |
| Type | Manual | Automatic |

| | DHCP |
|------------------------------|------|
| clear ip dhcp binding | DHCP |

show ip dhcp conflict

DHCP

EXEC

show ip dhcp conflict**show ip dhcp conflict**

DHCP

show ip dhcp conflict

```
Ruijie# show ip dhcp conflict
IP address      Detection Method
192.168.12.1    Ping
```

```
dhcpd excluded ipaddress
192.168.12.100
```

| IP address | DHCP IP |
|--------------------------|---------|
| Detection Method | |
| dhcpd excluded ipaddress | |

| clear ip dhcp confict | DHCP |
|-----------------------|------|

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
DHCPPREQUEST          25
DHCPCDECLINE          0
DHCPCRELEASE          1
DHCPCINFORM           150

Message                Sent
BOOTREPLY             16
DHCPCOFFER            9
DHCPCACK              7
DHCPCNAK              0

```

| Address pools | |
|--------------------------|------|
| Automatic bindings | |
| Manual bindings | |
| Expired bindings | |
| Malformed messages | DHCP |
| Message Received or Sent | DHCP |

| clear ip dhcp server statistics | DHCP |
|--|------|

option dot1x

Ip dhcp relay information option82

| | |
|---|-------------------|
| | |
| Service dhcp | DHCP |
| ip dhcp relay information option dot1x | DHCP option dot1x |

ip dhcp relay check server-id

no **ip dhcp relay check *server-id***
ip dhcp relay information check *server-id*

server-id option DHCP REQUEST
server

Ip dhcp relay check server-id

| | |
|---------------------|------|
| | |
| Service dhcp | DHCP |

ip dhcp relay suppression

```
DHCP                DHCP                no
                   DHCP relay

DHCP request        relay

1 relay
```

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

| | |
|---------------------|------|
| | |
| service dhcp | DHCP |

DNS

ip domain-lookup

DNS

no

DNS

ip domain-lookup

no ip domain-lookup

DNS

DNS

DNS

DNS

Ruijie(config)# **ip domain-lookup**

| <i>host-name</i> | |
|-------------------|----|
| <i>ip-address</i> | IP |

no ip host host-name ip-address

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

| show hosts | DNS |
|-------------------|-----|

RGOS10.1

clear host

clear host [*host-name*]

| <i>host-name</i> | “*” |
|------------------|-----|

DNS

1 ip host 2
DNS

SNTP

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

sntp enable

```

[no] sntp enable
    Enable SNTP
    Disable SNTP

```

SNTP Disable

show sntp SNTP

```
RedGiant(config)# sntp enable
```

| | |
|------------------------------|------|
| | |
| show sntp | SNTP |
| clock update-calendar | |
| clock set | |

RGOS10.0

sntp server

SNTP Server

seconds

60 --65535

1800s

show sntp

SNTP

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

| sntp enable | SNTP |
|------------------------------|------|
| show sntp | SNTP |
| clock update-calendar | |

RGOS10.0

:

show sntp

show sntp

SNTP

show sntp SNTP

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

| | |
|--------------------|------|
| | |
| sntp enable | SNTP |
| show sntp | SNTP |

RGOS10.0

NTP

NTP

NTP

- ' **no ntp**
- ' **ntp authenticate**
- ' **ntp authentication-key**
- ' **ntp disable**
- ' **ntp server**
- ' **ntp synchronize**
- ' **ntp trusted-key**

no ntp

ntp

ntp

no ntp

NTP

NTP
NTP

NTP

NTP

NTP

no ntp

| | |
|-------------------|-----|
| | |
| ntp server | NTP |

ntp authenticate

NTP NTP

ntp authenticate

no ntp authenticate

NTP

ntp authentication-key ntp trusted-key

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

| | |
|-------------------------------|--|
| | |
| ntp authentication-key | |
| ntp trusted-key | |

ntp authentication-key

NTP

NTP

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

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

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

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

1024

ID 6

ntp authentication-key 6 md5 woooooop

| ntp authenticate | |
|-------------------------|--|
| ntp trusted-key | |

ntp server

NTP

ntp disable

NTP

ntp disable

NTP

NTP

NTP

注意:

IP

NTP

no ntp

ntp server

NTP

NTP

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

no ntp server *ip-addr*

| | |
|----------------|--------|
| | |
| <i>ip-addr</i> | NTP IP |

| | | | |
|----------------|--------|-----|-------|
| <i>version</i> | NTP | 1-3 | NTPv3 |
| <i>if-name</i> | NTP | | |
| <i>keyid</i> | | | |
| prefer | Prefer | | |

NTP

NTP

8

NTP

Ntp synchronize

| ntp server | NTP |
|------------|-----|

ntp trusted-key

ID

ntp trusted-key *key-id*

no ntp trusted-key *key-id*

| <i>key-id</i> | ID |
|---------------|----|

NTP

ID

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

NTP

debug ntp

show ntp status

NTP

show ntp status

NTP

NTP

NTP

show ntp status

UDP-Helper

udp-helper enable

| | | |
|-----------------------------|-----|-----------|
| udp-helper enable | UDP | no |
| udp-helper enable | UDP | |
| UDP | | |
| udp-helper enable | | |
| no udp-helper enable | | |

ip helper-address

UDP

no

UDP

ip helper-address *address*

no ip helper-address *address*

| <i>address</i> | UDP 20 |
|----------------|--------|

UDP

20

UDP-Helper

UDP

no ip helper-address

UDP

:

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

| ip forward-protocol | UDP |
|----------------------------|-----|

RGOS10.1

ip forward-protocol

UDP UDP no

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

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

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

UDP

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

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

| udp-helper enable | UDP |
|----------------------------|-----|
| ip forward-protocol | UDP |

RGOS10.1

SNMP

SNMP

- ' **no snmp-server**
- ' **show snmp**
- ' **snmp-server chassis-id**
- ' **snmp-server community**
- ' **snmp-server contact**
- ' **snmp-server enable traps**
- ' **snmp-server host**
- ' **snmp-server location**
- ' **snmp-server packetsize**
- ' **snmp-server queue-length**
- ' **snmp-server system-shutdown**
- ' **snmp-server trap-source**
- ' **snmp-server trap-timeout**

no snmp-server

SNMP

no snmp-server

no snmp-server

SNMP

SNMP

SNMP

snmp-server chassis-id

```
SNMP                                     snmp-server
chassis-id                               no
snmp-server chassis-id text
no snmp-server chassis-id

text
```

```

ro          NMS  MIB
rw          NMS  MIB
number     0-99
           MIB  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 | |

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 |

snmp-server enable traps

SNMP NMS Trap

snmp-server enable traps

no SNMP NMS Trap

snmp-server enable traps [snmp]**no snmp-server enable traps**

snmp SNMP

snmp-server

SNMP

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

| | |
|-------------------------|------|
| | |
| snmp-server host | SNMP |

snmp-server host

snmp-server host SNMP NMS
no SNMP

snmp-server host *host-addr* **traps** [*version* {1 | 2c | 3 [*auth* | *noauth* | *priv*]}] *community-string* [**udp-port** *port-num*][*notification-type*]

no snmp-server host *host-addr*

host-addr SNMP

version snmp V1 V2C V3

auth | *noauth* | *priv* V3

community-string V3

port-num snmp

notification-type snmp

SNMP

snmp-server enable traps NMS

SNMP

[]

SNMP

SNMP

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

| | |
|--------------------------|--|
| | |
| snmp-server enable traps | |

snmp-server location

```
SNMP  
location no SNMP snmp-server
```

```
snmp-server location text
```

```
no snmp-server location
```

```
text
```

```
Ruijie(config)# snmp-server location net-technology-c  
ity 4F of A Buliding
```

| | |
|--------------------|------|
| | |
| snmp-sever contact | SNMP |

snmp-server packetsize

```
SNMP  
packetsize no snmp-sever
```

```
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 |

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 |

snmp-server system-shutdown

```
SNMP
system-shutdown no snmp-server
SNMP
snmp-server system-shutdown
no snmp-server system-shutdown
```

SNMP

```
reload/reboot SNMP RGOS
NMS
```

SNMP

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

snmp-server trap-source

```
SNMP
trap-source no snmp-server
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 user

| | | | |
|----|-----------------------|--------------|--|
| | SNMP | | snmp-server user |
| no | | | |
| | | | snmp-server user <i>username groupname</i> {v1 v2 v3 [<i>encrypted</i>] [<i>auth</i> {md5 sha} <i>auth-password</i>] [<i>priv</i> des56 <i>priv-password</i>]} [access {num name}] |
| | | | no snmp-server user <i>username groupname</i> {v1 v2c v3 } |
| | | | <i>username</i> |
| | | | <i>groupname</i> |
| | v1 v2 v3 | SNMP | v3 |
| | encrypted | | |
| | | | 16 |
| | MD5 | 16 | SHA |
| | 20 | | |
| | auth | md5 | MD5 |
| | SHA | | sha |
| | <i>auth-password:</i> | | 32 |
| | priv | des56 | 56 |
| | <i>priv-password</i> | | DES |
| | | | 32 |
| | | snmpV3 | md5 |
| | | | DES |
| | | | Ruijie(config)# snmp-server user user-2 mib2user v3 auth md5 authpasstr priv des56 despasstr |



| | |
|-----------------------|------|
| show snmp user | SNMP |
|-----------------------|------|

snmp-server group

| | |
|---|--------------------------|
| SNMP | snmp-server group |
| no | |
| snmp-server group <i>groupname</i> {v1 v2c v3 { <i>auth</i> <i>noauth</i> <i>priv</i> }} | |
| [<i>read readview</i>][<i>write writeview</i>] [<i>access</i> { <i>num</i> <i>name</i> }] | |
| no snmp-server group <i>groupname</i> {v1 v2c v3 } | |
| <i>v1 v2c v3</i> | SNMP |
| <i>auth</i> | v3 |
| <i>noauth</i> | v3 |
| <i>priv</i> | v3 |
| <i>readview</i> | |
| <i>writeview</i> | |

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

| | |
|------------------------|------|
| | |
| show snmp group | SNMP |

snmp-server view

```
SNMP                                snmp-server view  
no  
snmp-server view view-name oid-tree {include | exclude}  
no872135423p-server vieww
```

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

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 <i>chassis-id</i> | SNMP |

RMON

RMON

' **rmon collection stats** *index* [**owner** *owner-string*]

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

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

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 interval 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



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]
```

9

```

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

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

show rmon history

show rmon history

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



```

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

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

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 <i>number</i> [log] [trap <i>community</i>] [<i>description-string</i>] | |

RIP

auto-summary (RIP)

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

auto-summary

```
RIP
RIPv1 RIPv2
RIP
```

```
' RIP
' RIP
'
```

RIPv2

RIPv1

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

| version | RIP | v1 | v2 |
|----------------|-------|----|----|
| | v1&v2 | | |

default-metric (RIP)

```

RIP
no
default-metric metric
no default-metric

```

| <i>metric</i> | 16 | 1 | 16 | metric |
|---------------|------|---|----|--------|
| | RGOS | | | |

1

```

redistribute
RIP
RIP
RIP
RIP
default-metric d

```

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

| | |
|---------------------|--|
| | |
| redistribute | |

default-information originate(RIP)

RIP 532B05(config-[tion originate(RIP)

show ip rip database RIP

RIP
set metric

route-map

metric

route-map **set metric**
 RIP

metric

注意:

RIP

RIP

ip default-network
default-information originate

RIP

RIP

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

| | |
|-----------------------------------|-----|
| | |
| ip rip default-information | |
| redistribute | RIP |

distance

RIP
no

distance

distance *distance* [*ip-address wildcard*]

no distance [*distance ip-address wildcard*]

| | |
|--|--|
| | |
|--|--|

| | | |
|-------------------|-----|---------|
| <i>distance</i> | RIP | <1-255> |
| <i>ip-address</i> | IP | |
| <i>wildcard</i> | IP | |

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

```
RIP    FastEthernet 0/0
172.16          config)#( )config-router#( )config-router#
```

distribute-list out no

distribute-list {[*access-list-number* | *name*] | **prefix** *prefix-list-name*}
out [*interface* | *protocol* [*process-id* | *process-name*]]

no distribute-list {[*access-list-number* | *name*] | **prefix** *prefix-list-name*}
out [*interface* | *protocol* [*process-id* | *process-name*]]

| | |
|---------------------------------------|-------------------------------------|
| | |
| <i>access-list-number</i> | |
| prefix <i>prefix-list-name</i> | |
| <i>interface</i> | () |
| <i>protocol</i> | () |
| <i>process-id</i> | () <i>protocol</i> OSPF OSPF id |
| <i>process-name</i> | () <i>protocol</i> ISIS ISIS |

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 | |

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
```

RIP

ip rip authentication mode RIP

RIP

**ip rip authentication
key-chain**

RIP

RIP

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

ip rip default-information

```

                                RIP                                ip rip
default-information             no
ip rip default-information only originate [metric metric-value]
no ip rip default-information

```

| | |
|-----------------------------------|------|
| | |
| only | |
| originate | |
| metric <i>metric-value</i> | 1-15 |

metric 1

```

                                ip rip default-information    RIP
default-information originate

```

注意:

```

1                                ip rip default-information    RIP

```

2 **ip rip default-information**

ethernet0/0

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

| | |
|--------------------------------------|-----|
| | |
| default-information originate | RIP |

ip rip receive enable

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

ip rip receive enable
no ip rip receive enable

RIP

no RIP
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 |

ip rip receive version

RIP

ip rip receive version

RIP

no**ip rip receive version [1] [2]****no ip rip receive version**

| 1 | RIPv1 |
|----------|-------|
| 2 | RIPv2 |

version**vesion**

RIP

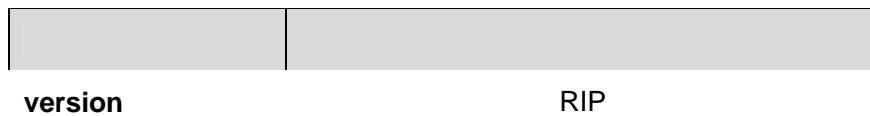
RIPv1 RIPv2
version

Fastethernet 0/0

RIPv1 RIPv2

```
Ruijie(config)# interface fastethernet 0/0
```

```
Ruijie(config-if)# ip rip receive version 1 2
```



RIP

| | |
|--------------------------|-----|
| passive-interface | RIP |
|--------------------------|-----|

ip rip send version

RIP

ip rip receive version

RIP

no

ip rip send version [1] [

ip rip v2-broadcast

RIP version 2

ip rip v2-broadcast

no

ip rip v2-broadcast

no ip rip v2-broadcast

version

version

RIP

RIPv1
version

RIPv2

Fastethernet 0/0

RIPv2

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

Ruijie(config-if)# **ip rip v2-broadcast**

| | |
|----------------|-----|
| | |
| version | RIP |

ip split-horizon (RIP)

RIP

ip split-horizon

no

RIP

ip split-horizon
no ip split-horizon

,ÖEST •Û + Û %o!fÑ»@ @

summary-address rip no

ip summary-address rip *ip-address ip-network-mask*

no ip summary-address rip *ip-address ip-network-mask*

| | |
|------------------------|----|
| | |
| <i>ip-address</i> | IP |
| <i>ip-network-mask</i> | IP |

RIP

ip summary-address rip

RIP

RIPv2

FastEthernet 1/0 172.16.0.0/16

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

Ruijie(config-if)# **ip summary-address rip** 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 |

network (RIP)

RIP

network **no****network** *network-number* [*wildcard*]**no network** *network-number* [*wildcard*]

| <i>network-number</i> | IP RIP |
|-----------------------|--|
| <i>wildcard</i> | IP 0 1 |

network-number *wildcard*

RIP

wildcard RGOS

RIP

RIP

RIP

RIP

RIP

192.168.12.0/24

172.16.0.0/24

RIP

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

neighbor (RIP)

```

RIP      IP      neighbor
no
neighbor ip-address
no neighbor
```

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

```

RIPv1      IP      255.255.255.255      RIPv2
           224.0.0.9
passive-interface
passive      RIP
```

offset-list(RIP)

```

RIP      metric
```

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

offset

RIP
offset-list

offset-list

| | |
|--------------|--------|
| | |
| <i>delay</i> | <8-50> |

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

passive

```

passive-interface default                passive
no passive-interface intface-type interface-num
    passive
ip rip send enable           ip rip receive enable
                                RIP
passive           RIP           RIP
enable           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 |

redistribute RIP

```

                                redistribute
                                no
redistribute {bgp | isis [process-name] | ospf <1-65535> | connec
    
```


ospf match match
match no

RIP

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

| | |
|-------------------------------------|--|
| | |
| default-metric <i>metric</i> | |

router rip

RIP
router rip no RIP
router rip
no router rip

RIP

RIP

async default routing

RIP

Ruijie(config)# **router rip**

| | |
|----------------------|-----|
| | |
| network (RIP) | RIP |

timers basic

```

RIP
no
timers basic update invalid flush
no timers basic
    
```

| | |
|----------------|---|
| | |
| <i>update</i> | <i>update</i> 30 <i>invalid</i> <i>Flush</i> |
| <i>invalid</i> | <i>invalid</i> <i>invalid</i> <i>invalid</i> <i>Invalid</i> 180 |
| <i>flush</i> | <i>flush</i> <i>Flush</i> RIP <i>invalid</i> 120 |

30 180 120

RIP RIP

RIP **show ip rip**

RIP

```

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

```

注意:

2Mbps

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

```

RIP

RIP 2

Ruijie(config)# **router rip**

Ruijie(config-router)# **version 2**



RIP

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

show ip rip database

RIP

show ip rip database**show ip rip database** [*network-number* {*network-mask*}]

| <i>network-number</i> | |
|-----------------------|--|
| <i>network-mask</i> | |

RIP

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

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
```

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

show ip rip external

RIP

show ip rip external

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

| | |
|---|------|
| | |
| bgp connected isis ospf static | |
| <i>process-name</i> | ISIS |
| <i><1-65535></i> | OSPF |

RIP

OSPF

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)# **no area 2**

| network area | OSPF OSPF |
|--------------|-----------|

area authentication

OSPF **area authentication**
no OSPF

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

no area *area-id* authentication

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

RGOS

OSPF OSPF

3 í ñ u Đ C 5

message-digest-key

MD5

OSPF

0

MD5

backbone

Ruijie(config)# **interface FastEthernet 0/0**Ruijie(config-if)# **ip address 192.168.12.1**
255.255.255.0Ruijie(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

| |
|-------------|
| <i>cost</i> |
|-------------|

STUB

NSSA

no area *area-id* **filter-list** [**access** *acl-name* | **prefix** *prefix-name*] [**in** | **out**]

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

ABR

ABR

area 1 172.22.0.0/8

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

area *area-id* **nssa** [**no-redistribution**] [**default-information-originate** [**metric** <0-16777214> | **metric-type** <1-2>]] [**no-summary**]
no area *area-id* **nssa** [**no-redistribution**][**default-information-originate**] [**no-summary**]

| | |
|--------------------------------------|-----------------------------------|
| | |
| area-id | NSSA |
| no-redistribution | ABR nssa nssa |
| default-information-originate | nssa ABR ASBR 7 LSA NSSA |
| no-summary | (ABR) nssa nssa 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
ASBR ABR nssa
NSSA LSA
ABR no-summary ABR NSSA
summary LSAs Type-3 LSA
area default-cost NSSA ABR
NSSA
NSSA 1

1

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



RFC1583

cost

cost

ABR

advertise

not-advertise

OSPF

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 172.16.16.0 255.2
55.240.0
```

area stub

OSPF

area stub no

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

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



no-summary

ABR

area virtual-link

OSPF
no

area virtual-link

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*

| <i>area-id</i> | OSPF IP |
|---|------------------|
| <i>router-id</i> | show ip ospf |
| dead-interval <i>seconds</i> | 40 |
| hello-interval <i>seconds</i> | OSPF Hello 10 |
| retransmit-interval <i>seconds</i> | OSPF LSA 5 |

```

dead-interval 40
hello-interval 10
retransmit-interval 5
transmit-delay 1
        ;
    
```

