



**RG-S2900E**

**RGOS 10.4(2T30)**

(4 1J@Âr£3RS )4)Hd)xß:Àě-Œv3fİ@tè

©2000-2010

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## RGOS<sup>®</sup> 10.4(2T30) Ш

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|   | 1. |   |   |   |
|   |    |   | Ш |   |
| ⚡ | 2. |   |   | 4 |
|   |    |   | Ш |   |
|   | 3. |   |   |   |
|   |    |   | Ш |   |
|   |    |   |   |   |

# 1 CLI

## 1.1

### 1.1.1 alias

alias no

**alias** *mode command-alias original-command*

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

| <i>mode</i>             | <span style="float: right;">no</span> |
|-------------------------|---------------------------------------|
| <i>command-alias</i>    | <span style="float: right;">no</span> |
| <i>original-command</i> | <span style="float: right;">no</span> |

EXEC no

EXEC help 4ping 4show 4

undebug 4 undebugno alias exec

```

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

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"
                                                    ㄚ

                show aliases
                                                    ㄚ

```

```

                                                    "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 ip route 0.0.0.0 0.0.0.0 192.168.1.1

```

|              |  |
|--------------|--|
|              |  |
| show aliases |  |

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

|               |           |  |
|---------------|-----------|--|
|               | privilege |  |
|               |           |  |
| ommand-string |           |  |
| mand-string   |           |  |

|      |
|------|
|      |
| CLI  |
|      |
|      |
| 0-15 |
|      |
|      |

|     |             |
|-----|-------------|
| CLI | privilege ? |
|     |             |
|     |             |
|     |             |

0.0.2 294.68 -139.2 -19.1Hp

```
Ruijie(config)# enable secret level 1 0 test
Ruijie(config)# privilege exec level 1 reload
1 CLI reload
Ruijie> reload ?
<cr>
reload 1 all
Ruijie(config)# privilege exec all level 1 reload
1 CLI reload
Ruijie> reload ?
at reload at a specific time/date
cancel cancel pending reload scheme
in reload after a time interval
<cr>
```

|               |     |
|---------------|-----|
|               |     |
| enable secret | CLI |

## EXEC

Ruijie# **show aliases exec**

exec mode alias:

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

## 2.1

### 2.1.1 disable

**disable** [ *privilege-level* ]

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\_\_\_\_\_

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2-1

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|  |                                    |    |
|--|------------------------------------|----|
|  | Э                                  | ЮШ |
|  | Э                                  | ЮШ |
|  | Э                                  | ЮШ |
|  | Э                                  | ЮШ |
|  | <div><div></div><div>-</div></div> |    |
|  | Э                                  | ЮШ |
|  | <div><div></div><div>-</div></div> |    |

|                    |                                                                                         |
|--------------------|-----------------------------------------------------------------------------------------|
|                    | enable password [level level] {password   [0   7] encrypted-password}no enable password |
|                    |                                                                                         |
| Password           | EXEC                                                                                    |
| Level              |                                                                                         |
| 0 7                | 0 7                                                                                     |
| encrypted-password |                                                                                         |



```

password security 15
security 0 15
password security 15
security

```

```

pw10
Ruijie(config)# enable secret 0 pw10

```

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

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

## 2.1.5 enable service

SSH Server/Telnet Server/Web Server/Snmp Agent  
enable service

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

|               |                            |
|---------------|----------------------------|
|               |                            |
| ssh-sesrver   | SSH Server IPv4<br>IPv6    |
| telnet-server | Telnet Server IPv4<br>IPv6 |
| web-server    | Http Server IPv4<br>IPv6   |
| snmp-agent    | Snmp Agent IPv4<br>IPv6    |