OSPF

```

                ABR          ABR
                Stub Area    NSSA
    
```

```

router-id OSPF
show ip ospf neighbor
    
```

```

router-id
    Loopback
    
```

```

area virtual-link
    OSPF
    
```

```

area authentication
    
```

1

2.2.2.2

```

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

digest

```
Ruijie(config-router)# area 1 virtual-link 1.1.1.1 message-digest-key 1 md5 hello
```

| area authentication | OSPF |
|----------------------------|------|
| show ip ospf | OSPF |

auto-cost

no

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

no auto-cost [reference-bandwidth]

| <i>ref-bw</i> | Mbps : 1-4294967 |
|---------------|---------------------|

100Mbps

(,) . default auto-cost no

auto-cost

OSPF 1

Ruijie# **clear ip ospf 1 process**

compatible rfc1583

AS

RFC1583

RFC2328

commpatible rfc1583

no commpatible rfc1583

| | |
|--|--|
| | |
| | |

RFC1583

rfc 2328

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

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

| | |
|---------------------|------|
| | |
| show ip ospf | ospf |

default-information originate OSPF

OSPF

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

always

OSPF

```

1          1          2          show ip route
1
STUB

          OSPF          OSPF
          1          50

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

| | |
|------------------------------|------|
| | |
| show ip ospf database | OSPF |
| show ip route | IP |

default-metric

```

          OSPF
default-metric          no
default-metric metric
no default-metric
    
```

| | |
|---------------|------|
| | |
| <i>metric</i> | OSPF |

default-metric

redistribute

default-metric
OSPF

default-information originate

OSPF

50

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

| | |
|---------------------|------|
| | |
| redistribute | |
| show ip ospf | ospf |

distance ospf

OSPF

distance ospf {intra-area <1-255> | inter-area <1-255> | external <1-255>}

no distance ospf

| | |
|---------------------------------|-----|
| | |
| intra-area <1-255> | 110 |
| inter-area <1-255> | 110 |
| external <1-255> | 110 |

110

OSPF

OSPF

distribute-list out redistribute route-map
OSPF
redistribute

OSPFv2

MIB SNMP OSPFv2

```

SNMP 100 OSPFv2
Ruijie(config)# router ospf 100
Ruijie(config-router)# enable mib-binding
    
```

| | |
|---------------------|-----------|
| | |
| show ip ospf | OSPF |
| enable traps | OSPF TRAP |

enable traps

OSPFv2 16 TRAP 4
 TRAP no
 TRAP

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

no enable traps [error [ifauthfailure | ifconfigerror | ifrxbadpacket | virtifauthfailure | virtifconfigerror | virtifrxbadpacket] | lsa [lsdbapproachoverflow | lsdboverflow | maxagelsa | originatelsa] | retransmit [iftxretransmit | virtiftxretransmit] | state-change [ifstatechange | nbrstatechange | virtifstatechange | virtnbrstatechange]]

| | |
|--|--|
| | |
|--|--|

| | |
|---------------------|--|
| 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 nbrstatechange virtifstatechange virtnbrstatechange |

TRAP

```

snmp-server
MIB TRAP
OSPFv2 100 TRAP
Ruijie(config)# router ospf

```



| | |
|---------------------------|-----------------|
| show ip ospf | OSPF |
| enable mib-binding | OSPFv2 MIB |

ip ospf authentication

no

ip ospf authentication [message-digest | null]

no ip ospf authentication

| | |
|-----------------------|-----|
| | |
| message-digest | MD5 |
| null | |

no

null

FastEthernet 0/0 OSPF MD5

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

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

ip ospf authentication-key

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 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
```

| | |
|------------------------|------|
| | |
| area authentication | OSPF |
| ip ospf authentication | |

ip ospf cost

OSPF OSPF
ip ospf cost **no**

ip ospf cost *cost*
no ip ospf cost

| | |
|-------------|------|
| | |
| <i>cost</i> | OSPF |

/Bandwidth 100Mbps

OSPF 100Mbps/Bandwidth Bandwidth
bandwidth

OSPF

' 64K cost 1562

' E1 cost 48

' 10M cost 10

' 100M cost

ip ospf cost OSPF

LSA

LSA serial 1/0

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

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 OSPF
Hello Hello
hello hello 4 hello
OSPF
hello
```

serial 1/0 OSPF

30

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

| | |
|-------------------------------|------------|
| | |
| ip ospf hello-interval | OSPF Hello |

ip ospf disable all

ospf

ip ospf disable all

no ip ospf disable all

O S P F

OSPF

^ network80.48 045A>Tj/TT5 1 l6d.4 Tr 6.01[<1C0307A1CF144

ip ospf hello-interval

| | |
|------------------------------|------|
| | |
| ip ospf dead-interval | OSPF |

ip ospf message-digest-key

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

```
ip ospf message-digest-key key-id md5 key
no ip ospf message-digest-key
```



OSPF

FastEthernet 0/0
hello5

OSPF

```
Ruijie(config)# interface Serial 1/0
Ruijie(config-if)# ip address 172.16.24.2
255.255.255.0
Ruijie(config-if)# ip ospf authentication
message-digest
Ruijie(config-if)# ip ospf message-digest-key 10 md5
hello10
Ruijie(config-if)# ip ospf message-digest-key 5 md5
hello5
```

```
Ruijie(config)# interface Serial1/0
Ruijie(config-if)# no ip ospf message-digest-key 10 md5
hello10
```

| | |
|------------------------|------|
| | |
| area authentication | OSPF |
| ip ospf authentication | |

ip ospf mtu-ignore

no

mtu

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

| | |
|--|--|
| | |
| | |

mtu

OSPF
MTU

MTU

| | | |
|---|----------|------|
| ' | PPP SLIP | X.25 |
| ' | NBMA | X.25 |
| ' | | |
| ' | | |

```
Ruijie(config)# interface Serial1/0
Ruijie(config-if)# ip address 172.16.24.4
255.255.255.0
Ruijie(config-if)# encapsulation frame-relay
Ruijie(config-if)# ip ospf network broadcast
```

```
Ruijie(config)# interface Serial1/0
Ruijie(config-if)# ip address 172.16.24.4
255.255.255.0
Ruijie(config-if)# encapsulation frame-relay
Ruijie(config-if)# ip ospf network point-to-multipoint
```

DR/RDR

DR/BDR

```
Ruijie(config)# interface Serial1/0
Ruijie(config-if)#ip address 172.16.24.4 255.255.255.0
Ruijie(config-if)# encapsulation frame-relay
Ruijie(config-if)# ip ospf network broadcast
Ruijie(config-if)# ip ospf priority 0
```

| dialer map ip | IP | |
|------------------------|----|------|
| frame-relay map | IP | DLCI |
| neighbor OSPF | IP | NBMA |
| X25 map | IP | X.25 |

ip ospf priority

OSPF
no

ip ospf priority

ip ospf retransmit-interval

LSU

ip ospf retransmit-interval no**ip ospf retransmit-interval** *seconds***no ip ospf retransmit-interval**

| <i>Seconds</i> | LSU 5 |
|----------------|-------|

5

ip ospf transmit delay

| | | |
|----------------|-----|---------|
| OSPF | LSU | ip ospf |
| transmit delay | no | |

ip ospf transmit delay *seconds*

no ip ospf transmit delay

| | |
|--|--|
| | |
|--|--|

Seconds

log-adj-changes

no default

log-adj-changes [detail]

no log-adj-changes [detail]

| | |
|-----------|----|
| <1-65535> | DD |
|-----------|----|

5

OSPF

DD

DD

4

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

Ruijie(config-router)# **max-concurrent-dd 4**

neighbor

OSPF

neighbor

no

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

no neighbor *ip-address*

| | |
|--|--|
| | |
| <i>ip-address</i> | IP |
| poll-interval <i>seconds</i> | Non-broadcast(NBMA) 120 |
| priority <i>priority</i> | Non-broadcast(NBMA) |
| Cost <i>cost</i> | , cost point-to-multipoint [non-broadcast] |

```

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

```

```

172.16.24.2      OSPF              IP
                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 |

network area

```

                OSPF              OSPF
network area      no              OSPF

```

network *ip-address*

OSPF

router ospf

OSPF

overflow database external *max-dbsize wait-time*

no overflow database external

| <i>max-dbsize</i> | external lsa | AS |
|-------------------|--------------|---------|
| | 0-2147483647 | |
| <i>wait-time</i> | | 0-65535 |

external-LSA

external-LSA

external-LSA

external-LSA

max-dbsize

external-LSA

external-LSA

wait-time

external-LSA

```
Ruijie# config terminal
```

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

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

passive-interface

no

passive-interface [default | *type number*]

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

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

, OSPF

serial 1/0

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

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

| | |
|--|--|
| | |
|--|--|

show ip ospf interface

metric-type {1/2} | **route-map** *map-tag* | **tag** <0-4294967295> | **subnets**]

| | |
|--|---------------------------------|
| | |
| bgp isis <i>area-tag</i> ospf <i>process-id</i> rip connected static | |
| metric | OSPF extern2 LSA metric |
| Level-1/ level-1-2/ level-2 | IS-IS level level-2 IS-IS |
| match | OSPF OSPF |
| metric-typ | E-1 E-2 |
| route-map | |
| tag | OSPF tag |
| subnets | |

ASBR OSPF
 type-5 LSA OSPF
 BGP metric 1 LSA
 metric 20
 isis level level-2
 level level
 level-1-2 level 1, level 2
 ospf match
 ospf match match
 match no
 route-map route-map match
 OSPF ISIS

match level route-map

OSPF

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

Show run

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

router ospf

```
no OSPF router ospf
no OSPF
router ospf process-id
no router ospf process-id
```

| | |
|-------------------|------|
| | |
| <i>process-id</i> | ospf |

OSPF

```
RGOS10.1                                     ospf
ospf
```

```
OSPF      10
```

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

| | |
|--------------------------|------|
| | |
| show ip protocols | |
| show ip ospf | ospf |

router-id

```
ID,      no      Router
Router ID
router-id router-id
no router-id
```

| | |
|------------------|--------|
| | |
| <i>router-id</i> | ID, IP |

```

router-id 0.0.0.36

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

| | |
|--------------------------|--|
| | |
| show ip protocols | |

summary-address

```

OSPF
summary-address no

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

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

OSPF
OSPF

```

area rang          area range          OSPF
summary-address    OSPF
    
```

NSSA **summary-address** NSSA ABR

100.100.0.0/16

```

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

| | |
|-------------------|------|
| | |
| area range | OSPF |

timers lsa-group-pacing

LSA

no

timers lsa-group-pacing seconds

no timers lsa-group-pacing

| | |
|----------------|------------------|
| | |
| <i>seconds</i> | LSA : 10-1800 |

: 240

LSA

4
LSA
10000 LSA 40~100
10~20
120
Ruijie(config)#**router ospf** 20

| | | |
|---|------------------|-----------|
| Process uptime | OSPF 0.0.0.0 | router-id |
| Bound to VRF | OSPF | VRF |
| Conforms to RFC2328 | RFC2328 | |
| RFC1583Compatibility flag | RFC2328 ASBR | RFC1583 |
| Support Tos | TOS0 | |
| Supports opaque LSA | opaque-LSA | |
| Router Type | OSPF ABR ASBR | normal |
| SPF Delay | SPF | |
| SPF-holdtime | SPF | |
| LsaGroupPacing | LSA | |
| Incomming current DD exchange neighbors | exstart | incomming |
| Outgoing current DD exchange neighbors | exstart | outgoing |
| Number of external LSA | LSA | |
| External LSA Checksum Sum | LSA | |
| Number of opaque LSA | opaque-LSA | |
| Opaque LSA Checksum Sum | opaque-LSA | |
| Number of non-default external LSA | external-LSA | |
| External LSA database limit | external-LSA | |
| Exit database overflow state interval | overflow | |
| Database overflow state | OSPF | overflow |
| Number of LSA originated | LSA | |
| Number of LSA received | LSA | |

Log Neighbor Adjency Changes

Area type

,

show ip ospf border-routers

Ruijie# **show ip ospf border-routers**

OSPF internal Routing Table

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

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

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

show ip ospf database

OSPF

show ip

ip-address]

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

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

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

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

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

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


```

Link ID      ADV Router    Age  Seq#      CkSum
192.88.88.27  1.1.1.1      120  0x80000001 0x5366
    
```

Summary Link States (Area 0.0.0.0)

```

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

Router Link States (Area 0.0.0.1 [NSSA])

```

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

Summary Link States (Area 0.0.0.1 [NSSA])

```

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

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

```

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

| | |
|---------------------------|-----|
| Router Link States | |
| Net Link States | |
| Summary Net Link States | |
| NSSA-external Link States | |
| AS External Link States | |
| Link ID | |
| ADV Router | |
| Age | |
| Seq# | LSA |
| Cksum | |
| Link-Count | |
| Route | LSA |
| Tag | |

show ip ospf database asbr-summary

```
Ruijie# show ip ospf database asbr-summary
OSPF Router with ID (1.1.1.35) (Process ID 1)
ASBR-Summary Link States (Area 0.0.0.1)
LS age: 47
Options: 0x2 (*|-|-|-|-|E|-)
LS Type: ASBR-summary-LSA
Link State ID: 3.3.3.3 (AS Boundary Router address)
Advertising Router: 1.1.1.1
LS Seq Number: 80000001
Checksum: 0xbe8c
Length: 28
Network Mask: /0
TOS: 0 Metric: 1
```

show ip ospf database asbr-summary

| | |
|---------------------|------|
| | |
| OSPF Router with ID | OSPF |

AS Summary Link States

| | |
|--------------------------------|-----------------|
| Type-5 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 | 0.0.0.0 IP |
| External Route Tag | OSPF 32 OSPF |

show ip ospf database network

```
Ruijie# show ip ospf database network
OSPF Router with ID (1.1.1.1) (Process ID 1)
Network Link States (Area 0.0.0.0)

LS age: 572
Options: 0x2 (*|-|-|-|-|E|-)
LS Type: network-LSA
Link State ID: 192.88.88.27 (address of Designated Router)
Advertising Router: 1.1.1.1
LS Seq Number: 80000001
Checksum: 0x5366
Length: 32
Network Mask: /24
Attached Router: 1.1.1.1
Attached Router: 3.3.3.3
```

OSPF

| OSPF Router with ID | OSPF |
|-------------------------|------|
| Summary Net Link States | |
| LS age | |
| Options | |
| LS Type | |
| Link State ID | |

| | |
|---------------------------|------|
| | |
| OSPF Router with ID | OSPF |
| NSSA-external Link States | |
| LS age | |
| Options | |
| LS Type | |
| Link State ID | |
| Advertising Router | |
| LS Seq Number | |
| Checksum | |
| Length | |
| Network Mask | |
| Metric Type | |

TOS

TOS

```

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 | 0.0.0.0 | IP |
| External Route Tag | OSPF | 32 OSPF |

show ip ospf database database-summary

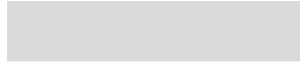
```

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



show ip ospf interface FastEthernet 1/0

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

FastEthernet 1/0 is up, line protocol is up
Internet Address 192.88.88.27/24, Ifindex 4, Area 0.0.0.0,
MTU 1500
Matching network config: 192.88.88.0/24
Process ID 1, Router ID 1.1.1.1, Network Type BROADCAST,
Cost: 1
Transmit Delay is 1 sec, State DR, Priority 1
Designated Router (ID) 1.1.1.1, Interface Address
192.88.88.27
Backup Designated Router (ID) 3.3.3.3, Interface Address
192.88.88.72
Timer intervals configured, Hello 10, Dead 40, Wait 40,
Retransmit 5
Hello due in 00:00:03
Neighbor Count is 1, Adjacent neighbor count is 1
Crypt Sequence 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 | Down UP |
| Internet Address | IP |
| Area | OSPF |
| MTU | MTU |
| Matching network config | OSPF |

| | |
|------------------------------|-----|
| Priority | |
| Designated Router(ID) | DR |
| DR's Interface address | DR |
| Backup designated router(ID) | BDR |
| BDR's Interface address | BDR |

Time intervals configured

Hello Dead Wait

| | |
|--------------------|--|
| <i>neighbor-id</i> | |
|--------------------|--|

OSPF

show ip ospf neighbor

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

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

show ip ospf neighbor

| | |
|-------------|--|
| | |
| Neighbor ID | |

| | |
|-------------------|------------|
| Thread Poll Timer | Poll Timer |
|-------------------|------------|

show ip ospf route

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

| | | |
|-------------------|--|------|
| | | |
| <i>process-id</i> | | 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

| | |
|-----|--|
| via | |
|-----|--|

show ip ospf summary-address

```

OSPF
show ip ospf summary-address
show ip ospf summary-address
  
```

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
Ruijie#
  
```

| Summary Address | |
|-----------------|--|
| Summary Mask | |
| Advertise | |

| | |
|--------------------|--|
| Status | |
| Aggregated subnets | |

show ip ospf virtual-link

```

OSPF
virtual-link
show ip ospf [process-id] virtual-link

```

| | |
|--|--|
| | |
| | |

| | |
|-------------------------------|-------------------------------|
| | |
| 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 |

istribute-list in

istribute-list in **no**

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

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

| <i>access-list-number</i> | 1300-1999 2000-2699 1-99 100-199 |
|--|---|
| <i>access-list-name</i> | |
| prefix <i>prefix-list-name</i> | |
| gateway <i>prefix-list-name</i> | |
| <i>interface-type</i> <i>interface-number</i> | () |

OSPF

OSPF

RIP Fastethernet 0/0
172.16

```
Ruijie(config)# router rip
Ruijie(config-router)# network 200.168.23.0
Ruijie(config-router)# distribute-list 10 in
fastethernet 0/0
Ruijie(config-router)# no auto-summary
Ruijie(config-router)# exit
Ruijie(config)# access-list 10 permit 172.16.0.0
0.0.255.255
```

| | |
|--------------------|--|
| | |
| access-list | |
| prefix-list | |

distribute-list out

distribute-list out no

distribute-list {[*access-list-number* | *access-list-name*] | **prefix**
prefix-list-name} **out** [*interface* | *protocol* | *process-id*]

no distribute-list {[*access-list-number* | *name*] | **prefix** *prefix-list-name*}
out [*interface* | *protocol* | *process-id*]

| | |
|--|--|
| | |
|--|--|

| | | |
|---------------------------------------|------------------------|-----------------|
| <i>access-list-number</i> | 1300-1999 2000-2699 | 1-99 100-199 |
| <i>access-list-name</i> | | |
| prefix <i>prefix-list-name</i> | | |
| <i>Interface</i> | () | |
| <i>protocol</i> | () | |

| | |
|--------------|--|
| redistribute | |
|--------------|--|

ip default-network

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

| | |
|---------|--|
| | |
| network | |

0.0.0.0/0

default-network