W

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

—

---

```
no exec
end
```

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



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

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## 2.1.9 ip telnet source-interface

|  |                                                  |        |           |
|--|--------------------------------------------------|--------|-----------|
|  | IP                                               | Telnet | ip telnet |
|  | source-interface                                 |        |           |
|  | ip telnet source-interface <i>interface-name</i> |        |           |
|  |                                                  |        |           |



|  |                                                                                                                                                                                                      |      |
|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
|  |                                                                                                                                                                                                      |      |
|  | -                                                                                                                                                                                                    | -    |
|  |                                                                                                                                                                                                      |      |
|  | line                                                                                                                                                                                                 |      |
|  |                                                                                                                                                                                                      | EXEC |
|  | lock                                                                                                                                                                                                 | ⏏    |
|  | <pre> Ruijie(config)# line console 0 Ruijie(config-line)# lockable Ruijie(config-line)# end Ruijie# lock Password: &lt;password&gt; Again: &lt;password&gt; Locked Password: &lt;password&gt; </pre> |      |
|  |                                                                                                                                                                                                      |      |
|  | lock                                                                                                                                                                                                 | ⏏    |
|  |                                                                                                                                                                                                      |      |
|  |                                                                                                                                                                                                      |      |
|  | -                                                                                                                                                                                                    | -    |

### 2.1.12 login

\_\_\_\_\_



```
Ruijie(config)# no aaa new-model
```

```
Ruijie(config)# line vty 0
```

```
Ruijie(config-line)# password 0 normatest
```

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

1000

### 2.1.13 login authentication

AA

W

**no**

AAA

Ш

W

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

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

---

$$A \quad A \quad A \quad =$$

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

| <b>aaa new-model</b>            | AAA |
|---------------------------------|-----|
| <b>aaa authentication login</b> |     |

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

## 2.1.14 login local

AAA •! ™^ tæ ð Àp( H—à4â Æ À! y ■ Ô!Zì ù~€W itæ lœcR15031710TCr2.257-0/50108183AA1A5A



|                           |               |
|---------------------------|---------------|
|                           |               |
| <i>password</i>           | line      0 7 |
| <i>017</i>                |               |
| <i>encrypted-password</i> |               |

line

line      0 7

line      red

Ruijie(config)# **line vty 0**

Ruijie(config-line)# **password red**

|              |  |
|--------------|--|
|              |  |
| <b>login</b> |  |

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

### 2.1.17 service password-encryption

|  |                                     |
|--|-------------------------------------|
|  | service password-encryption      no |
|  |                                     |

service password-encryption

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

---

service password-encryption  
password  
show running write  
service password-encryption

service password-encryption  
password  
W

|                                                                                   |       |      |                 |
|-----------------------------------------------------------------------------------|-------|------|-----------------|
|  | /vrf  | RSR  |                 |
|                                                                                   | /ipv6 | IPV6 | S3760 4S57 4S86 |

|   |        |      |             |
|---|--------|------|-------------|
| 1 | telnet | IPV4 | 192.168.1.1 |
|   | vlan 1 | VRF  | vpn1        |

Ruijie# **telnet** 192.168.1.1 /**source interface** vlan 1 /**vrf** vpn1

|   |        |      |                 |
|---|--------|------|-----------------|
| 2 | telnet | IPV6 | 2AAA:BBBB::CCCC |
|---|--------|------|-----------------|

Ruijie# **telnet** 2AAA:BBBB::CCCC

| <b>ip telnet source-interface</b> | IP Telnet |
|-----------------------------------|-----------|
| <b>show session</b>               | TTY       |
| <b>exit</b>                       |           |

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

## 2.1.19 username

username

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

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

**no username** *name*

| <i>name</i>               |     |
|---------------------------|-----|
| <i>password</i>           |     |
| <b>0 7</b>                | 0 7 |
| <i>encrypted-password</i> |     |
| <i>privilege-level</i>    |     |



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

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

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

## 2.2.2 banner motd

**banner motd** 

**no banner motd** 

**banner motd** *c message c*

|                |  |
|----------------|--|
|                |  |
| <i>c</i>       |  |
| <i>message</i> |  |



---

## 2.2.4 clock update-calendar



clock update-calendar



|  |                                               |      |
|--|-----------------------------------------------|------|
|  | <i>seconds</i>                                |      |
|  | 10 min                                        |      |
|  | LINE                                          |      |
|  |                                               | LINE |
|  | line vty 0                                    | 5 30 |
|  | Ruijie(config-line)# <b>exec-timeout</b> 5 30 |      |
|  |                                               |      |
|  | -                                             | -    |
|  |                                               |      |
|  |                                               |      |
|  | -                                             | -    |