```
connected
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
200.200.200.0
200.200.200.0
Ruijie(config)# ip default-network 200.200.200.0
```

| | |
|---------------|----|
| | |
| show ip route | IP |

ip prefix-list

ip prefix-list

no

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

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

| | |
|------------------------------|------------------------|
| | |
| <i>prefix-lis-name</i> | |
| <i>seq-number</i> | 1 2147483647 5 5 |
| deny | |
| permit | |
| <i>ip-prefix</i> | IP 0 32 |
| <i>minimum-prefix-length</i> |) ge (|
| <i>maximum-prefix-length</i> |) le (|

ip prefix-list

IP

permit

deny



| | | | | | |
|-----------------------|----|----|----|----|-----------|
| | | | ge | le | |
| | | | | | ip-prefix |
| | | ge | le | | ip-prefix |
| | | | ge | | |
| minimum-prefix-length | 32 | | le | | |



IP Deny routes from Net-A

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

ip prefix-list sequence-number

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

```
Ruijie# configure terminal
Ruijie(config)# ip prefix-list sequence-number
```

ip route

```
ip route ip route no
```

ip route *network net-mask* {*ip-address* | *interface* [*ip-address*]}
[*distance*] [**tag** *tag*] [*permanent*] [**weight** *number*] [*disable* | *enable*]



| | |
|-----------------------|-----|
| <i>Interface</i> | |
| <i>distance</i> | |
| <i>tag</i> | Tag |
| permanent | |
| <i>number</i> | |
| disable/enable | |

1

OSPF 110
125 OSPF

1 **show ip route weight**
weight WCMP

weight
WCMP 32
WCMP

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

172.16.10.0/24 fastethernet 0/0

fastethernet0/0#ip address 172.16.10.0 255.255.255.0

| | |
|--|--|
| | |
| | |

ip static route-limit

ip static route-limit

no

ip static route-limit *number*

no ip static route-limit

| | |
|---------------|---------|
| | |
| <i>number</i> | 1-10000 |

1000

ip static

route-limit

show running-config

900

Ruijie(config)# ip static route-limit 900

Ruijie(config)# no ip static route-limit

ipv6 prefix-list

IPv6

ipv6

prefix-list

no

ipv6 prefix-list *prefix-lis-name* [**seq** *seq-number*] { **deny** | **permit** }

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

no ipv6 prefix-list *prefix-lis-name* [**seq** *seq-number*] { **deny** | **permit** }

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

| | |
|------------------------------|------------------------|
| <i>prefix-list-name</i> | |
| <i>seq-number</i> | 1 2147483647 5 5 |
| deny | |
| permit | |
| <i>ipv6-prefix</i> | IP 0 32 |
| <i>minimum-prefix-length</i> |) ge |
| <i>maximum-prefix-length</i> |) le |

ipv6 prefix-list

IPv6

permit

deny

ge le

minimum-prefix-length

```

1
IPv6 ( IP 2222::/64
)
RIP OSPF

```

```

Ruijie# configure terminal
Ruijie(config)# ipv6 prefix-list pre permit 2222::/64
Ruijie(config)# ipv6 router rip
Ruijie(config-router)# redistribute ospf 1
Ruijie(config-router)# distribute-list prefix pre out
Ruijie(config-router)# end

```

ipv6 prefix-list description

```

IPv6
description no
ipv6 prefix-list
ipv6 prefix-list prefix-lis-name description descripton-text

```

| <i>prefix-lis-name</i> | IPv6 |
|------------------------|------|
| <i>descripton-text</i> | IPv6 |

```

IPv6 pre Deny routes from Net-A
Ruijie# configure terminal
Ruijie(config)# ipv6 prefix-list pre description Deny
routes from Net-A

```

ipv6 prefix-list sequence-number

```

IPv6
no
ipv6 prefix-list description
ipv6 prefix-list sequence-number

```

IPv6

```
Ruijie# configure terminal  
Ruijie(config)# ipv6 prefix-list sequence-number
```

match as-path

```
AS_PATH  
match as-path no  
match as-path as-path-acl-list-num as-path-acl-list-num.....  
no match as-path as-path-acl-list-num.....
```

| | |
|-----------------------------|---------|
| | |
| <i>as-path-acl-list-num</i> | 1...500 |

match as-path

```
1 match 1  
set match set
```

```
Ruijie(config)# route-map ROUTEMAP2IBGP
```

match community

6

exact-match

```
set match 1 match 1 set
```

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

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

match interface

match

```
interface no
```

```
match interface interface-type interface-number [...interface-type interface-number]
```

```
no match interface interface-type interface-number [...interface-type interface-number]
```

| | |
|-----------------------|--|
| | |
| <i>interface-type</i> | |

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

match ip address

match ip address **no**

match ip address {*access-list-number* [*access-list-number...* |
access-list-name...] |*access-list-name* [*access-list-number...* |
access-list-name] | **prefix-list** |

match ip address

OSPF

RIP

| | |
|-------------------------|--|
| match metric | |
| match route-type | |
| match tag | |
| set metric | |
| set metric-type | |
| set tag | |

match ip next-hop

IP

match ip next-hop **no**

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

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

| <i>access-list-number</i> | 1300-1999 1-99 2000-2699 100-199 |
|--|---|
| <i>access-list-name</i> | |
| prefix-list <i>prefix-list-name</i> | |

match ip next-hop

```
      OSPF
    OSPF
      IP
      OSPF
      RIP
      RIP
      route maps
      1
    set      match      1
      match      set
```

```
      OSPF      RIP      RIP
      10 20 OSPF
```

```
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
```

n
a
a

n
a
a

e-

lis
ar
fix

es
na
fix

. /

IP OSPF RIP RIP
 5 OSPF

```

Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets
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 | |

match ipv6 address

IPv6
match ipv6 address no

```

match ipv6 address { access-list-name | prefix-list prefix-list-name }
no match ipv6 address
    
```



access-list-name

```

      OSPF                                RIP                                RIP
      IP                                  OSPF
      route maps
      1                                match                                1
      set                                match                                set

```

```

      OSPF                                RIP
      10 RIP                                OSPF
      type-1                                40

```

```

Ruijie(config)# ipv6 router ospf
Ruijie(config-router)# redistribute rip subnets
route-map redrip
Ruijie(config-router)# exit
Ruijie(config)# ipv6 access-list v6acl
Ruijie(config-ipv6-acl)# 10 permit ipv6 2720::/64 any
Ruijie(config-ipv6-acl)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match ipv6 next-hop v6acl
Ruijie(config-route-map)# set metric 40

```

| | |
|--------------------------------|------|
| | |
| ipv6 access-list | IPv6 |
| match interface | |
| match ipv6 address | IPv6 |
| match ipv6 route-source | IPv6 |
| match metric | |
| match route-type | |
| match tag | |

set metric

```
          OSPF          RIP
    10  RIP      OSPF
type-1          40
```

```
Ruijie(config)# ipv6 router ospf
Ruijie(config-router)# redistribute rip subnets
route-map redrip
Ruijie(config-router)# exit
Ruijie(config)# ipv6 access-list v6acl
Ruijie(config-ipv6-acl)# 10 permit ipv6 5200::/64 any
Ruijie(config-ipv6-acl)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match ipv6 route-source v6acl
Ruijie(config-route-map)# set metric 50
```

```
660 1 Tf2 A2A750F5605294682AFC
```

match length

length IP match
no

match length *min-length max-length*
no match length *min-length max-length*

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

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

match metric

no

match metric *metric*

no match metric

match metric

| <i>metric</i> | 0-4294967295 |
|---------------|--------------|

set

match

set

RIP OSPF RIP 10

```
Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets
route-map redist-rip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255
area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redist-rip permit 10
Ruijie(config-route-map)# match metric 10
```

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

| | |
|-------------------|-----|
| | |
| egp | EGP |
| igp | IGP |
| Incomplete | |

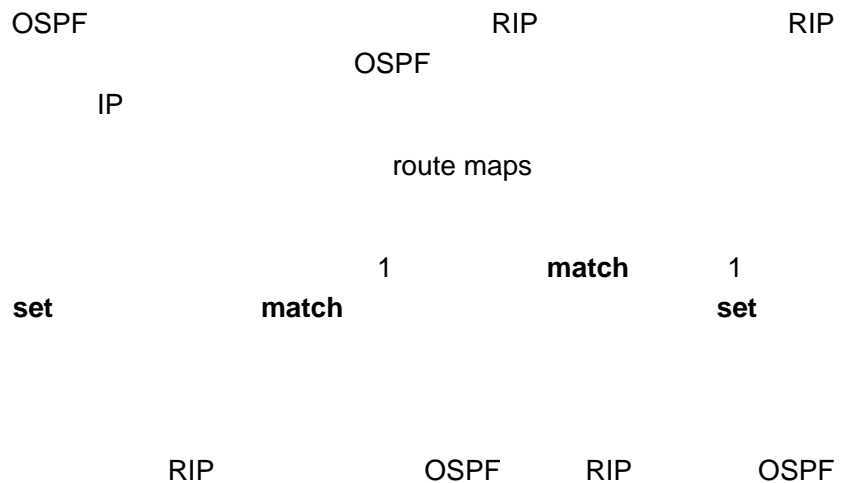
```
Ruijie(config)# route-map MY_ 10.5 89 QsthdRozFa)ttE KFS pYhU(e!
```

no

match route-type {local | internal | external [type-1 | type-2] | level-1 | level-2}

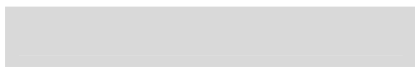
no match route-type {local | internal | external [type-1 | type-2] | level-1 | level-2}

| | |
|--------------------------|-------------|
| | |
| local | |
| Internal | OSPF |
| external | (BGP OSPF) |
| type-1 type-2 | OSPF 1 2 |
| level-1 level-2 | ISIS 1 2 |



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

```
Ruijie(config)# route-map redrip permit 10  
Ruijie(config-route-map)# match route-type internal
```



```

match tag tag
OSPF RIP RIP
OSPF
IP
route maps
1 match 1
set match set
RIP OSPF RIP OSPF
50 80

```

```

Ruijie(config)# router rip
Ruijie(config-router)# redistribute ospf 100 route-map
redrip
Ruijie(config-router)# network 192.168.12.0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match tag 50 80

```

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

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

match permit set

permit

-
- 1) *sequence-number*
10
 - 2) *sequence-number*

| | | |
|----|------|--------|
| | OSPF | RIP |
| 4 | OSPF | RIP |
| 40 | 40 | 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)# match metric 4
Ruijie(config-route-map)# set metric 40
Ruijie(config-route-map)# set metric-type type-1
Ruijie(config-route-map)# set tag 40

```

| | |
|---------------------|--|
| | |
| Redistribute | |

set aggregator as

| | |
|--------------------------|-----------|
| match | AS |
| set aggregator as | no |

set aggregator as *as-num ip_addr*

no set aggregator as [*as-num ip_addr*]

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

BGP

as,ip-addr

```
Ruijie(config)# route-map set-as-path
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set aggregator as 3 2.2.2.2
```

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

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]
```

| <i>as-number</i> | 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 repend
```

| | |
|------------------------------|-----------------|
| | |
| <i>community-list-number</i> | 1-99 100-199 |
| <i>community-list-name</i> | 80 |

```

Ruijie(config)# router bgp 100
Ruijie(config-router)# neighbor 172.16.233.33
remote-as 120
Ruijie(config-router)# neighbor 172.16.233.33
route-map ROUTEMAPIN in
Ruijie(config-router)# neighbor 172.16.233.33
route-map

```

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

set community

match COMMUNITY
set community no

set community {*community-number*[*community-number* ...] **additive** | **none**}

no set community { *community-number*[*community-number* ...] **additive** | **none**}

| | |
|--|--|
| | |
|--|--|

AA:NN(:2
)
 0-4294967295

internet Internet

community-number

local-as AS

Ruijie(config)# **route-map** SET_COMMUNITY 10

| | | |
|--------------------------|------------------------|----------|
| <i>reuse</i> | 750 | 1..20000 |
| <i>suppress</i> | 1..20000 | 2000 |
| <i>max-suppress-time</i> | 1..255() half-life | 4* |

```

Ruijie(config)# route-map tag
Ruijie(config-route-map)# match as path 10
Ruijie(config-route-map)# set dampening 30 1500 10000
120
Ruijie(config-route-map)# exit
Ruijie(config)# router bgp 100
Ruijie(config-router)# neighbor 172.16.233.52
route-map tag in

```

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

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]*

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

set default interface

1

down
set

set

serial 1/0

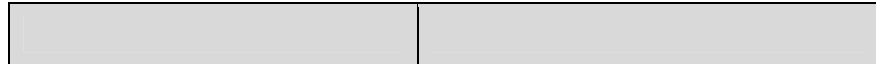
500

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

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

| | |
|------------------------|---------|
| | |
| match as-path | AS_PATH |
| match community | |

| | |
|------------------------------|--|
| set default interface | |
|------------------------------|--|

```

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

```

```

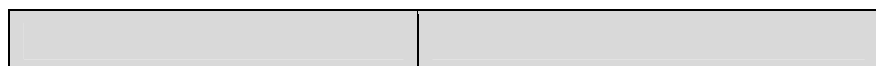
Ruijie(config)#route-map equal-access permit 10
Ruijie(config-route-map)#match ip address 1
Ruijie(config-route-map)#set ip default next-hop
6.6.6.6
Ruijie(config)#route-map equal-access permit 20
Ruijie(config-route-map)#match ip address 2
Ruijie(config-route-map)#set ip default next-hop
7.7.7.7

```

```

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 |

set ip dscp

```

match DSCP
dscp no
set ip dscp dscp_value
no set ip dscp
set ip

```

| | |
|-------------------|------------|
| | |
| <i>dscp_value</i> | IP IP DSCP |

| | |
|-------------------------|--|
| | |
| route-map | |
| match ip address | |

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

set ip next-hop

match IP
set ip next-hop no

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

```
ip address      weight      4
next-hop
```

```
next-hop      weight      set
WCMP          WCMP
weight next-hop      weight
```

```
1
```

```
1
```

```
set
```

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

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

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

Ruijie(config)#route-map load-balance permit 10
Ruijie(config-route-map)#match ip address 10
Ruijie(config-route-map)#set ip next-hop 192.168.100.1

Ruijie(config)#route-map load-balance permit 20
Ruijie(config-route-map)#match ip address 20
Ruijie(config-route-map)#set ip next-hop 172.16.100.1

Ruijie(config)#route-map load-balance permit 30
Ruijie(config-route-map)#set interface Null 0
```



serial 1/0

10.0.0.0/8

192.168.100.1

172.16.0.0/16

172.16.100.1

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

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

Ruijie(config)#**access-list 10 permit 10.0.0.0**
0.255.255.255

Ruijie(config)#**access-list 20 permit 172.16.0.0**
0.0.255.255

Ruijie(config)#**route-map load-balance permit 10**

Ruijie(config-route-map)#**match ip address 10**

Ruijie(config-route-map)#**set ip next-hop**
192.168.100.1

Ruijie(config)#**route-map load-balance permit 20**

Ruijie(config--route-map)#**match ip address 20**

Ruijie(config-route-map)#**set ip next-hop 172.16.100.1**

Ruijie(config)#**route-map load-balance permit 30**

Ruijie(config-route-map)#**set interface Null 0**

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

set ip precedence

```
match IP ,
set ip precedence no
```

```
set ip precedence {<0-7> | critical | flash | flash-override |
immediate | internet | network | priority | routine }
```

```
no set ip precedence {<0-7> | critical | flash | flash-override
| immediate | internet | network | priority | routine }
```

```
IP IP
```

```
set ip precedence
```

```
IP
```

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

| 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 |

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
Ruijie(config)#route-map name
Ruijie(config-route-map)#match ip address 1
Ruijie(config-route-map)#set ip tos 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 | |

```

Ruijie(config-route-map)# set local-preference 6800
Ruijie(config-route-map)# exit
Ruijie(config)# route-map SET_PREF permit 20
Ruijie(config-route-map)# match as-path 2
Ruijie(config-route-map)# set local-preference 50

```

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

set metric

```

                match                set
metric                no
set metric [+ metric-value | - metric-value | metric-value]
no set metric

```

| + | metric |
|---------------------|--------|
| - | metric |
| <i>metric-value</i> | |

```

set metric      +      -  metric

```

```

      OSPF                                RIP                                RIP
      IP                                  OSPF
      route maps
      set                                1      match      1
      match
  
```

```

      OSPF                                RIP
      40
  
```

```

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

set metric-type

match
set metric-type **no**
set metric-type *type*
no set metric-type

| | |
|--|--|
| | |
|--|--|

kyfDRWxhDME

IP

route maps

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

192.168.1.2

Ruijie(config)# **route-map redrip permit 10**

| | |
|-------------------|-----|
| igp | IGP |
| incomplete | |

```
Ruijie(config)# route-map SET_ORIGIN 10 permit
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set origin igp
Ruijie(config-route-map)# exit
Ruijie(config)# route-map SET_ORIGIN 20 permit
```

| | |
|------------|--|
| | |
| <i>tag</i> | |

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 | |

set weight

match BGP
set weight no
set weight *number*
no set weight

| <i>number</i> | 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 | |

show ip prefix-list

show ip prefix-list

show ip prefix-list [*prefix-name*]

| | |
|--------------------|--|
| | |
| <i>prefix-name</i> | |

```
Ruijie# show ip prefix-list
ip prefix-list pre: 2 entries
seq 5 permit 192.168.64.0/24
seq 10 permit 192.2.2.0/24
```

show ip route

IP

show ip route

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

```

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 |
| | |

show ip route network

| Routing Descriptor Blocks | IP BGP |
|------------------------------|-----------|

show ip route count

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

show ip route weight

```
Ruijie# show ip route weight
-----[distance/metric/weight]-----
S 23.0.0.0/8 [1/0/2] via 192.1.1.20
S 172.0.0.0/16 [1/0/4] via 192.0.0.1
```

show ipv6 prefix-list

IPv6 **show ipv6 prefix-list**
show ipv6 prefix-list [prefix-name]

| <i>prefix-name</i> | IPv6 |
|--------------------|------|

IPv6

```
Ruijie# show ipv6 prefix-list
ipv6 prefix-list p6: 2 entries
```

```
permit 13::/20
permit 14::/20
```

show route-map

show route-map

show route-map *route-map-name*

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

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

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

IGMP

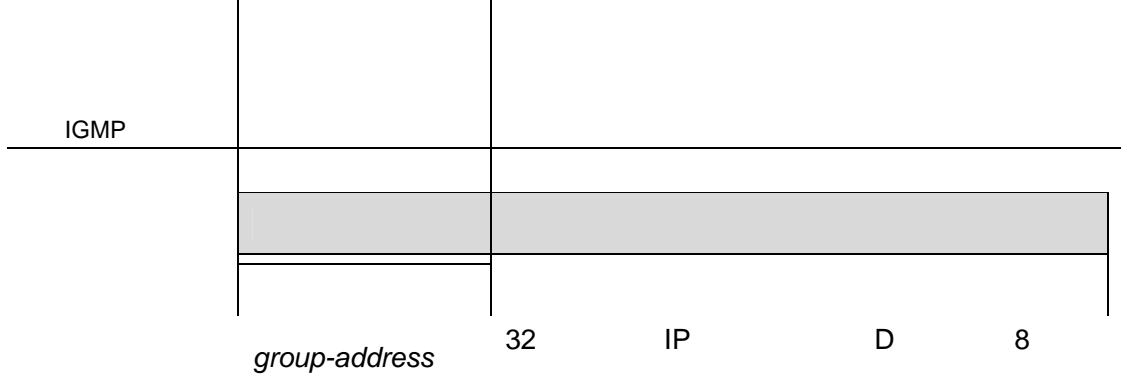
IGMP

```
' clear ip igmp group
' clear ip igmp interface
' ip igmp access-group
' ip igmp join-group
' ip igmp static-group
' ip igmp immediate-leave group-list
' ip igmp last-member-query-count
' ip igmp last-member-query-interval
' ip igmp limit (          )
' ip igmp querier-timeout
' ip igmp query-interval
' ip igmp query-max-response-time
' ip igmp robustness-variable
' ip igmp ssm-map enable
' ip igmp ssm-map static
' ip igmp version
' ip igmp limit (          )
' show ip igmp groups
' show ip igmp interface
```

clear ip igmp group

IGMP

```
clear ip igmp group[group-address | interface-type interface-number]
```



IGMP

ifname

Ruijie# **clear ip igmp interface eth1**

ip igmp access-group

IP

no

ip igmp access-group *access-list*

no ip igmp access-group

| | |
|--------------------|--------------------------------|
| | |
| <i>access-list</i> | , <1-199> <1300-2699> WORD |

ip igmp access-group

注意:

| | | | |
|--------|--------------------|----|-------------|
| | | IP | |
| S,G | igmp report | IP | permit deny |
| | source destination | | igmp |
| report | S1,S2,S3...Sn,G | | (0,G) |
| | G | G | igmp report |
| S G | | | igmp report |
| | | | S.G |

igmp report

IP (0, G)
S1,S2,S3...Sn,G

0 G *G IP
permit host 0.0.0.0 host *group-number*
group-number **permit any host** *group-number*

Eth0 225.2.2.2.

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

ip igmp join-group

no

ip igmp join-group *group-address*
no ip igmp join-group *group-address*

group-address

Eth0 233.3.3.3 .

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

ip igmp static-group

no

```
ip igmp static-group group-address
no ip igmp static-group group-address
```

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

Eth0 236.6.6.6

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

ip igmp immediate-leave group-list

IGMPversion2 IGMPversion3

no

ip igmp immediate-leave group-list *access-list*

no ip igmp immediate-leave group-list

| | |
|--------------------|--|
| | |
| <i>access-list</i> | |

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

ip igmp last-member-query-count

last-member-query-count

leave

last-member-query-count

no

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

no ip igmp last-member-query-count

| <i>number</i> | , <2-7> |
|---------------|---------|

last member query count 2

IGMPv2 **ip igmp**
last-member-query-count

3.

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

ip igmp last-member-query-interval

no

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

no ip igmp last-member-query-interval

| <i>interval</i> | <1-255> 0.1s |
|-----------------|--------------|

1s

IGMPv2 ip igmp

last-member-query-count

20

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

ip igmp immediate-leave

ip igmp limit ()

igmp states no

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

no ip igmp limit

| | |
|--------------------|----------------------|
| | |
| <i>number</i> | IGMP |
| <i>except</i> | access-list limit |
| <i>access-list</i> | |

IGMP
IGMP

300

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

ip igmp query-interval

no

ip igmp query-interval *seconds*

no ip igmp query-interval

| <i>seconds</i> | s 1 18000 |
|----------------|-----------|

125

Ethernet 0

120s

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

Ethernet 0

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



3

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

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

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

| <i>number</i> | IGMP |
|--------------------|----------------------|
| <i>except</i> | access-list limit |
| <i>access-list</i> | |

65536

IGMP
IGMP

300

Ruijie config # **ip igmp limit 300**

ip igmp proxy-service

mroute-proxy
mroute-proxy

ip igmp proxy-service

no ip igmp proxy-service

proxy-service

```

proxy-service 255 32
  proxy-service
proxy-service mroute-proxy
  proxy-service
  .
  switchport
mroute-proxy interface ip igmp

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

```

ip igmp mroute-proxy

```

ip igmp mroute-proxy interfname
no ip igmp mroute-proxy

```

| | |
|-------------------|--|
| | |
| <i>interfname</i> | |

```

  proxy-service
gmp

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

```

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**

ip igmp ssm-map static

ssm-map

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

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

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

ip igmp ssm-map enable

v3

ACL 11 192.168.2.2,

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

show ip igmp groups

IGMP

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

| <i>group-address</i> | 32 | IP | D | 8 |
|-------------------------|----|----|---|---|
| <i>interface-type</i> | | | | |
| <i>interface-number</i> | | | | |
| <i>detail</i> | | | | |
| | | | | |

-s/TT3 1 Tf-0.000d5.46 TdIP

```

224.0.1.60      eth2  00:00:05  00:04:15  10.10.0.7
239.255.255.250 eth2  00:00:12  00:04:15  10.10.0.228
239.255.255.254 eth2  00:00:08  00:04:13  10.10.0.84

```

```
Ruijie# show ip igmp groups 224.1.1.1 detail
```

```

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

```

show ip igmp interface

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

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

```

Ruijie# show ip igmp interface
Interface vlan 1(Index 4294967295)
IGMP Active, Non-Querier, Version 3 (default)
IGMP querying router is 0.0.0.0

```

```
IGMP query interval is 125 seconds
IGMP querier timeout is 255 seconds
IGMP max query response time is 10 seconds
Last member query response interval is 1000 milliseconds
Group Membership interval is 260 seconds
IGMP Snooping is globally enabled
IGMP Snooping is enabled on this interface
IGMP Snooping fast-leave is not enabled
IGMP Snooping querier is not enabled
IGMP Snooping report suppression is enabled
```

show ip igmp ssm-mapping

```
IGMP      ssm-map
```

PIM-DM

PIM-DM

PIM-DM

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

ip pim dense-mode

```
no PIM-DM ip pim dense-mode
PIM-DM
```

ip pim dense-mode

no ip pim dense-mode

PIM-DM

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

/ 说明:

PIM-DM

PIM-DM

PIM-DM

IGMP

Failed to enable PIM-DM on <
>, resource temporarily unavailable, please try again

PIM-DM Configure failed! VIF limit
exceeded in NSM!!!

PIM-DM


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

ip pim state-refresh disable

```
state-refresh disable          PIM          no          ip pim  
                                PIM-DM
```

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

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

SR Cap

Hello

Hello

PIM

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

注意:

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

PIM-DM

ip pim state-refresh origination-interval

```

PIM-DM
state-refresh origination-interval
no
ip pim

```

```

ip pim state-refresh origination-interval interval-seconds
no ip pim state-refresh origination-interval

```

| | |
|-------------------------|---------|
| | |
| <i>interval-seconds</i> | <1-100> |

60

```

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

```

show ip pim dense-mode interface

```

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

```

10.5 180.6 543.3203 Tj/TT61 Tf Tf 2 0 Td (324F0D011[<010 Td (09262c 0 Tw 14.5148F07A-



show ip pim dense-mode neighbor

```
Ruijie# show ip pim dense-mode neighbor
Neighbor-Address Interface      Uptime/Expires    Ver
10.10.10.1      FastEthernet 0/45 00:19:29/00:01:21 v2
50.50.50.1      VLAN 4          00:22:09/00:01:39 v2
```

| Neighbor-Address | |
|------------------|-----|
| Interface | |
| Uptime/Expires | |
| Ver | PIM |

show ip pim dense-mode nexthop

```
PIM-DM show ip pim dense-mode
nexthop
```

```
show ip pim dense-mode nexthop
```

```
/ /
```

PIM-DM

```
Ruijie# show ip pim dense-mode nexthop
Destination Nexthop Nexthop Nexthop Metric Pref
              Num      Addr      Interface
1.1.1.111    1        50.50.50.1 VLAN 4    0      1
```

| Destination | |
|--------------|--|
| Nexthop Num | |
| Nexthop Addr | |

PIM-SM

PIM-SM

PIM-SM

- ' **clear ip mroute**
- ' **clear ip mroute statistics**
- ' **clear ip pim sparse-mode bsr rp-set**
- ' **ip multicast-routing**
- ' **ip pim accept-register list**
- ' **ip pim bsr-candidate**
- ' **ip pim cisco-register-checksum**
- ' **ip pim dr-priority**
- '

- ' **show ip pim sparse-mode bsr-router**
- ' **show ip pim sparse-mode interface**
- ' **show ip pim sparse-mode local-members**
- ' **show ip pim sparse-mode mroute**
- ' **show ip pim sparse-mode neighbor**
- ' **show ip pim sparse-mode nexthop**
- '

| | |
|---|-------|
| * | pimsm |
| <i>group_address</i> | pimsm |
| <i>group_address</i> <i>source_address</i> | pimsm |

pimsm

```
Ruijie# clear ip mroute statistics *  
Ruijie# clear ip mroute statistics 224.2.2.2  
Ruijie# clear ip mroute statistics 224.2.2.2 2.2.2.2
```

clear ip pim sparse-mode bsr rp-set

clear ip pim sparse-mode bsr rp-set *

| | |
|---|--------|
| | |
| * | rp-set |

RP

```
Ruijie# clear ip pim sparse-mode bsr rp-set *
```

ip multicast-routing

ip multicast-routing

pimsm
ip pim sparse-mode pimsm

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

ip pim accept-register list

ip pim accept-register list *access-list*

| | |
|--------------------|---|
| | |
| <i>access-list</i> | access-list <100 199> <2000 2699> acl |

RP

RP

```
Ruijie (config)# ip pim accept-register list 100
Ruijie (config)# access-list 100 permit ip 192.168.195.0
0.0.0.255 225.1.1.1 0.0.0.255
```

access-list

ip pim bsr-candidate

ip pim bsr-candidate *interface-type interface-number*
 [*hash-mask-length*][*priority-value*]

| | |
|--|-------------------------|
| | |
| <i>interface-type interface-number</i> | |
| <i>hash-mask-length</i> | <0-32> RP HASH 10 |
| <i>priority-value</i> | <0-255> BSR 64 |

BSR

```

PIM-SM
RP
BSR BSR
PIM-SM BSR C-BSR BSR BSR
224.0.0.13
PIM BSR BSR
BSR BSR BSR
IP
    
```

```

Ruijie# configure terminal
Ruijie(config)# ip pim bsr-candidate g 0/3
Ruijie(config)# ip pim bsr-candidate g 0/3 30 192
    
```

ip pim cisco-register-checksum

ip pim cisco-register-checksum [**group-list** *access-list*]

| <i>access-list</i> | access-list <1 99> <1300 1999> acl group-list access-list |
|--------------------|---|

PIM

PIM

| | | |
|-----------------------|----------------|---|
| <i>priority-value</i> | <0-4294967294> | 1 |
|-----------------------|----------------|---|

DR 1

DR

```

'
DR          hello          DR
DR          IP             DR
'
          hello          DR
          DR             IP             DR
    
```

```

Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim dr-priority 10000
    
```

ip pim ignore-rp-set-priority

```

config-if)#      interface g
    
```

ip pim jp-timer

ip pim jp-timer interval-seconds

| <i>Interval-seconds</i> | <1-65535> |
|-------------------------|-----------|

join/prune

60s

join/prune

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

ip pim mib

ip pim mib dense-mode

sparse-mode MIB

dense-mode MIB

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

ip pim neighbor-filter

ip pim neighbor-filter *access_list*

| <i>access_list</i> | access-list | acl | 1-99 | acl |
|--------------------|-------------|-----|------|-----|

PIM

PIM-SM

peering

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim neighbor-filter 14
Ruijie(config-if)# exit
Ruijie(config)#access-list 14 deny 192.168.1.5
0.0.0.255
```

access-list

ip pim query-interval

ip pim query-interval *interval-seconds*

| <i>interval-seconds</i> | <1-65535> |
|-------------------------|-----------|

ip pim register-rp-reachability

ip pim register-rp-reachability

IP RP
Register-Stop

注意:

PIM-SM

```
Ruijie# configure terminal
Ruijie(config)# ip pim register-source 192.168.195.80
Ruijie(config)# ipv6 pim register-source g 0/3
```

ip pim register-suppression

ip pim register-suppression *seconds*

| | |
|----------------|------------|
| | |
| <i>seconds</i> | <11-21843> |

60

DR DR ip pim
rp-register-kat RP RPkeepalive

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

ip pim rp-address

ip pim rp-address *rp-address* [*access_list*]

| | | | | |
|--------------------|-------------|-----|--------|--------------|
| | | | | |
| <i>rp-address</i> | RP | IP | | |
| <i>access_list</i> | access-list | acl | <1-99> | <1-300-1999> |
| | | acl | | |

rp

```

RP RP BSR
' BSR RP
' RP ACL
' RP IP RP
' ACL 224/4 ACL
' RP RP
' IP RP
' IP RP
' RP RP
RP RP

```

```

Ruijie# configure terminal
Ruijie(config)# ip pim rp-address 210.34.0.55
Ruijie(config)# ip pim rp-address 210.34.0.55 4
Ruijie(config)# access-list 4 permit 225.1.1.1
0.0.0.255

```

access-list

ip pim rp-candidate

ip pim rp-candidate *interface-type interface-number* [**priority** *priority-value*][**interval** *interval-seconds*][**group-list** *access_list*]

| | |
|--|--|
| | |
| <i>interface-type</i> <i>interface-number</i> | |
| <i>priority-value</i> | <0-255> priority <i>priority-value</i> 192 |
| <i>Interval-seconds</i> | <1-16383> interval <i>interval-seconds</i> seconds interval-seconds 60s |
| <i>access_list</i> | acl 1-99 acl group-list <i>access_list</i> |

ip pim rp-register-kat

ip pim rp-register-kat *seconds*

| <i>seconds</i> | KAT <1-65535> |
|----------------|---------------|

group-list

SPT

```
Ruijie# configure terminal
Ruijie(config)# ip pim spt-threshold
Ruijie(config)# ip pim spt-threshold group-list 12
Ruijie(config)# access-list 12 permit 225.1.1.1
0.0.0.255
```

access-list

ip pim ssm

ip pim ssm { default / range access_list }

| | | | |
|--------------------|-------|------|-----|
| | | | |
| default | 232/8 | | |
| <i>access_list</i> | acl | 1-99 | acl |

SSM

PIM-SSM

PIM-SSM

232/8

```
Ruijie# configure terminal
Ruijie(config)# ip pim SSM default
10
Ruijie(config)# ip pim SSM range 10
Ruijie(config)# access-list 10 permit 232.0.0.1
0.0.0.255
```


interface-type
interface-number

| | |
|---------------|--|
| | |
| detail | |

/ /

```
Ruijie# show ip pim sparse-mode neighbor detail
```

```
Nbr 5.5.5.3 (VLAN 1)
```

```
Expires in 81 seconds
```

show ip pim sparse-mode nexthop

```
show ip pim sparse-mode nexthop
```

/ /

metric

show ip pim sparse-mode rp mapping

```
show ip pim sparse-mode rp mapping
```

/ /

RP

```
Ruijie (config)#sh ip pim sparse-mode rp mapping
PIM Group-to-RP Mappings
Group(s): 224.0.0.0/4
```

230.0.0.1

Ruijie# **clear ip mroute 230.0.0.1**

| show ip mroute | |
|-----------------------|--|

clear ip mroute statistics

IP

clear ip mroute statistics { * | *group-address* [*source -address*]

| * | |
|------------------------|--|
| <i>group-address</i> | |
| <i>source -address</i> | |

IP

230.0.0.1

Ruijie#

| | |
|------------------------|--|
| | |
| show ip mroute | |
| clear ip mroute | |

ip mroute

no

ip mroute *source-address mask [protocol as-number] {rpf-address | interface-type interface-number} [distance]*

no ip mroute *source-address mask [protocol as-number] {rpf-address | interface-type interface-number} [distance]*

clear ip mroute [source-address mask [protocol as-number] {rpf-address | interface-type interface-number} [distance]]

172.30.10.13

```
Ruijie(config)# ip mroute 172.16.0.0 255.255.0.0  
172.30.10.13
```

ip multicast route-limit

| | |
|------------------|-------------|
| | |
| <i>tll-value</i> | 0~255 TTL , |

tll-value 1

TTL TTL
TTL TTL 0

TTL 5

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

ip multicast-routing

no

ip multicast-routing
no ip multicast-routing

IPv4

IPv4

IPv4

IGMP

snooping

IGMP snooping

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

/ **说明:**

/

v4

ip multicast boundary

IP

IP

no

ip multicast boundary *access-list*

no ip multicast boundary *access-list*

| | |
|--------------------|---|
| | |
| <i>access-list</i> | IP access-list ACL |

ip multicast static

no

ip multicast static *source-address group-address interface-type interface-number*

no ip multicast static *source-address group-address interface-type interface-number*

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

PIM-DM PIM-SM

(192.168.43.4 225.1.1.5)

GigabitEthernet 2/6 FastEthernet 3/2

ruijie(config)# **ip multicast static** 192.168.43.4
225.1.1.5 G2/6

ruijie(config)# **ip multicast static** 192.168.43.4
225.1.1.5 F3/2


```

Ruijie# show ip mroute 10.10.1.52 224.0.1.3
IP Multicast Routing Table
Flags: I - Immediate Stat, T - Timed Stat, F - Forwarder
installed
Timers: Uptime/Stat Expiry
Interface State: Interface (TTL)
(10.10.1.52, 224.0.1.3), uptime 00:03:24, stat expires
00:01:28
Owner PIM-SM, Flags: TF
Incoming interface: FastEthernet 2/1
Outgoing interface list:
FastEthernet 1/3

```

```

Ruijie# show ip mroute count
IP Multicast Statistics
Total 1 routes using 132 bytes memory
Route limit/Route threshold: 2147483647/2147483647
Total NOCACHE/WRONGVIF/WHOLEPKT rcv from fwd: 1/0/0
Total NOCACHE/WRONGVIF/WHOLEPKT sent to clients: 1/0/0
Immediate/Timed stat updates sent to clients: 0/0
Reg ACK rcv/Reg NACK rcv/Reg pkt sent: 0/0/0
Next stats poll: 00:01:10
Forwarding Counts: Pkt count/Byte count, Other Counts:
Wrong If pkts
Fwd msg counts: WRONGVIF/WHOLEPKT rcv
Client msg counts: WRONGVIF/WHOLEPKT/Imm Stat/Timed Stat
sent
Reg pkt counts: Reg ACK rcv/Reg NACK rcv/Reg pkt sent
(10.10.1.52, 224.0.1.3), Forwarding: 2/19456, Other: 0
Fwd msg: 0/0, Client msg: 0/0/0/0, Reg: 0/0/0