## 2.2.6 hostname

|  |                             |    |
|--|-----------------------------|----|
|  | <b>hostname</b>             |    |
|  | <b>hostname</b> <i>name</i> |    |
|  | <i>name</i>                 | 63 |



---

### 2.2.8 reload

no session-timeout

|  |                |  |
|--|----------------|--|
|  |                |  |
|  | <i>minutes</i> |  |
|  | <b>output</b>  |  |

0 min

LINE

LINE  
LINE

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

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

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A blank coordinate plane with a horizontal x-axis and a vertical y-axis intersecting at the origin. The axes are represented by thin black lines.

### 2.2.11 write

W

**write [ memory | network | terminal ]**

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

[illegible]

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

detail 山

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

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

## 2.3.2 show line

### show line

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

| <b>console</b>  |      |
|-----------------|------|
| <b>aux</b>      | aux  |
| <b>vty</b>      | vty  |
| <i>line-num</i> | 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
```

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



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



## 3 LINE

### 3.1 LINE

#### 3.1.1 access-class

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

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

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

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

|                   |  |            |
|-------------------|--|------------|
|                   |  |            |
| <b>aux</b>        |  |            |
| <b>console</b>    |  |            |
| <b>tty</b>        |  |            |
| <b>vty</b>        |  | telnet/ssh |
| <i>First-line</i> |  | first-line |
| <i>Last-line</i>  |  | last-line  |

```

LINE VTY 1 3 LINE
Ruijie(config)# line vty 1 3

```

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

1

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

|                 | VTY                                   | Ш  | no         |
|-----------------|---------------------------------------|----|------------|
|                 | <b>line vty</b> <i>line-number</i>    |    |            |
|                 | <b>no line vty</b> <i>line-number</i> |    |            |
|                 | -                                     | -  |            |
|                 | VTY                                   | 5  | 0--4Ш      |
|                 | VTY                                   |    | Ш          |
| 1               | VTY                                   | 20 | VTY 0--19Ш |
| Ruijie(config)# | <b>line vty 19</b>                    |    |            |
| 2               | VTY                                   | 10 | VTY 0—9Ш   |
| Ruijie(config)# | <b>line vty 10</b>                    |    |            |
|                 | -                                     | -  |            |
|                 | -                                     | -  |            |

### 3.1.4 transport input

|                         |                 |      |     |
|-------------------------|-----------------|------|-----|
| Line                    | transport input | Line | SSH |
| default transport input | LINE            |      | SSH |

transport input {all | ssh | telnet | none}

default transport input

|     |          |
|-----|----------|
|     |          |
| all | Line SSH |
| ssh | Line SSH |

|               |      |        |   |
|---------------|------|--------|---|
| <b>telnet</b> | Line | Telnet | ␣ |
| <b>none</b>   | Line |        | ␣ |

|     |   |     |                                |
|-----|---|-----|--------------------------------|
| VTY | ␣ | TTY | NONE                           |
| ␣   |   |     | <b>default transport input</b> |
| ␣   |   |     |                                |

|      |
|------|
| Line |
|------|

|                |                             |                                |               |
|----------------|-----------------------------|--------------------------------|---------------|
| Line           | ␣VTY                        |                                | ␣             |
|                |                             | VTY                            | ␣             |
| <b>running</b> | Line                        | ␣                              |               |
|                |                             | <b>default transport input</b> | ␣no transport |
| <b>&amp;</b>   | <b>input</b>                | LINE                           | ␣             |
|                | <b>transport input none</b> | ␣                              |               |

|                                                    |        |
|----------------------------------------------------|--------|
| line vty 0 4                                       | telnet |
| Ruijie# <b>configure terminal</b>                  |        |
| Ruijie(config)# <b>line vty 0 4</b>                |        |
| Ruijie(config-line)# <b>transport input telnet</b> |        |

|                     |   |
|---------------------|---|
|                     |   |
| <b>show running</b> | ␣ |

|          |
|----------|
| RGOS10.1 |
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|   |   |
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# 4

## 4.1

### 4.1.1 ping

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

|

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

---

|  |     |   |
|--|-----|---|
|  | DNS | 山 |
|--|-----|---|

|                |                 |
|----------------|-----------------|
| <i>length</i>  |                 |
| <i>times</i>   |                 |
| <i>seconds</i> |                 |
| <i>data</i>    |                 |
| <i>source</i>  | IPv6 ⅃<br>::1 ⅃ |

25100ByteIP⅃

Ping ipv6

ping ipv6

ping ipv6

25100ByteIP

‘!’

‘C’

ping

ping ipv6

ping ipv6

ping ipv6

ping ipv6

ping ipv6

ping ipv6

ping ipv6

ping ipv6

ping ipv6

|  |      |   |
|--|------|---|
|  | -    | - |
|  | ipv6 | W |
|  |      |   |
|  | -    | - |

### 4.1.3 traceroute

traceroute

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

|                        |           |   |
|------------------------|-----------|---|
|                        |           |   |
| <i>vrf-name</i>        | VRF       |   |
| <i>ip-address</i>      | IPv4      | W |
| <i>number</i>          |           |   |
| <i>source</i>          | IPv4      | W |
|                        | 127.0.0.1 | W |
| <i>seconds</i>         |           |   |
| <i>minimum maximum</i> |           |   |