```

```

Ruijie# show ip mroute summary
IP Multicast Routing Table
Flags: I - Immediate Stat, T - Timed Stat, F - Forwarder
installed
Timers: Uptime/Stat Expiry
Interface State: Interface (TTL)
(10.10.1.52, 224.0.1.3), 00:01:32/00:03:20, PIM-SM,
Flags: T

```

| | |
|-------|----------------|
| | |
| Flags | I- T- F- |

| | |
|---|---|
| Timers:Uptime/Stat Expiry | |
| Interface State | |
| Owner | |
| Incoming interface | |
| Outgoing interface list | |
| Forwarding Counts Pkt count/Byte count, | / |
| Other Counts: Wrong If pkts | |

| Interface | | Vif | Owner | TTL | Local |
|-----------|--------|----------|--------|---------|-------------|
| Remote | | Uptime | | | |
| Idx | Module | Address | | Address | |
| VLAN 1 | 1 | 1 | PIM-DM | 2 | 192.168.1.1 |
| 0.0.0.0 | | 00:13:16 | | | |

IP

IP

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

debug nsm mcast all

no

debug nsm mcast all

3 4€

4€

z

debug nsm mcast fib-msg

'B@9žÿ¼ " w MXu†`4¼ i• @, M' óP)1Ò \ A9€ 9fð P"Ñ»@ Ñœ Ü " %ø Ð óPà,Õ ™ j

debug nsm mcast fib-msg

Ruijie# **debug nsm mcast vif**

debug nsm mcast register

no

debug nsm mcast register

Ruijie# **debug nsm mcast register**

debug nsm mcast stats

no

debug nsm mcast stats

Ruijie# **debug nsm mcast stats**

-
- ' **storm-control**
 - ' **switchport protected**
 - ' **switchport port-security**
 - ' **switchport port-security aging**
 - ' **switchport port-security mac-address**
 - ' **port-security arp-check**

storm-control

no

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

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

broadcast

multicast

unicast

percent

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 | |

86 **pps**

switchport protected

no

switchport protected

no switchport protected

3

show interfaces

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

| show interfaces | |
|-----------------|--|

S32 S37

acl

switchport port-security

no

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

no switchport port-security [violation]

| port-security | |
|--------------------|------|
| violation protect | |
| violation restrict | trap |
| violation shutdown | Trap |

IP() MAC
)
 1
 M

Gigabitethernet 1/1
 shutdown

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

| show port-security | |
|--------------------|--|

switchport port-security aging

no

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

| Static | |
|-----------|----------|
| time time | 1440 0 0 |

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

show port-security

```

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

```

| | |
|---------------------------|--|
| | |
| show port-security | |

switchport port-security mac-address

no

**switchport port-security [mac-address *mac-address* [ip-address
ip-address]] | [maximum *value*]**

**no switchport port-security [mac-address *mac-address*] |
[maximum]**

| | |
|---------------------------------------|----|
| | |
| mac-address <i>mac-address</i> | |
| ip-address <i>ip-address</i> | IP |
| maximum <i>value</i> | |

~~00d0.f800.073c~~

```
ACL          IP      MAC
ACL          ACL     802.1x
              IP
              gigabitethernet 1/1
00d0.f800.073c      IP      192.168.12.202
Ruijie# configure terminal
```

Arp-check

Arp

arp

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

| | |
|---------------------------|--|
| | |
| show port-security | |

' **show storm-control**

' **show port-security**

show storm-control

show storm-control [*interface-id*]

| | |
|---------------------|--|
| | |
| <i>interface-id</i> | |

| | |
|---|--|
| switchport port-security mac-address | |
|---|--|

802.1X

| | |
|----------------------------------|--|
| <code>show dot1x auto-req</code> | |
|----------------------------------|--|

dot1x auto-req req-interval

dot1x auto-req user-detect

no

dot1x auto-req user-detect

no dot1x auto-req user-detect

show dot1x auto-req

```
Ruijie# configure terminal  
Ruijie(config)# dot1x auto-req user-detect  
Ruijie(config)# end  
Ruijie# show dot1x auto-req
```

```
Auto-Req: Enabled  
User-Detect : Enabled  
Packet-Num : 0  
Req-Interval: 60 Second
```

| | |
|----------------------------|--|
| | |
| show dot1x auto-req | |

dot1x

dot1x

' **dot1x timeout quiet-period**

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

dot1x timeout quiet-period

no

dot1x timeout quiet-period *seconds*

no dot1x timeout quiet-period

seconds

0 65535 s

10

show dot1x

1000s

```
Ruijie# configure terminal
```

```
Ruijie(config)# dot1x timeout quiet-period 1000
```

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

```
Ruijie# show dot1x
```

```
802.1X Status: Enabled
```

```
Authentication Mode: EAP-MD5
```

```
Authed User Number: EP0v4..00v4..00v4..00v43..0E53>-6<2AFC18DB092F
```

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 |

dot1x timeout re-authperiod

no

dot1x timeout re-authperiod *seconds*

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

| | |
|-------------------|--------|
| | |
| show dot1x | 802.1x |

dot1x timeout server-timeout

no

dot1x timeout server-timeout *seconds*

no dot1x timeout server-timeout

seconds

1

65535

5

show dot1x

10s

Ruijie# **configure terminal**

Ruijie(config)# **dot1x timeout server-timeout 10**

Ruijie(config)# **end**

Ruijie# **show dot1x**

802.1X Status: Enabled
Authentication Mode: EAP-MD5
Authenticated User Number: 0
Re-authen Enabled: Disabled
Re-authen Period: 1000 sec
Quiet Timer Period: 1000 sec
Tx Timer Period: 3 sec
Supplicant Timeout: 3 sec
Server Timeout: 10 sec
Re-authen Max: 3 times
Maximum Request: 3 times
Filter Non-RG Supp-1.45 sec

```
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 |

dot1x timeout tx-period

no

show dot1x

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 |

dot1x

```
' dot1x re-authentication
' dot1x reauth-max
```

dot1x re-authentication

no

[no] **dot1x re-authentication**

show dot1x

```
Ruijie# configure terminal
Ruijie(config)# dot1x re-authentication
Ruijie(config)# end
Ruijie# show dot1x
```

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

dot1x reauth-max

no

dot1x reauth-max *count*

no dot1x reauth-max

count

3

show dot1x

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

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

| | |
|-------------------|--------|
| | |
| show dot1x | 802.1x |

dot1x

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

dot1x probe-timer

```
dot1x probe-timer{interval | alive}interval
no dot1x probe-timer
```

no

alive

interval

interval hello

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 | |

dot1x client-probe enable

[no] dot1x client-probe enable

```
Ruijie# configure terminal
Ruijie(config)# dot1x client-probe enable
Ruijie(config)# end
Ruijie# show dot1x
```

```
802.1X Status:      Enabled
Authentication Mode: EAP-MD5
Authed User Number: 0
Re-authen Enabled:  Enabled
Re-authen Period:   1000 sec
Quiet Timer Period: 1000 sec
Tx Timer Period:    10 sec
Supplicant Timeout: 10 sec
```

```

Server Timeout:      10 sec
Re-authen Max:      5 times
Maximum Request:    3 times
Filter Non-RG Supp: Disabled
Client Oline Probe: Enabled
Eapol Tag Enable:   Disabled
Authorization Mode:  Group Server

```

| | |
|-------------------|-------|
| | |
| show dot1x | dot1x |

dot1x

```

dot1x
' dot1x authentication
' dot1x accounting
' dot1x auth-address-table
' dot1x auth-mode
' dot1x default
' dot1x dynamic-vlan enable
' dot1x eapol-tag
' dot1x max-req
' dot1x private-supplicant-only
' dot1x port-control auto
' dot1x port-control-mode
' dot1x stationarity enable

```

dot1x authentication

```

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

default
list-name

```

AAA

AAA

AAA

dot1x

AAA **enable** AAA **dot1x authentication** *auth* **aaa domain** *auth*

AAA

group radius

```
Ruijie# configure terminal
Ruijie(config)# aaa new-model
Ruijie(config)# aaa authentication dot1x default group radius
Ruijie(config)# interface fastEthernet0/1
Ruijie(config-if)# dot1x authentication default
Ruijie(config-if)# end
Ruijie#
```

| | |
|---------------------------------|-----|
| | |
| aaa new-model | AAA |
| aaa authentication dot1x | |

dot1x accounting

AAA

AAA

no

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

default*list-name*

AAA default

AAA dot1x

enable AAA dot1x accounting aaa domain

AAA

group radius

```
Ruijie# configure terminal
Ruijie(config)# aaa new-model
Ruijie(config)#aaa accounting network acct start-stop
group radius
Ruijie(config)# dot1x accounting acct
Ruijie(config)# end
Ruijie#
```

| | |
|--------------------------|-----|
| | |
| aaa new-model | AAA |
| aaa authentication dot1x | |

dot1x auth-address-table

802.1X

no

dot1x auth-address-table address *mac-addr* **interface** *interface*

no dot1x auth-address-table address *mac-addr* **interface** *interface*

mac-addr

Interface

802.1X **show dot1x**

auth-address table

```
Ruijie# configure terminal
Ruijie(config)# dot1x auth-address-table address
00d0f8000000 interface ethernet 1/1
Ruijie(config)# end
Ruijie#
```

| | |
|--------------------------------------|--------|
| | |
| show dot1x auth-address-table | 802.1X |

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 |

dot1x default

802.1x

dot1x default

show dot1x 802.1x

802.1x

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

| | |
|-------------------|--------|
| | |
| show dot1x | 802.1x |

dot1x dynamic-vlan enable

vlan **no**

```
dot1x dynamic-vlan enable
no dot1x dynamic-vlan enable
```

show dot1x dynamic-vlan

802.1x vlan

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

| | |
|-------------------|--------|
| | |
| show dot1x | 802.1x |

dot1x eapol-tag

EAPOL TAG

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

show dot1x

802.1X tag

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

| | |
|-------------------|--------|
| | |
| show dot1x | 802.1x |

dot1x max-req

```
DOT1X DOT1X DOT1X  
DOT1X  
no
```

```
dot1x max-req count  
no dot1x max-req
```

count

3

show dot1x

802.1x 7

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

| | |
|-------------------|--------|
| | |
| show dot1x | 802.1x |

dot1x private-supplicant-only

no

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

show dot1x private-supplicant-only

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

| | |
|--|--|
| | |
|--|--|

| |
|---|
| <code>show dot1x private-supplicant-only</code> |
|---|

dot1x port-control auto

no

```
dot1x port-control auto
no dot1x port-control
```

802.1x

show dot1x

802.1x

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

| | |
|-------------------|--------|
| | |
| show dot1x | 802.1x |

dot1x port-control-mode

802.1x

MAC

802.1x

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

dot1x

```
' show dot1x
' show dot1x auth-address-table
' show dot1x auto-req
' show dot1x private-supPLICANT-only
' show dot1x max-req
' show dot1x port-control
' show dot1x probe-timer
' show dot1x re-authentication
' show dot1x reauth-max
' show dot1x summary
' show dot1x timeout
' show dot1x user id
```

show dot1x

802.1x

```
show dot1x
```

```
Ruijie# show dot1x
802.1X Status:      Enabled
Authentication Mode: EAP-MD5
Authed User Number: 0
Re-authen Enabled:  Disabled
Re-authen Period:   3600 sec
Quiet Timer Period: 10 sec
Tx Timer Period:    3 sec
Suppl1-1.1Timer                               Timer Period:
```

| | |
|-------------------------------------|--|
| dot1x timeout server-timeout | |
| dot1x timeout supp-timeout | |
| dot1x timeout tx-period | |

show dot1x auth-address-table

802.1X

show dot1x auth-address-table[*addressmac-addr*][*interface interface*]

mac-addr

interface

```
Ruijie# show dot1x auth-address-table
interface:g3/1
-----
mac addr: 00D0.F800.0001
Ruijie#
```

| | |
|--------------------------------|--------|
| | |
| dot1x auth-mode | 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 | |

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  
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 | |

show dot1x private-supPLICANT-only

show dot1x private-supPLICANT-only

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

show dot1x port-control

show dot1x port-control [*interface interface*]

interface

```
Ruijie# show dot1x port-control  
interface dyn-user static-user max-user qos
```



```
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 | |

show dot1x re-authentication

```
show dot1x re-authentication
```

```
Ruijie# show dot1x re-authentication  
reauth-enabled: disabled  
Ruijie#
```



```
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 | |

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 | |

show dot1x user id

802.1X

show dot1x user id <id>

| <i>id</i> | show summary | id |
|-----------|--------------|----|
|-----------|--------------|----|

```
Ruijie# show dot1x user id 1
```

```
User name: caikov
```

| 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 | |

show dot1x timeout

802.1X

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

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



AAA

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

aaa authentication dot1x

```
AAA      802.1X      aaa
authentication dot1x 802.1X      no
      802.1X
```

```
aaa authentication dot1x {default | list-name} method1 [method2...]
no aaa authentication dot1x {default | list-name}
```

```
default      802.1X
list-eult 65 802.1X
```

C

```
AAA 802.1X AAA 802.1X  
aaa authentication dot1x  
802.1X
```

```
rds_d1x AAA 802.1X  
RADIUS RADIUS
```

```
Ruijie(config)# aaa authentication dot1x rds_d1x group  
radius local
```



aaa authentication ppp {default | *list-name*} *method1* [*method2*...]

no aaa authentication ppp {default | *list-name*}

default PPP

list-name PPP

method 4

| | |
|--------------|--------|
| | |
| local | |
| none | |
| group | RADIUS |

AAA PPP

AAA PPP

aaa authentication ppp

PPP

rds_ppp AAA PPP

© 2010 H3C

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

aaa authorization commands

| | NAS | CLI | AAA |
|------------------|-----|-----|--|
| | | | aaa authorization commands no |
| AAA | | | |
| | | | aaa authorization commands <i>level</i> { default <i>list-name</i> } <i>method1</i> [<i>method2...</i>] |
| | | | no aaa authorization commands <i>level</i> { default <i>list-name</i> } |
| <i>level</i> | | | 0~15 |
| default | | | |
| <i>list-name</i> | | | |
| <i>method</i> | | | 4 |

Ö9-öey - D Î PÃ4~! qT Á~!à«â! û•WÁ9I ,A¹ -sçÊÃf @Ð-aY",A°- 16Î P/

AAA

14

14

TACACS+ 15

```
Ruijie(config)# aaa authorization commands 15 default  
group tacacs+
```

| aaa new-model | AAA |
|-------------------------------|-----|
| authorization commands | |

aaa authorization config-commands

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 |

aaa authorization console

AAA

aaa authorization console

no

AAA

aaa authorization console

no aaa authorization console

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

| aaa new-model | AAA |
|-----------------------------------|-----|
| aaa authorization commands | AAA |
| authorization commands | |

aaa authorization exec

| | | | | |
|-------------------------------|---------------------------------------|-------------------------------|------|-----------|
| AAA | NAS | CLI | Exec | |
| | | aaa authorization exec | | no |
| AAA Exec | | | | |
| aaa authorization exec | { default <i>list-name</i> } | <i>method1</i> [| | no |

RADIUS Exec

```
Ruijie(config)# aaa authorization exec default group
radius
```

| aaa new-model | AAA |
|--------------------|-----|
| authorization exec | |
| username | |

aaa authorization network

```
AAA PPP SLIP
aaa authorization network no
AAA
```

```
aaa authorization network {default | list-name} method1 [method2...]
```

```
no aaa authorization network {default | list-name}
```

```
default Network
```

```
method 4
```

| none | |
|-------|--------|
| group | RADIUS |

AAA Network

PPP SLIP

cmd 15
TACACS+ none
VTY 0 - 4

```
Ruijie(config)# aaa authorization commands 15 cmd group tacacs+ none
```

```
Ruijie(config)# line vty 0 4
```

```
Ruijie(config-line)# authorization commands 15 cmd
```

| aaa new-model | AAA |
|-----------------------------------|-----|
| aaa authorization commands | AAA |

authorization exec

Exec
authorization exec no Exec

authorization exec {default | list-name}

no authorization exec

default Exec

list-name Exec

AAA Exec

Exec

AAA

Exec

Exec

Exec

exec-1 Exec

level 0~15

default

list-name

method 4

| | |
|-------------|--|
| | |
| none | |

group TACACS+

aaa accounting exec

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 4

| | |
|--------------|----------------|
| | |
| none | |
| group | TACACS+ RADIUS |

Exec
none Exec

Start NAS CLI Stop

AAA

group radius



aaa new-model

AAA

```
Ruijie(config)# aaa accounting network default  
start-stop group radius
```

| | |
|----------------------------------|-----|
| | |
| aaa new-model | AAA |
| aaa authorization network | AAA |
| aaa authentication | AAA |
| username | |

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 | |

aaa accounting update periodic

periodic aaa accounting update
no

aaa accounting update periodic *interval*

no aaa accounting update periodic

interval 1

5 minutes

AAA

AAA

1

```
Ruijie(config)# aaa new-model
Ruijie(config)# aaa accounting update
Ruijie(config)# aaa accounting update periodic 1
```

| | |
|------------------------|-----|
| | |
| aaa new-model | AAA |
| aaa accounting network | |

accounting commands

accounting commands no

accounting commands *level* {**default** | *list-name*}

no accounting commands *level*

level 0~15

default

list-name

```
TACACS+          cmd          15          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 |

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
```

```
' accounting network
' authentication dot1x
' authorization network
' state
' show aaa domain
' username-format
```

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 | |

aaa domain enable

AAA

AAA

no

aaa domain enable

no aaa domain enable

AAA

AAA

AAA

Ruijie(config)# **aaa domain enable**

| | |
|------------------------|-----|
| | |
| aaa new-model | AAA |
| show aaa domain | |

access-limit

IEEE802.1x

no

access-limit num

no access-limit

num

IEEE802.1x

ruijie.com

20

Ruijie(config)# **aaa domain** *ruijie.com*Ruijie(config-aaa-domain)# **access-limit** 20

| | |
|--------------------------|-----|
| | |
| aaa new-model | AAA |
| aaa domain enable | AAA |
| show aaa domain | |

accounting network

Network

no**accountingnetwork** {**default** | *list-name*}**no accounting network****default***list-name*

default

AAA

Network

Network

state

no

state {block | n o a t

domain.com

Ruijie# **show aaa domain domain.com**

=====
Domain domain.com=====

State: Active

Username format: Without-domain

Access limit: No limit

802.1X Access statistic: 0

Selected method list:

authentication dot1x default

username-format

NAS

no

username-format {without-domain

```
Ruijie(config)# aaa domain ruijie.com  
Ruijie(config-aaa-domain)# username-domain  
without-domain
```

| aaa new-model | AAA |
|--------------------------|-----|
| aaa domain enable | AAA |
| show aaa domain | |

AAA

```
' aaa group server  
' server  
' show aaa group
```

aaa group server

```
AAA no  
aaa group server {radius | tacacs+} name  
no aaa group server {radius | tacacs+} name
```

```
name radiusw /C2_0 1 Tf0 Tc 0 T51 0 Ts  
Ö' h"d" Ý Ñ/ ³G!5BCACS+F0E0DB34721354
```

```
Ruijie# show aaa group
Group Name:  ss
Group Type:  radius
Referred:   1
Server List:
```

| | |
|-----------------------|-----|
| | |
| show aaa group | aaa |

AAA

Server List:
IP Address: 192.168.4.12
Authentication Port: 6
Accounting Port: 5
Referred: 1

| aaa group server | aaa |
|-------------------------|-----|
| show aaa group | aaa |

show aaa group

AAA

show aaa group

AAA

```
Ruijie# show aaa group
Group Name: ss
Group Type: radius
Referred: 2
Server List:
IP Address: 192.168.217.64
Authentication Port: 1812
Accounting Port: 1813
Referred: 1
```

| | |
|------------------|-----|
| | |
| aaa group server | AAA |

AAA

- ' **aaa local authentication attempts**
- ' **aaa local authentication lockout-time**
- ' **aaa new-model**
- ' **clear aaa local user lockout**
- ' **debug aaa**
- ' **show aaa method-list**
- ' **show aaa user lockout**

aaa local authentication attempts

login

aaa local authentication attempts *max-attempts*

max-attempts

1~2147483647

3

Login

Ruijie# **configure terminal**

Ruijie(config)# **aaa local authentication attempts 6**

| | |
|----------------------------|--|
| | |
| show running-config | |

| | |
|------------------------|-------|
| show aaa logout | login |
|------------------------|-------|

aaa local authentication logout-time

login

aaa local authentication logout-time *logout-time*

logout-time

1~2147483647

15

login

```
Ruijie# configure terminal
```

```
Ruijie(config)# aaa local authentication logout-time
```

```
5
```

| | |
|----------------------------|--|
| show running-config | |
|----------------------------|--|

show aaa logout

AAA

AAA

AAA
aaa new-model AAA AAA AAA AAA

AAA <W1&K0

```
Ruijie# clear aaa local user lockout all
```

| | |
|----------------------------|-------|
| | |
| show running-config | |
| show aaa lockout | login |

debug aaa

AAA

no

debug aaa event

no debug aaa event

¶

~ B

AAA

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

| aaa authentication | |
|---------------------------|--|
| aaa authorization | |
| aaa accounting | |

show aaa user logout

6(aaa user logout>]T/T0 1 Tf 0.0020 Tc 0 Tw 08.72 0 T

| | |
|----------------------------|-------|
| | |
| show running-config | |
| show aaa lockout | login |

RADIUS

RADIUS

RADIUS

- ' **ip radius source-interface**
- ' **radius-server host**
- ' **radius-server key**
- ' **radius-server retransmit**
- ' **radius-server timeout**
- ' **radius-server dead-time**
- ' **radius attribute**
- ' **radius set qos cos**
- ' **radius vendor-specific extend**

ip radius source-interface

```
radius source-interface no ip radius RADIUS
ip radius source-interface interface
no radius source-interface
```

Interface DAA5 radius

```

radius          radius          fastEthernet 0/0          ip
radius
Ruijie(config)# ip radius source-interface
fastEthernet 0/0
    
```

| | |
|---------------------------|--------|
| | |
| radius-server host | RADIUS |
| ip address | ip |

radius-server host

```

RADIUS          radius-server
no              RADIUS

radius-server host {hostname | ip-address} [auth-port port-number]
[acct-port port-number]
no radius-server host {hostname | ip-address}
    
```

```

hostname: RADIUS          DNS
ip-address: RADIUS        IP
auth-port: RADIUS        UDP
port-number: RADIUS      UDP          0

acct-port: Radius        UDP
port-number: RADIUS      UDP          0
    
```

RADIUS

```

RADIUS  AAA          RADIUS
radius-server      RADIUS
    
```

RADIUS

```
Ruijie(config)# radius-server host 192.168.12.1
```

| | |
|---------------------------------|--------|
| | |
| aaa authentication | AAA |
| radius-server key | RADIUS |
| radius-server retransmit | RADIUS |
| radius-server timeout | RADIUS |

radius-server key

```

RADIUS
radius-server key no

```

```

radius-server key text-string
no radius-server key

```

text-string

```

RADIUS
RADIUS
RADIUS

```

```

RADIUS
aaa

```

```
Ruijie(config)# radius-server key aaa
```

| | |
|--|--|
| | |
|--|--|

| | |
|---------------------------------|--------|
| radius-server host | RADIUS |
| radius-server retransmit | RADIUS |
| radius-server timeout | RADIUS |

radius-server retransmit

RADIUS

radius-server retransmit**no****radius-server retransmit** *retries***no radius-server retransmit***retries* RADIUS

3

AAA

RADIUS

4

Ruijie(config)# **radius-server retransmit 4**

| | |
|------------------------------|--------|
| | |
| radius-server host | RADIUS |
| radius-server key | RADIUS |
| radius-server timeout | RADIUS |

radius-server timeout

RADIUS
radius-server timeout **no**

radius-server timeout *seconds*

no radius-server timeout

seconds

1-1000

5

10

Ruijie(config)# **radius-server timeout** 10

| | |
|---------------------------------|--------|
| | |
| radius-server host | RADIUS |
| radius-server retransmit | RADIUS |

minutes

1-1000

5

10

Ruijie(config)# **radius-server deadtime 10**

| radius-server host | RADIUS |
|---------------------------------|--------|
| radius-server retransmit | RADIUS |
| radius-server key | RADIUS |
| radius-server timeout | RADIUS |

radius attribute

radius attribute{<*id*> | **down-rate-limit** | **dscp** | **mac-limit** | **up-rate-limit**} **vendor-type** <*type*>

no radius attribute {<*id*>|**down-rate-limit** | **dscp** | **mac-limit** | **up-rate-limit**} **vendor-type**

id *id* <1-255>

type *type*

| id | | type |
|-----------|---------------|-------------|
| 1 | max down-rate | 1 |
| 2 | qos | 2 |

RADIUS

| | | |
|----|----------------------|----|
| 7 | user name | 7 |
| 8 | password | 8 |
| 9 | file-diractory | 9 |
| 10 | file-count | 10 |
| 11 | file-name-0 | 11 |
| 12 | file-name-1 | 12 |
| 13 | file-name-2 | 13 |
| 14 | file-name-3 | 14 |
| 15 | file-name-4 | 15 |
| 16 | max up-rate | 75 |
| 17 | version to server | 17 |
| 18 | flux-max-high32 | 18 |
| 19 | flux-max-low32 | 19 |
| 20 | proxy-avoid | 20 |
| 21 | dailup-avoid | 21 |
| 22 | ip privilige | 22 |
| 23 | login privilige | 42 |
| 24 | limit to user number | 50 |

max up-rate 211

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

| | |
|--------------------|-------------------|
| | |
| radius set qos cos | radius qos cos |

radius set qos cos

radius qos cos

radius set qos cos
no radius set qos cos

qos dscp

qos cos dscp

Ruijie(config)# **radius set qos cos**

| | |
|--------------------------------------|-----------|
| | |
| radius vendor-specific extend | Radius id |

radius vendor-specific extend

id

radius vendor-specific extend
no radius vendor-specific extend

id

id

Ruijie(config)# radius vendor-specific extend

| radius attribute | |
|------------------|--------------|
| radius set | qos cos |

RADIUS

debug radius [event] detail 1 Tf0 Tc 0 Tw 6.554 0 Td-0.00040/C2_0 1 Tf3.99()Tj/C

radius

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

| radius-server host | RADIUS |
|--------------------------|--------|
| radius-server retransmit | RADIUS |
| radius-server key | RADIUS |
| radius-server timeout | RADIUS |

show radius parameter

RADIUS

show radius parameter

radius

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

| radius-server host | RADIUS |
|--------------------------|--------|
| radius-server retransmit | RADIUS |
| radius-server key | RADIUS |
| radius-server timeout | RADIUS |

show radius vendor-specific

RADIUS

show radius vendor-specific

RADIUS

| | | |
|----|-------------------|----|
| 2 | qos | 77 |
| 3 | user ip | 3 |
| 4 | vlan id | 4 |
| 5 | version to client | 5 |
| 6 | net ip | 6 |
| 7 | user name | 7 |
| 8 | password | 8 |
| 9 | file-diractory | 9 |
| 10 | file-count | 10 |
| 11 | file-name-0 | 11 |
| 12 | file-name-1 | 12 |
| 13 | file-name-2 | 13 |
| 14 | file-name-3 | 14 |
| 15 | file-name-4 | 15 |
| 16 | max up-rate | 75 |
| 17 | version to server | 17 |
| 18 | flux-max-high32 | 18 |
| 19 | flux-max-low32 | 19 |
| 20 | proxy-avoid | 20 |

TACACS+

TACACS+

TACACS+

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

aaa group server tacacs+

TACACS+

TACACS+

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

```
group-name TACACS+
```

TACACS+

TACACS+

ar1#TACACS+

Ruijie(config-gs-tacacs+)# **server** 1.1.1.1

| | | |
|--------------------------|---------|--------|
| | | |
| server | TACACS+ | server |
| ip vrf forwarding | TACACS+ | VRF |

TACACS+

server *ip-address*

no server *ip-address*

ip-address TACACS+

TACACS+

aaa group server tacacs+

TACACS+
tacacs-server host

TACACS+

1.1.1.1 TACACS+

Ruijie(config)# **aaa**

Ruijie(config-gs-tacacs+)#

| | |
|---------------------------------|---------|
| | |
| aaa group server tacacs+ | TACACS+ |

| | | |
|--------------------------|---------|-----|
| ip vrf forwarding | TACACS+ | VRF |
|--------------------------|---------|-----|

ip tacacs source-interface

TACACS+

```
ip tacacs source-interface interface  
no ip tacacs source-interface
```

Interface TACACS+

TACACS+

no tacacs-server host *ip-address*

ip-address TACACS+ IP
port *integer* TACACS+ TCP
timeout *integer* TACACS+
key *string* TACACS+ client

TACACS+

TACACS+ AAA TACACS+
tacacs-server TACACS+

TACACS+

Ruijie(config)# **tacacs-server host** 192.168.12.1

| | |
|------------------------------|---------|
| | |
| aaa authentication | AAA |
| tacacs-server key | TACACS+ |
| tacacs-server timeout | TACACS+ |

tacacs-server key

TACACS+

tacacs-server key [0 | 7] *string*

no tacacs-server key

string

0 | 7 0 7

TACACS+

```
Ruijie# show tacacs  
Tacacs+ Server : 172.19.192.80/49  
Socket Opens: 0  
Socket Closes: 0  
Total Packets Sent: 0  
Total Packets Recv: 0  
Reference Count: 0
```

| tacacs-server host | TACACS+ |
|---------------------------|---------|

SSH

SSH

SSH

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

crypto key generate

crypto key generate {rsa | dsa}

| | |
|------------|-----|
| | |
| rsa | RSA |
| dsa | DSA |

SSH Server

```

SSH Server
enable service ssh-server
SSH 1  RSA  SSH 2  RSA
      RSA  SSH1  SSH2
DSA      SSH2
SSH
SSH Server
DSA

```

注意:

key zeroize no crypto key generate crypto

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



```
show ip ssh
```

```
Sshd( # 10840225 ) 089578.40 057600(2) 3260
```

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

| show ip ssh | SSH Server |
|--------------------------------------|------------|
| crypto key generate {rsa dsa} | DSA RSA |

RGOS10.1

ip ssh version

SSH server no

```
ip ssh version {1 / 2}
no ip ssh version
```

| 1 | SSH Server | SSH1 |
|----------|------------|------|
| 2 | SSH Server | SSH2 |

```
SSH SSH 1 2
no ip ssh version
```

```
SSH Server SSH
SSH Server SSH1 SSH2 SSH 1
SSH 2 1 2
SSH show ip ssh SSH Serv
er
```

2

```
Ruijie# configure terminal
Ruijie(config)# ip ssh version 2
```

| | |
|-------------|------------|
| | |
| show ip ssh | SSH Server |

RGOS10.1

ip ssh time-out

SSH Server

no

```
ip ssh time-out time
no ip ssh time-out
```

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

```
time-out          120s          no ip ssh
```

```
SSH Server
120s
show ip ssh      SSH server
```

100s

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

| | |
|--------------------|------------|
| | |
| show ip ssh | ssh-server |

RGOS10.1

ip ssh authentication-retries

SSH Server

no

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

| | |
|--------------------|--|
| | |
| <i>retry times</i> | |

3

no ip ssh**authentication-retries**

SSH Server

SSH Server

ip ssh

SSH Server

show

2

Ruijie# **configure terminal**Ruijie(config)# **ip ssh ssh authentication-retries 2**

| | |
|--------------------|------------|
| | |
| show ip ssh | SSH Server |

RGOS10.1

SSH

SSH

- ' **show ip ssh**
- ' **show ssh**
- ' **show crypto key mypubkey**
- ' **disconnect ssh**

show ip ssh

SSH Server

show ip ssh

SSH Server
Server

SSH

SSH

SSH

Ruijie# **show ip ssh**

| ip ssh version {1 2} | SSH Server |
|-------------------------------|------------|
| ip ssh time-out time | SSH Server |

| |
|--|
| ip ssh authentication-retries retry times |
|--|

| |
|------------|
| SSH Server |
|------------|

RGOS10.1

show ssh

SSH

show ssh

SSH

VTY

SSH

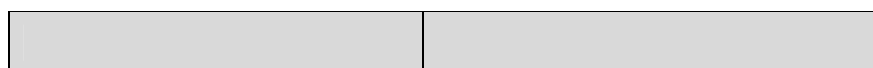
Ruijie# **show ssh**

RGOS10.1

show crypto key mypubkey

SSH Server

show crypto key mypubkey {rsa/dsa}



VTY SSH SSH SSH

Ruijie# **disconnect ssh 1**

Ruijie# **disconnect ssh vty 1**

| | |
|--|-----|
| | |
| show ssh | SSH |
| Clear line vty <i>line_number</i> | VTY |

RGOS10.1

GSN

- ' **security gsn enable**
- ' **security community**
- ' **snmp-server host**
- ' **scurity event interval**

- ' **security address-bind enable**

security gsn enable

GSN no

- security gsn enable**
- no security gsn enable**

GSN

GSN

```
Ruijie# configure terminal  
Ruijie(config)# security gsn enable
```

RGOS10.1

security community

smp

security { [

no smp-server host

ip-address smp server ip

smp server

show smp-server

Ruijie(config)#**smp-server host 192.168.4.243**

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

| | |
|-------------------------------------|--|
| | |
| show security event interval | |

RGOS10.1

security address-bind enable

security address-bind enable

RGOS10.1

:

show smp-server
show security event interval

show smp-server

smp server IP

smp server IP

Ruijie# **show smp-server**
SMP-Server IP 192.168.20.30

| smp-server host | smp server ip |
|------------------------|---------------|

RGOS10.1

show security evnet interval

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



security event interval *interval*

DAI

VLAN DAI

ip arp inspection vlan

ip arp inspection vlan vlan-id

```

          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*]

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

ip arp inspection trust

```

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

```

ARP          DAI
            ARP
    
```

gigabitEthernet 0/19

```

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

| | |
|---|-----|
| | |
| show ip arp inspection interface | DAI |

```

NFPP(          )
DAI          NFPP
    
```

ARP

ip arp inspection limit-rate

ip arp inspection limit-rate limit-rate

```

                                ARP                                ip arp
inspection limit-rate          no
ip arp inspection limit-rate {limit-rate | none }
no ip arp inspection limit-rate

```

| | |
|-------------------|--------|
| | |
| none | |
| <i>limit-rate</i> | 1 2048 |

```

                                15 ARP /
0

```

DAI
(Network Foundation Protection Policy)

```

                                VLAN 2          gigabitEthernet 0/2
10 ARP /

Ruijie(config)# ip arp inspection
Ruijie(config)# interface gigabitEthernet 0/2
Ruijie(config-if)# ip arp inspection limit-rate 10

```

DHCP Snooping

VLAN DAI ARP
 ARP
DHCP Snooping . DHCP Snooping
 DHCP Snooping DHCP Snooping

ACL

| | |
|-----------------------|--|
| | |
| id | IP ACL: 1-99,1300-1999 IP ACL: 100-199,2000-2699 MAC ACL: 700-799 ACL: 2700-2899 |
| name | ACL |
| sn | ACL () |
| start-sn | |
| inc-sn | |
| deny | |
| permit | |
| prot | IPv6 ipv6, icmp, tcp,udp 0-255 IPv4 eigrp, gre, ipinip, igmp, nos, ospf, icmp, udp, tcp, ip IP 0-255 icmp/tcp/udp |
| interface idx | |
| src | |
| src-wildcard | 0.255.0.32 |
| src-ipv6-pfix | IPv6 |
| dst-ipv6-pfix | IPv6 |
| pfix-len | |
| src-ipv6-addr | IPv6 |
| dst-ipv6-addr | IPv6 |
| dscp dscp | , 0-63 |
| flow-label flow-label | 0-1048575 |
| dst | |
| dst-wildcard | 0.255.0.32 |
| fragment | |
| precedence precedence | 0-7 |

| | |
|------------------------|---|
| time-range tm-rng-name | tm-rng-name |
| tos tos | 0-15 |
| cos cos | cos (0-7) |
| cos inner cos | tag cos |
| icmp-type | ICMP 0-255 |
| icmp-code | ICMP 0-255 |
| icmp-message | ICMP |
| operator port[port] | Operator lt- eq- gt- neq- range- port |
| src-mac-addr | |
| dst-mac-addr | |
| VID vid | vlan id |
| VID inner vid | tag vid |
| ethernet-type | 0x |

match-all tcpf

tcp flag

| | | | | | | | |
|---|-----|---------|-------|----|----------|----|---------|
| J | IP | 26 | XY | IP | | 58 | |
| K | TOS | 24069.4 | 61TdZ | 1 | Tf0.1543 | Tc | 3.0286. |

 ipv6 traffic-filter

access-list

no

1) 1 IP 1 - 99 1300 - 1999

access-list *id* {deny | permit} {source source-wildcard | host source | any}

2) IP 100 - 199 2000 - 2699

access-list *id* {deny | permit} protocol {source source-wildcard | host source | any} {destination destination-wildcard | host destination | any} [precedence precedence] [tos tos] [fragments] [time-range time-range-name]

3) MAC 700 - 799

access-list *id* {deny | permit} {any | host source-mac-address} {any | host destination-mac-address} [ethernet-type][cos [out][inner in]]

4) Expert 2700 - 2899

access-list *id* {deny | permit} [protocol | [ethernet-type][cos [out][inner in]]] [VID [out][inner in]] {source source-wildcard | host source | any} {host source-mac-address | any} {destination destination-wildcard | host destination | any} {host destination-mac-address | any} [[precedence precedence] [tos tos] [fragments] [time-range time-range-name]

Ethernet-type cos

access-list *id* {deny | permit} {ethernet-type| cos [out][inner in]} [VID [out][inner in]] {source source-wildcard | host source | any} {host source-mac-address | any } {destination destination-wildcard | host destination | any} {host destination-mac-address | any} [time-range time-range-name]

Protocol

access-list *id* {deny | permit} protocol [VID [out][inner in]] {source source-wildcard | host source | any} {host source-mac-address | any } {destination destination-wildcard | host destination | any} {host destination-mac-address | any} [precedence precedence] [tos tos] [fragments] [time-range time-range-name]