```

2      192.168.9.2      4 msec  4 msec  4 msec
3      192.168.9.1      8 msec  8 msec  4 msec
4      192.168.0.10     4 msec  28 msec 12 msec
5      202.101.143.130   4 msec  16 msec  8 msec
6      202.101.143.154  12 msec  8 msec  24 msec
7      61.154.22.36     12 msec  8 msec  22 msec
                                     IP      61.154.22.36
                                     1  6
                                     Ⅲ

```

```

2      traceroute
Ruijie# traceroute 202.108.37.42
< press Ctrl+C to break >
Tracing the route to 202.108.37.42
1      192.168.12.1      0 msec  0 msec  0 msec
2      192.168.9.2      0 msec  4 msec  4 msec
3      192.168.110.1    16 msec 12 msec 16 msec
4      * * *
5      61.154.8.129     12 msec 28 msec 12 msec
6      61.154.8.17      8 msec 12 msec 16 msec
7      61.154.8.250     12 msec 12 msec 12 msec
8      218.85.157.222   12 msec 12 msec 12 msec
9      218.85.157.130   16 msec 16 msec 16 msec
10     218.85.157.77    16 msec 48 msec 16 msec
11     202.97.40.65     76 msec 24 msec 24 msec
12     202.97.37.65     32 msec 24 msec 24 msec
13     202.97.38.162    52 msec 52 msec 224 msec
14     202.96.12.38     84 msec 52 msec 52 msec
15     202.106.192.226   88 msec 52 msec 52 msec
16     202.106.192.174   52 msec 52 msec 88 msec
17     210.74.176.158   100 msec 52 msec 84 msec
18     202.108.37.42    48 msec 48 msec 52 msec
                                     IP      202.108.37.42
                                     1  17
                                     4      Ⅲ

```