Expert

Internet Control Message Protocol (ICMP)

access-list *id* {deny | permit} icmp [VID [*out*][inner *in*]] {source *source-wildcard* | host *source* | any} {host *source-mac-address* | any} {destination *destination-wildcard* | host *destination* | any} {host *destination-mac-address* | any} [icmp-type] [[icmp-type [*icmp-code*]] | [*icmp-message*]] [precedence *precedence*] [tos *tos*] [fragments] [time-range *time-range-name*]

Transmission Control Protocol (TCP)

access-list *id* {deny | permit} tcp [VID [*out*][inner *in*]] {source *source-wildcard* | host *Source* | any} {host *source-mac-address* | any} [operator *port* [*port*]] {destination *destination-wildcard* | host *destination* | any} {host *destination-mac-address* | any} [operator *port* [*port*]] [precedence *precedence*] [tos *tos*] [fragments] [time-range *time-range-name*] [match-all *tcp-flag*]

User Datagram Protocol (UDP)

access-list *id* {deny | permit} udp [VID [*out*][inner *in*]] {source *source-wildcard* | host *source* | any} {host *source-mac-address* | any} [operator *port* [*port*]] {destination *destination-wildcard* | host *destination* | any} {host *destination-mac-address* | any} [operator *port* [*port*]] [precedence *precedence*] [tos *tos*] [fragments] [time-range *time-range-name*]

5)

access-list *list-remark text*

id 1-99 100-199 1300-1999 2000-2699 È

precedence 0-7

time-range
time-range-name

tos
tos 0-15

icmp-type ICMP 0-255

icmp-code ICMP 0-255

icmp-message ICMP

operator lt- eq- gt- neq- range-

port [*port*] *range*

host *source-mac-address*

' **syn**

' **fin**

' **critical**

' **flash**

' **flash-override**

' **immediate**

' **internet**

' **network**

' **priority**

' **routine**

' **max-reliability**

' **max-throughput**

' **min-delay**

' **min-monetary-cost**

' **normal**

ICMP

' **administratively-prohibited**

' **dod-host-prohibited**

' **dod-net-prohibited**

' **echo**

'

,

' 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
' appletalk
' decnet-iv
' diagnostic
' etype-6000
' etype-8042
' lat
' lavc-sca
' mop-console
' mop-dump
' mumps
' netbios
' vines-echo
' xns-idp
```

1) IP

```
IP 192.168.1.64 - 192.168.1.127
```

```
Ruijie(config)# access-list 1 permit 192.168.1.64
0.0.0.63
```

2) IP

```
IP DNS ICMP
```

```
Ruijie(config)# access-list 102 permit tcp any any eq
domain
```

```
Ruijie(config)# access-list 102 permit udp any any eq
domain
```

```
Ruijie(config)# access-list 102 permit icmp any any echo
```

```
Ruijie(config)# access-list 102 permit icmp any any
```

echo-reply

3) MAC

```

MAC 00d0f8000c0c
100 1
    
```

```

Ruijie(config)# access-list 702 deny host 00d0f8000c0c
any aarp
    
```

```

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

```

Ruijie(config-if)# mac access-group 702 in
    
```

4) Expert

```

Expert Extended ACL ACL
IP 192.168.12.3 MAC 00d0.f800.0044
TCP
    
```

```

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

| | |
|--------------------------|-----|
| | |
| show access-lists | |
| mac access-group | MAC |

RGOS10.0

ip access-list

```

no IP ACL IP ACL
ACL
    
```

```

ip access-list {extended | standard} {id | name}
no ip access-list {extended | standard} {id | name}
    
```

```

id IP 1-99 1300-1999 100-199
2000-2699
    
```

name IP

ACL

ACL
access-lists **deny** **permit** ACL **show ip**

ACL

```
Ruijie(config)# ip access-list extended 123
Ruijie(config-ext-nacl)# show ip access-lists
ip access-list extended 123
Ruijie(config-ext-nacl)#
```

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)#
```

| | |
|-----------------------------|----|
| | |
| show ip access-lists | IP |

RGOS10.0

MAC access-list

MAC ACL **no**
 ACL

```
mac access-list extended {id | name}
no mac access-list extended {id | name}
```

id MAC 700-799

show ipv6 access-lists

ACL

IPV6

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
Ruijie#
```



[sn] deny tcp {source source-wildcard | **host** Source | **any**} [operator port [port]] {destination destination-wildcard | **host** destination | **any**} [operator port [port]] [**precedence** precedence] [**tos** tos] [**fragments**] [**time-range** time-range-name] [**match-all** tcp-flag]

User Datagram Protocol (UDP)

[sn] deny udp {source source-wildcard | **host** source | **any**} [operator port [port]] {destination destination-wildcard | **host** destination | **any**} [operator port [port]] [**precedence** precedence] [**tos** tos] [**fragments**] [**time-range** time-range-name]

3) MAC

[sn] deny {**any** | **host** source-mac-address}{**any** | **host** destination-mac-address} [ethernet-type][**cos** [out] [inner in]]

4) Expert

[sn] deny[protocol | [ethernet-type][**cos** [out] [inner in]]] [[**VID** [out][inner in]]] {source source-wildcard | **host** source | **any**}{**host** source-mac-address | **any** } {destination destination-wildcard | **host** destination | **any**} {**host** destination-mac-address | **any**} [**precedence** precedence] [**tos** tos][**fragments**] [**time-range** time-range-name]

ethernet-type cos

[sn] deny {[ethernet-type][**cos** [out] [inner in]]} [[**VID** [out][inner in]]] {source source-wildcard | **host** source | **any**} {**host** source-mac-address | **any** } {destination destination-wildcard | **host** destination | **any**} {**host** destination-mac-address | **any**} [**time-range** time-range-name]

protocol

[sn] deny protocol [[**VID** [out][inner in]]] {source source-wildcard | **host** source | **any**} {**host** source-mac-address | **any** } {destination destination-wildcard | **host** destination | **any**} {**host** destination-mac-address | **any**} [**precedence** precedence] [**tos** tos] [**fragments**] [**time-range** time-range-name]

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] [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] [time-range time-range-name]

5) 5 IPV6

[sn] deny protocol{source-ipv6-prefix/prefix-length | any | host source-ipv6-address} {destination-ipv6-prefix / prefix-length | any | hostdestination-ipv6-address} [dscp dscp] [flow-label flow-label] [fragments] [time-range time-range-name]

IPV6

Internet Control Message Protocol (ICMP)

[sn]deny Vp((ICMP))Tj0 Tc 5.a-0.0019Tc 0.537 0 Td-TT0 1 Tf0.0022

```

source-ipv6-prefix    IPv6
destination-ipv6-prefix IPv6
prefix-length
source-ipv6-address    IPv6
destination-ipv6-address IPv6
dscp
dscp                  0-63.
flow-label
flow-label            0-1048575.
protocol              IPV6          IPV6 | icmp | tcp | udp  <0-255>

```

ACL

ACL ACL

```

Expert Extended ACL                      ACL
IP            192.168.4.12            MAC            001300498272
TCP
Ruijie(config)# expert access-list extended 2702
Ruijie(config-exp-nacl)# deny tcp host
192.168.4.12 host 0013.0049.8272 any any
Ruijie(config-exp-nacl)# permit any any any any
Ruijie(config-exp-nacl)# show access-lists
expert access-list extended 2702
10 deny tcp host 192.168.4.12 host 0013.0049.8272 any
any
20 permit any any any any any
Ruijie(config-exp-nacl)#
IP            ACL                      IP    192.168.4.12
TCP            100                                  1
Ruijie(config)#

```

```
Ruijie(config-ext-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ip access-group ip-ext-acl in
Ruijie(config-if)#

          MAC      ACL                      MAC      0013.0049.8272
                100
```

| | |
|----------------------------|----------|
| ipv6 traffic-filter | IPV6 |
| ip access-group | IP ACL |
| mac access-group | MAC ACL |
| ip access-list | IP ACL |
| mac access-list | MAC ACL |
| expert access-list | ACL |
| ipv6 access-list | IPV6 ACL |
| permit | |

RGOS10.0

permit

ACL (permit) ACL

1) 1 IP

[sn] **permit** {*source source-wildcard* | **host source** | **any**}

2) IP

[sn] **permit protocol** *source source-wildcard destination*

destination-wildcard [**precedence precedence**] [**tos tos**] [**fragments**]

[**time-range** *time-range-name*]

IP

Internet Control Message Protocol (ICMP)

[sn] **permit icmp** {*source source-wildcard* | **host source** | **any**}

{*destination destination-wildcard* | **host destination** | **any**}

[*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**precedence precedence**] [**tos tos**] [**fragments**] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)

[sn] **permit tcp** {*source source-wildcard* | **host Source** | **any**} [*operator*

port [*port*] {*destination destination-wildcard* | **host destination** | **any**}

[*operator port* [*port*]] [**precedence precedence**] [**tos tos**] [**fragments**]

[**time-range** *time-range-name*] [**match-all tcp-flag**]

User Datagram Protocol (UDP)

[sn] permit udp

precedence] [**tos** *tos*] [**fragments**] [**time-range** *time-range-name*]
 [**match-all** *tcp-flag*]

User Datagram Protocol (UDP)

[*sn*] **permit udp** [**VID** [*out*][*inner in*]][*source source* *-wildcard* | **host**
source | **any**] {**host** *source-mac-address* | **any** } [*operator port* [*port*]]
 {*destination destination-wildcard* | **host** *destination* | **any**} {**host**
destination-mac-address | **any**} [*operator port* [*port*]] [**precedence**
precedence] [**tos** *tos*] [**fragments**] [**time-range** *time-range-name*]

5) IPV6

[*sn*] **permit protocol** {*source-ipv6-prefix / prefix-length* | **any** | **host**
source-ipv6-address} {*destination-ipv6-prefix / prefix-length* | **any**
 | *hostdestination-ipv6-address*} [**dscp** *dscp*] [**flow-label**
flow-label] [**fragments**] [**time-range** *time-range-name*]

IPV6

Internet Control Message Protocol (ICMP)

[*sn*] **permit icmp** {*source-ipv6-prefix / prefix-length* | **any**
source-ipv6-address | **host**} {*destination-ipv6-prefix /*

| **an** } { **wTc** -28.

ACL

ACL

ACL

```
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
10permittcp host 192.168.4.12host 0013.0049.8272any
any
20 deny any any any any
Ruijie(config-exp-nacl)#
```

IP

ACL

IP

1

```
Ruijie(config)# ip access-list standard std-acl 192.15 Td (.)Tj -0.0001 Tc -28.2 -1if.610 TT3  
Ruijie(config-std-nacl)# permit host 192.168.4.12 ip aPowj /TT3 1 Tf
```

list-remark textACL **no****list-remark text***Text*

ACL

ACL

```

Ruijie# ip access-list extended 102
Ruijie(config-ext-nacl)# list-remark this acl is to
filter the host 192.168.4.12
Ruijie(config-ext-nacl)# show access-lists
ip access-list extended 102
deny ip host 192.168.4.12 any
1000 hits
this acl is to filter the host 192.168.4.12
Ruijie(config-ext-nacl)#

```

| | |
|--------------------------|----|
| | |
| show access-lists | |
| ip access-list | IP |

RGOS10.0

no sn

ACL

no sn*sn* ACL

ACL

ACL

ACL

```

Ruijie(config)# ipv6 access-list extended v6-acl
Ruijie(config-ipv6-nacl)# permit ipv6
host ::192.168.4.12 any
Ruijie(config-ipv6-nacl)# 12 deny ipv6 host any any
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
10 permit ipv6 host ::192.168.4.12 any
12 deny ipv6 any any
Ruijie(config-ipv6-nacl)# no 12
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
10 permit ipv6 host ::192.168.4.12 any
Ruijie(config-ipv6-nacl)#

```

| | |
|--------------------------|-------------|
| | |
| show access-lists | |
| ip access-list | ip ACL |
| ipv6 access-list | IPV6 ACL |
| deny | ACL |
| permit | ACL |

RGOS10.0

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

out

ACL

ACL

show running-config

access-list accept_00d0f8xxxxxx_only

Gigabit

1

```
Ruijie(config)# interface GigaEthernet 1/1
Ruijie(config-if)# mac access-group
accept_00d0f8xxxxxx_only in
```

| | |
|--------------------------|-----|
| | |
| show access-group | ACL |

RGOS10.0

expert access-group

EXPERT ACL

no

```
expert access-group {id | name} {in | out}
no expert access-group {id | name} {in | out}
```

id Expert 2700-2899

name Expert

in

out

Expert ACL

ACL
show access-group

1 access-list accept_00d0f8xxxxxx_only Gigabit

```
Ruijie(config)# interface GigaEthernet 0/1
Ruijie(config-if)# expert access-group
accept_00d0f8xxxxxx_only in
```

| | |
|--------------------------|-----|
| | |
| show access-group | ACL |

RGOS10.0

ipv6 traffic-filter

IPV6 ACL no

```
ipv6 traffic-filter name {in | out}
no ipv6 traffic-filter name {in | out}
```

name IPV6
in
out

IPV6 ACL

ACL
show access-group

```

access-list v6-acl      Gigabit    1
Ruijie(config)# interface GigaEthernet 0/1
Ruijie(config-if)# ipv6 traffic-filter v6-acl in
    
```

| | |
|---------------------------------|-----|
| | |
| show ipv6 traffic-filter | ACL |

RGOS10.0

```

:
' show access-lists
' show ip access-group
' show mac access-group
' show ipv6 traffic-filter
' show expert access-group
' show access-group
    
```

show access-lists

```

ACL          ACL
show access-lists [id | name]
    
```

id
name

```

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 10jie#
```

| | |
|-----------------------|--------|
| | |
| ip access-list | IP ACL |

RGOS10.0

show expert access-group

Expert

show expert access-group [interface <interface>]

<interface>

Expert ACL

Expert ACL

```
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 |

RGOS10.0

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 |

RGOS10.0

show ipv6 traffic-filter

IPV6

show ipv6 traffic-filter [interface <interface>]

<interface>

IPv6 ACL

IPv6

ACL

```
Ruijie# show ipv6 traffic-filter interface
gigabitethernet 0/4
ipv6 access-group v6 in
```

Applied On interface GigabitEthernet 0/4.

| | |
|-------------------------|----------|
| | |
| ipv6 access-list | IPV6 ACL |

RGOS10.0

show access-group

ACL

show access-group [interface <interface>]

<interface>

ACL

ACL

```
Ruijie# show access-group
ip access-list standard ipstd3
Applied On interface GigabitEthernet 0/1.
ip access-list standard ipstd4
Applied On interface GigabitEthernet 0/2.
ip access-list extended 101
Applied On interface GigabitEthernet 0/3.
ip access-list extended 102
Applied On interface GigabitEthernet 0/8.
```

| | |
|----------------------------|--------|
| | |
| ip access-group | ip |
| mac access-group | MAC |
| expert access-group | Expert |
| ipv6 traffic-filter | IPV6 |

RGOS10.0

- ' **security global access-group**
- ' **security access-group**
- ' **security uplink enable**

security global access-group

security global access-group {*id*|*name*}

no security global access-group

id ACL id

name ACL

security access-group

security access-group {*id*|*name*}

no security access-group

id ACL id

name ACL

Ruijie(config-if)#**security access-group** 1

| | |
|----------------------|--|
| | |
| show security | |

RGOS10.2

security uplink enable

security uplink enable

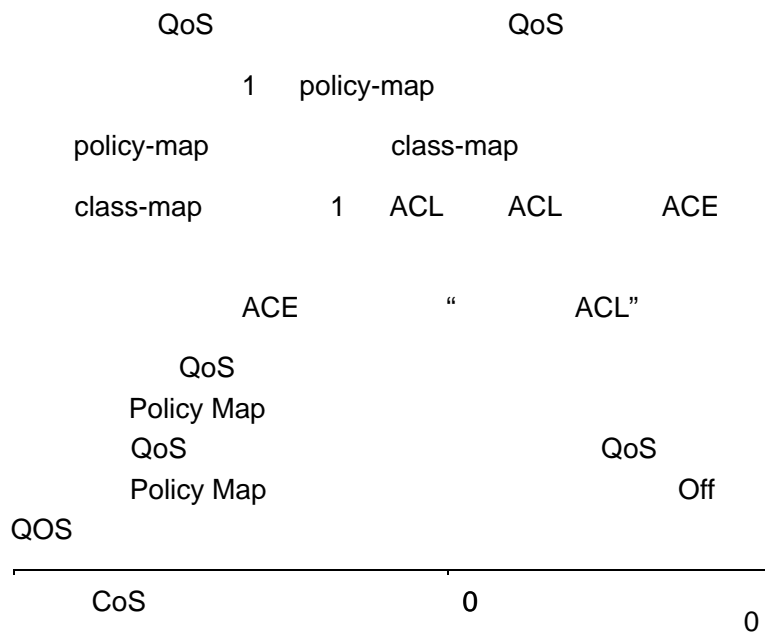
no security uplink enable

Ruijie(config-if)#**security uplink enable**

| | |
|----------------------|--|
| | |
| show security | |

RGOS10.2

QoS



IP-Precedence to DSCP

| | | | | | | | | |
|---------------|---|---|----|----|----|----|----|----|
| IP-Precedence | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| DSCP | 0 | 8 | 16 | 24 | 32 | 40 | 48 | 56 |

DSCP to CoS

| | | | | | | | | |
|------|---|---|----|----|----|----|----|----|
| DSCP | 0 | 8 | 16 | 24 | 32 | 40 | 48 | 56 |
| CoS | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

mls qos trust

Qos

mls qos trust [cos | dscp | ip-precedence]**no mls qos trust**

| | | |
|----------------------|-----|--------|
| cos | Qos | CoS |
| dscp | Qos | DSCP |
| <i>ip-precedence</i> | Qos | IP-PRE |
| no | | |

```
Ruijie(config)# interface gigabitethernet 1/1  
Ruijie(config-if)# mls qos trust cos
```

```
show mls qos interface interface-id
```


[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

policy map, po

Ruijie(config)# **policy-map** po

class-map cm

Ruijie(config-pmap)# **class** cm

dscp 10

Ruijie(config-pmap-c)# **set ip dscp** 10

1M, 4096k, dscp 16

Ruijie(config-pmap-c)# **police** 1000000 4096

exceed-action dscp 16

show policy-map

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

priority-queue

[no] **priority-queue**

priority-queue SP

no priority-queue WRR

WRR

no

```
Ruijie(config)# wrr-queue cos-map 1 0 1
```

show mls qos queueing

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

mls qos map dscp-cos

DSCP CoS

mls qos map dscp-cos *dscp-list* to *cos*

no mls qos map dscp-cos

dscp-list

cos 0 7

no

Ruijie(config)# **mls qos map dscp-cos** 8 10 16 18 to 0

show mls qos maps dscp-cos maps,dscp-cos maps
ip-prec-dscp maps

interface rate-limit

rate-limit {input | output} *bps burst-size*

no rate-limit

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# rate-limit input 1000000 4096
```

show mls qos interface

mls qos scheduler

mls qos scheduler [sp | rr | wrr | drr]

no mls qos scheduler

sp

rr

wrr

drr

no

wrr