```

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

```

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

-

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

#### 4.1.4 traceroute ipv6

traceroute ipv6

山

**traceroute [ipv6 ip-address][ [probe number ] [timeout seconds] [ttl minimum maximum]]**

| <i>ip-address</i>      | IPv6 山 |
|------------------------|--------|
| <i>number</i>          |        |
| <i>seconds</i>         |        |
| <i>minimum maximum</i> | TTL    |

Traceroute ipv6

⏏

DNS

⏏

traceroute ipv6

⏏

1 traceroute ipv6

Ruijie# **traceroute ipv6 3004::1**

< press Ctrl+C to break >

Tracing the route to 3004::1

|   |         |        |         |         |
|---|---------|--------|---------|---------|
| 1 | 3000::1 | 0 msec | 0 msec  | 0 msec  |
| 2 | 3001::1 | 4 msec | 4 msec  | 4 msec  |
| 3 | 3002::1 | 8 msec | 8 msec  | 4 msec  |
| 4 | 3004::1 | 4 msec | 28 msec | 12 msec |

IP 3004::1

1 4

⏏

2 traceroute ipv6

Ruijie# **traceroute ipv6 3004::1**

< press Ctrl+C to break >

Tracing the route to 3004::1

|   |         |        |         |         |
|---|---------|--------|---------|---------|
| 1 | 3000::1 | 0 msec | 0 msec  | 0 msec  |
| 2 | 3001::1 | 4 msec | 4 msec  | 4 msec  |
| 3 | 3002::1 | 8 msec | 8 msec  | 4 msec  |
| 4 | * * *   |        |         |         |
| 5 | 3004::1 | 4 msec | 28 msec | 12 msec |

IP 3004::1

1 5

4

⏏

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

---

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

5

5.1

5.1.1 carrier-delay

carrier-delay

no

carrier-delay [ seconds ]

no carrier-delay

|         |      |
|---------|------|
|         |      |
| seconds | 1 60 |

2

DCD

Down

Up

DCD

DCD

DCD

2Ruijie Tdfig)#6.84 0.4-6<0800 081 ref6interface gigabitethernet6.84 0.557 0 Td5 0 9A>Tj/TT/1

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

### 5.1.2 clear counters

**clear counters** *[interface-id]*

|  |                     |   |
|--|---------------------|---|
|  |                     |   |
|  | <i>interface-id</i> | ⏏ |

⏏

|                 |                        |              |
|-----------------|------------------------|--------------|
|                 | <b>show interfaces</b> | <b>clear</b> |
| <b>counters</b> | ⏏                      |              |
| ⏏               |                        |              |

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

|  |                        |   |
|--|------------------------|---|
|  |                        |   |
|  | <b>show interfaces</b> | ⏏ |

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

### 5.1.3 clear interface

**clear interface** *interface-id*

|  |                     |   |
|--|---------------------|---|
|  |                     |   |
|  | <i>interface-id</i> | ⏏ |

W

**shutdown**

**no shutdown**

W

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

**shutdown**

—

### 5.1.4 description

W

no

III

**description** *string*

no description

*string*

W

## show interfaces

W

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