```
Ruijie(config)# mls qos scheduler sp
```

show mls qos scheduler

drr-queue bandwidth

DRR

drp-queue bandwidth *weight1...weight8*

no drr-queue bandwidth

weight1...weight8

no

```
Ruijie(config)# drp-queue bandwidth 1 2 3 4 5 6 7 8
```

show mls qos queueing

86

mls qos map ip-prec-dscp

ippre DSCP

mls qos map ip-prec-dscp *dscp1...dscp8*

no mls qos map ip-prec-dscp

dscp

no

```
Ruijie(config)# mls qos map ip-prec -dscp 8 10 16 18 24  
26 32 34
```

show mls qos maps dscp-cos maps,dscp-cos maps
ip-prec-dscp maps

wfq-queue bandwidth

wfq

wfq-queue *queue-id* **bandwidth** *min max*

no wfq-queue *queue-id* **bandwidth**

queue-id

min

max

min kbps

max kbps

wfq

wfq

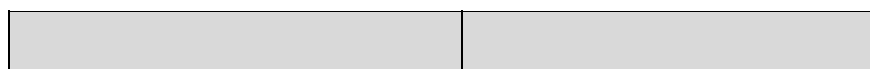
Ruijie(config)# **mls qos scheduler wfq**

Ruijie(config)# **show mls qos scheduler**

Ruijie(config-if)# **wfq-queue 2 bandwidth 10 10240**

Ruijie(config-if)# **wfq-queue 4 bandwidth 7 10240**

Ruijie(config-if)# **show running**



QOS

| |
|-------------------------------------|
| <code>show mls qos scheduler</code> |
|-------------------------------------|

| |
|-----|
| QOS |
|-----|

RGOS10.1

wfq-queue sp

wfq

RGOS10.1

show mls qos interface

QoS

show mls qos interface *interface-id* [**policers**]

interface-id

policers

police

QoS

```
Ruijie# show mls qos interface fastEthernet 0/1
```

show mls qos queueing

QoS

(cos-to-queue map,wrr weight,drp weight)

show mls qos queueing

```
Ruijie# show mls qos queueing
```

show mls qos scheduler

show mls qos scheduler

```
Ruijie# show mls qos scheduler
```

show mls qos maps

```
dscp-cos maps,dscp-cos maps ip-prec-dscp maps
```

```
show mls qos maps [cos-dscp | dscp-cos | ip-prec-dscp]
```

```
cos-dscp cos-dscp maps
```

```
dscp-cos dscp-cos maps
```

```
ip-prec-dscp ip-prec-dscp maps
```

```
dscp-cos maps dscp-cos maps ip-prec-dscp maps
```

```
Ruijie# show mls qos maps
```

show mls qos rate-limit

```
show mls qos rate-limit [interface interface-id]
```

```
interface interface-id rate-limit
```

```
Ruijie# show mls qos rate-limit
```

VRRP

VRRP

- ' **vrrp authentication**
- ' **vrrp description**
- ' **vrrp ip**
- ' **vrrp preempt**
- ' **vrrp priority**
- ' **vrrp timers advertise**
- ' **vrrp timers learn**
- ' **vrrp track**

vrrp authentication

VRRP

no

vrrp group authentication *string*

no vrrp group authentication

group VRRP

string VRRP
)

(8

VRRP

VRRP

VRRP

/

VRRP

VRRP 1

vrrp 1 authentication x30dn78k

| | |
|---|------------|
| | |
| Ruijie(config-if)# vrrp group ip ipaddress [secondary] | VRRP IP |

| | |
|---|------------|
| Ruijie(config-if)# vrrp group ip ipaddress [secondary] | VRRP IP |
|---|------------|

vrrp ip

```

VRRP          IP          no
VRRP          IP

vrrp group ip ipaddress [secondary]
no vrrp group ip ipaddress [secondary]

group          VRRP
ipaddress      IP
secondary      IP

VRRP

secondary      IP          IP          IP          no
VRRP          VRRP          IP          IP          no
VRRP          IP          IP

1          IP          0          VRRP          VRRP
          IP          10.0.1.20          IP          10.0.2.20

interface FastEthernet 0/0
no switchport
ip address 10.0.1.1 255.255.255.0
ip address 10.0.2.1 255.255.255.0 secondary
vrrp 1 ip 10.0.1.20
vrrp 1 ip 10.0.2.20 secondary
    
```

| | |
|--|------|
| | |
| Ruijie# show vrrp [brief group] | VRRP |

vrrp priority

VRRP

no

vrrp group priority level

no vrrp group priority

group VRRP

level VRRP

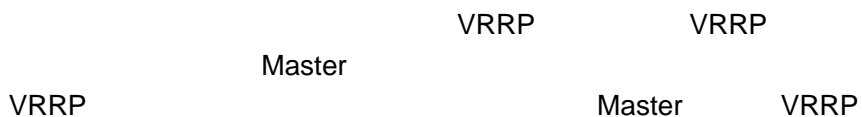
VRRP

100

VRRP

VRRP

VRRP



VRRP 1

vrrp 1 timers learn

| | |
|---|------------|
| | |
| Ruijie(config-if)# vrrp group ip <i>ipaddress [secondary]</i> | VRRP IP |
| Ruijie(config-if)# vrrp group timers advertise [msec] interval | VRRP |

vrrp track

no

vrrp group track *interface-type number [interface -priority]*

no vrrp group track *interface-type number*

group VRRP

interface-type

number

interface-priority

10

VRRP

VRRP

VRRP

(Routed Port SVI Loopback Tunnel)

```

VRRP 1 Routed Port Fa1/1 Fa1/1
VRRP 30 Fa1/1 VRRP
1

```

```
vrrp 1 track FastEthernet 1/1 30
```

| Ruijie(config-if)# vrrp group ip <i>ipaddress [secondary]</i> | VRRP IP |
|---|------------|
| Ruijie(config-if)# vrrp group priority level | VRRP |

VRRP

```
%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 |

debug vrrp errors

VRRP

no

debug vrrp errors

no debug vrrp errors

VRRP

VRRP

```
Ruijie# debug vrrp errors  
Ruijie#  
VRRP: Grp 1 Advertisement from 192.168.201.213 has  
invalid virtual address 192.168.1.1  
VRRP: Grp 1 Advertisement from 192.168.201.213 has  
invalid virtual address 192.168.1.1  
VRRP: Grp 1 Advertisement from 192.168.201.213 has  
invalid virtual address 192.168.1.1
```

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
```

debug vrrp packets

VRRP no

debug vrrp packets
no debug vrrp packets

VRRP

VRRP

VRRP 1

```
Ruijie# debug vrrp packets
Ruijie#
VRRP: Grp 2 sending Advertisement checksum DD4D
VRRP: Grp 2 sending Advertisement checksum DD4D
VRRP: Grp 2 sending Advertisement checksum DD4D
```

, VRRP

```
VRRP 1 IP VRRP 1
Ruijie# debug vrrp packets
Ruijie#
VRRP: Grp 1 Advertisement priority 120, ipaddr
192.168.201.213
VRRP: Grp 1 Advertisement priority 120, ipaddr
192.168.201.213
VRRP: Grp 1 Advertisement priority 120, ipaddr
192.168.201.213
```

debug vrrp state

```
VRRP no
```

```
debug vrrp state
no debug vrrp state
```

```
VRRP
```

```
VRRP
```

```
Ruijie# debug vrrp state
Ruijie#
%VRRP-6-STATECHANGE: FastEthernet 0/0 Grp 2 state Master
-> Backup
%VRRP-6-STATECHANGE: FastEthernet 0/0 Grp 2 state Backup
-> Master

Ruijie# config terminal
Enter configuration commands, one per line. End with
CNTL/Z.

Ruijie(config)# interface fastethernet 0/0
Ruijie(config-if)# no shutdown
Ruijie(config-if)# end
Ruijie#
%VRRP-6-STATECHANGE: FastEthernet 0/0 Grp 2 state Master
-> Init

Ruijie#
```


Master Down interval is 9 sec

Ruijie#

VRRP

Ruijie# **show vrrp brief**

| Interface | Grp | Pri | Time | Own | Pre | State | Master |
|-----------|-------|------|------|-----|-----|-------|--------|
| addr | Group | addr | | | | | |

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 <i>ip address [secondary]</i> | VRRP IP |
|---|------------|

RLDP

RLDP

- ' **rldp enable**
- ' **rldp detect-interval**
- ' **rldp detect-max**

- ' **rldp port {unidirection-detect | bidirection-detect | loop-detect}**
{warning | shutdown-svi | shutdown-port | block}

- ' **rldp reset**

rldp enable

RLDP

- rldp enable**
- no rldp enable**

RLDP

RLDP

:

```
Ruijie(config)# rldp enable
```

no rldp detect-max

num , 2-10

2

5 :

Ruijie(config)# **rldp detect-max 5**

| | |
|-----------------------------|--|
| | |
| rldp detect-interval | |

rldp port

rldp

**rldp port { unidirection-detect | bidirection-detect | loop-detect }
 { warning | shutdown-svi | shutdown-port | block }**

no rldp port { unidirection-detect | bidirection-detect | loop-detect }

unidirection-detect

bidirection-detect

loop-detect

warning

shutdown-svi shutdown svi

shutdown-port shutdown

block

- ' **show rldp** [**interface** *interface-id*]
- ' **debug rldp** {**packet** | **event** | **error**}

show rldp

rldp

show rldp [**interface** *interface-id*]

Interface-id

EXEC

debug rldp

rldp no

- ' **debug rldp** [**packet** | **event** | **error**]
- ' **undebug rldp** [**packet** | **event** | **error**]

packet rldp

event

error

EXEC

TPP

topology guard

```
                topology guard
                no
[no] topology guard
```

cpu topology-limit

```
Ruijie(config)# topology guard
Ruijie(config)# no topology guard
```

tp-guard port enable

```
cpu topology-limit    CPU
```

tp-guard port enable

```
no
```

[no] tp-guard port enable

CPU

(AP)

```
Ruijie(config-if)# tp-guard port enable
```

```
Ruijie(config-if)# no tp-guard port enable
```

topology guard

TPP

show tpp

show tpp

tpp

Ruijie# **show tpp**

topology guard

```
' cat
' cd
' cp
' ls
' makefs
' mkdir
' mv
' pwd
' rm
' rmdir
```

cd

```
cd DIRECTORY
```

```
DIRECTORY
```

```
“ ”  
..
```

```
“ ”  
.
```

ls

tmp

Ruijie# **cd** tmp



Is

Is *PATHNAME*

PATHNAME

a

b

jffs2

dev/mtdblock/1

```
Ruijie# makefs dev /dev/mtdblock/1 fs jffs2
```

mkdir

```
mkdir DIRECTORY
```

```
DIRECTORY
```

()

test

```
Ruijie# mkdir test
```

mv

```
mv sour SOURCE_FILE dest {DESTINE_FILE | DIRECTORY}
```

```
mv dest {DESTINE_FILE | DIRECTORY} sour SOURCE_FILE
```

SOURCE_FILE

DESTINE_FILE/DIRECTORY

```
a ( type file); b '?'  
'?'
```

,

```
log.txt , config.txt,
```

,

```
Ruijie# mv sour tmp/log.txt dest ../config.txt
```

```
log.txt tmp
```

```
Ruijie# mv dest /mnt/tmp sour tmp/log.txt
```

pwd

pwd

| | |
|------------|--|
| | |
| pwd | |

Ruijie# **pwd**

rm

rm *FILE*

FILE ()

,

log.txt

Ruijie# **rm** *log.txt*

| | |
|--------------|--------|
| | |
| rmdir | , rm , |

rmdir

rmdir *DIRECTORY*

DIRECTORY ,

rm , ,

tmp

Ruijie# **rmdir** tmp

Ruijie# **ls**

logging on

no

logging on

no logging on

RGOS

Console

VTY

| | |
|------------------------|----------------|
| logging console | |
| logging monitor |) VTY (telnet |
| logging trap | Syslog Server |

terminal monitor

VTY

VTY

no

terminal monitor

terminal no monitor

VTY

VTY

VTY

logging buffered [*buffer-size* | *level*]

no logging buffered

buffer-size 4K 128K Bytes

level 0 7

4k Bytes

7

show logging

clear logging

FLASH

Syslog Server

RGOS

8

1

| Emergencies | 0 | |
|---------------|---|--|
| Alerts | 1 | |
| Critical | 2 | |
| Errors | 3 | |
| warnings | 4 | |
| Notifications | 5 | |
| informational | 6 | |
| Debugging | 7 | |

0

6 6 10000

Ruijie(config)# **logging buffered 10000 6**

| | |
|----------------------|--|
| | |
| logging on | |
| show logging | |
| clear logging | |

logging

Syslog Sever

Syslog server **Syslog Server**

no

logging host

no logging host

Host syslog server

Syslog server

Syslog server RGOS

5 Syslog Server Syslog Server

202.101.11.1 syslog server

Ruijie(config)# **logging 202.101.11.1**

| | |
|---------------------|---------------|
| | |
| logging on | |
| show logging | |
| logging trap | syslog server |

logging file flash

```

FLASH
FLASH no
logging file flash:filename [max-file-size] [level]
no logging file

Filename txt
max-file-size 128K 6M bytes
128K
level 1 FLASH 6

FLASH

Syslog Server
FLASH
txt

```

注意:

```

FLASH FLASH
FLASH logging file flash

```

64K, FLASH trace.txt
6

Ruijie(config)# **logging file flash:trace**

| | |
|---------------------|-------|
| | |
| logging on | |
| show logging | |
| more flash | FLASH |

logging console

no

logging console *level*

no logging console

level 0 7

1

Debugging (7)

| | |
|---------------------|--|
| logging on | |
| show logging | |

logging monitor

```

VTY telnet SSH
no VTY

```

logging monitor level

no logging monitor

level

1

Debugging (7)

```

VTY terminal
monitor VTY
logging monitor

```

Logging monitor VTY

VTY 6

Ruijie(config)# **logging monitor informational**

| | |
|---------------------|--|
| | |
| logging on | |
| show logging | |

logging trap

```
                Syslog Server
                no                               Syslog Server
logging trap level
no logging trap
```

```
level
1
```

```
Informational(6)
```

```
                Syslog Server                               logging
Syslog Server      logging trap
```

```
show logging
```

```
                6                               202.101.11.22
Syslog Server
```

```
Ruijie(config)# logging 202.101.11.22
Ruijie(config)# logging trap informational
```

| logging on | |
|--------------|---------------|
| logging | Syslog Server |
| show logging | |

logging source interface

no login type interface number

Syslog Server

Loopback 0 Syslog

```
Ruijie(config)# logging source ip 192.168.1.1
```

| logging | Syslog server |
|---------|---------------|

logging facility

no (23)

logging facility *facility-type*

no logging facility

facility-type Syslog

Local7(23)

2 Syslog

2

| Numerical Code | Facility |
|----------------|-----------------|
| 0 | kernel messages |

| | |
|---|--|
| 1 | user-level messages |
| 2 | mail system |
| 3 | system daemons |
| 4 | security/authorization messages |
| 5 | messages generated internally by syslogd |
| 6 | line printer subsystem |
| 7 | network news subsystem |
| 8 | UUCP subsystem |
| 9 | clock daemon |

| | |
|------------------------|--|
| | |
| logging console | |

logging count

no

logging count

no logging count

count

no logging

Ruijie(config)# **logging count**

| | |
|---------------------------|--|
| | |
| show logging count | |
| show logging | |

service sequence-numbers

no

service sequence-numbers

Mar 22 15:28:02 %SYS-5-CONFIG: Configured from console
by console
Ruijie# **config terminal**
Enter configuration commands, one per line. End with
CNTL/Z.
Ruijie(config)# **service sysname**
Ruijie(config)# **end**
Ruijie#
Mar 22 15:35:57 S3250 %SYS-5-CONFIG: Configured from
console by console



| logging file flash: | FLASH |
|---------------------|-------|

clear logging

clear logging

Ruijie# clear logging

| logging on | |
|------------------|--|
| show logging | |
| logging buffered | |

show logging

show logging

show logging

```
Ruijie# show logging
Syslog logging: enabled
Console logging: level debugging, 4 messages logged
Monitor logging: level informational, 0 messages logged
Buffer logging: level debugging, 6 messages logged
Timestamp debug messages: datetime
Timestamp log messages: disabled
Sequence log messages: enable
Trap logging: level debugging, 2 message lines logged, 0
reserved, 0 fail
logging to 202.101.11.22
logging to 192.168.200.112
Log Buffer (Total 4096 Bytes) : have written 680
00001 2004-11-17 10:20:59 Ruijie: %7:%LINK CHANGED:
Interface FastEthernet 0/0, changed state to up
00002 2004-11-17 10:20:59 Ruijie: %7:%LINE PROTOCOL
CHANGE: Interface FastEthernet 0/0, changed state to UP
00003 2004-11-17 10:57:18 Ruijie: %7:%LINK CHANGED:
Interface FastEthernet 0/1, changed state to
administratively down
00004 2004-11-17 10:57:21 Ruijie: %7:%LINK CHANGED:
Interface FastEthernet 0/1, changed state to down
00005 2004-11-17 10:57:41 Ruijie: %7:%LINK CHANGED:
Interface FastEthernet 0/1, changed state to
administratively down
00006 2004-11-17 10:57:43 Ruijie: %7:%LINK CHANGED:
Interface FastEthernet 0/1, changed state to down
```

| | |
|-----------------|---------------------------------|
| | |
| Syslog logging | disabled enabled, |
| Console logging | |
| Monitor logging | VTY |

| | |
|--------------------------|---------------|
| Buffer logging | |
| Timestamp debug messages | Debug |
| Timestamp log messages | Log |
| Sequence log messages | |
| Trap logging | Syslog Server |
| Log Buffer | |

| | |
|----------------------|--|
| | |
| logging on | |
| clear logging | |

show logging count

show logging count

logging

count show logging count

show logging

show logging count

```
Ruijie# show logging count
Module Name  Message Name Sev Occur      Last Time
=====
SYS          CONFIG_I     5  1          Jul 6 10:29:57
```

SYS TOTAL

1

| logging count | |
|----------------------|--|
| show logging | |
| clear logging | |

- ' **device-priority**
- ' **device-description**
- ' **stack on**
- ' **show member**

device-priority

device-priority [*member*] *priority*

| | |
|-----------------|----------------|
| | |
| <i>member</i> | ID member 1 |
| <i>priority</i> | [1, 10] |

```

10 1 10
write
2 8
Ruijie(config)# device-priority 2 8

```



| | |
|--------------------|--|
| show member | |
|--------------------|--|

device-description

device-description [*member member*] *description*

| | |
|----------------------|----------------|
| | |
| member member | ID member 1 |
| <i>description</i> | 31 |

write

2 red-giant

Ruijie(config)# **device-description member 2 red-giant**

| | |
|--------------------|--|
| | |
| show member | |

stack on

(no) stack on

no

S3750

GigabitEthernet 0/28

```
Ruijie(config)# interface GigabitEthernet 0/28
Ruijie(config-if)# stack on
```

show member

show member [*member*]

| <i>member</i> | ID |
|---------------|----|
|---------------|----|

```
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 |