```
Ruijie(config-if)# description GBIC-1
```

## show interfaces

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

### 5.1.5 duplex

**no**

W

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

**no duplex**

|             |   |
|-------------|---|
|             |   |
| <b>auto</b> | ⏏ |
| <b>full</b> | ⏏ |
| <b>half</b> | ⏏ |

W

☰ show interfaces

W

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

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

W

**no flowcontrol**

---

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

the 1990s, the number of people in the United States who are 65 years of age or older has increased by 50 percent. The number of people 75 years of age or older has increased by 100 percent. The number of people 85 years of age or older has increased by 200 percent. The number of people 95 years of age or older has increased by 400 percent. The number of people 100 years of age or older has increased by 800 percent. The number of people 105 years of age or older has increased by 1,600 percent. The number of people 110 years of age or older has increased by 3,200 percent. The number of people 115 years of age or older has increased by 6,400 percent. The number of people 120 years of age or older has increased by 12,800 percent. The number of people 125 years of age or older has increased by 25,600 percent. The number of people 130 years of age or older has increased by 51,200 percent. The number of people 135 years of age or older has increased by 102,400 percent. The number of people 140 years of age or older has increased by 204,800 percent. The number of people 145 years of age or older has increased by 409,600 percent. The number of people 150 years of age or older has increased by 819,200 percent. The number of people 155 years of age or older has increased by 1,638,400 percent. The number of people 160 years of age or older has increased by 3,276,800 percent. The number of people 165 years of age or older has increased by 6,553,600 percent. The number of people 170 years of age or older has increased by 13,107,200 percent. The number of people 175 years of age or older has increased by 26,214,400 percent. The number of people 180 years of age or older has increased by 52,428,800 percent. The number of people 185 years of age or older has increased by 104,857,600 percent. The number of people 190 years of age or older has increased by 209,715,200 percent. The number of people 195 years of age or older has increased by 419,430,400 percent. The number of people 200 years of age or older has increased by 838,860,800 percent. The number of people 205 years of age or older has increased by 1,677,721,600 percent. The number of people 210 years of age or older has increased by 3,355,443,200 percent. The number of people 215 years of age or older has increased by 6,710,886,400 percent. The number of people 220 years of age or older has increased by 13,421,772,800 percent. The number of people 225 years of age or older has increased by 26,843,545,600 percent. The number of people 230 years of age or older has increased by 53,687,091,200 percent. The number of people 235 years of age or older has increased by 107,374,182,400 percent. The number of people 240 years of age or older has increased by 214,748,364,800 percent. The number of people 245 years of age or older has increased by 429,496,729,600 percent. The number of people 250 years of age or older has increased by 858,993,459,200 percent. The number of people 255 years of age or older has increased by 1,717,986,918,400 percent. The number of people 260 years of age or older has increased by 3,435,973,836,800 percent. The number of people 265 years of age or older has increased by 6,871,947,673,600 percent. The number of people 270 years of age or older has increased by 13,743,895,347,200 percent. The number of people 275 years of age or older has increased by 27,487,790,694,400 percent. The number of people 280 years of age or older has increased by 54,975,581,388,800 percent. The number of people 285 years of age or older has increased by 109,951,162,777,600 percent. The number of people 290 years of age or older has increased by 219,902,325,555,200 percent. The number of people 295 years of age or older has increased by 439,804,651,110,400 percent. The number of people 300 years of age or older has increased by 879,609,302,220,800 percent. The number of people 305 years of age or older has increased by 1,759,218,604,441,600 percent. The number of people 310 years of age or older has increased by 3,518,437,208,883,200 percent. The number of people 315 years of age or older has increased by 7,036,874,417,766,400 percent. The number of people 320 years of age or older has increased by 14,073,748,835,532,800 percent. The number of people 325 years of age or older has increased by 28,147,497,671,065,600 percent. The number of people 330 years of age or older has increased by 56,294,995,342,131,200 percent. The number of people 335 years of age or older has increased by 112,589,990,684,262,400 percent. The number of people 340 years of age or older has increased by 225,179,981,368,524,800 percent. The number of people 345 years of age or older has increased by 450,359,962,737,049,600 percent. The number of people 350 years of age or older has increased by 900,719,925,474,099,200 percent. The number of people 355 years of age or older has increased by 1,801,439,850,948,198,400 percent. The number of people 360 years of age or older has increased by 3,602,879,701,896,396,800 percent. The number of people 365 years of age or older has increased by 7,205,759,403,792,793,600 percent. The number of people 370 years of age or older has increased by 14,411,518,807,585,587,200 percent. The number of people 375 years of age or older has increased by 28,823,037,615,171,174,400 percent. The number of people 380 years of age or older has increased by 57,646,075,230,342,348,800 percent. The number of people 385 years of age or older has increased by 115,292,150,460,684,697,600 percent. The number of people 390 years of age or older has increased by 230,584,300,921,369,395,200 percent. The number of people 395 years of age or older has increased by 461,168,601,842,738,790,400 percent. The number of people 400 years of age or older has increased by 922,337,203,685,477,580,800 percent. The number of people 405 years of age or older has increased by 1,844,674,407,370,955,161,600 percent. The number of people 410 years of age or older has increased by 3,689,348,814,741,910,323,200 percent. The number of people 415 years of age or older has increased by 7,378,697,629,483,820,646,400 percent. The number of people 420 years of age or older has increased by 14,757,395,258,967,641,292,800 percent. The number of people 425 years of age or older has increased by 29,514,790,517,935,282,585,600 percent. The number of people 430 years of age or older has increased by 59,029,581,035,870,565,171,200 percent. The number of people 435 years of age or older has increased by 118,059,162,071,741,130,342,400 percent. The number of people 440 years of age or older has increased by 236,118,324,143,482,260,684,800 percent. The number of people 445 years of age or older has increased by 472,236,648,286,964,521,369,600 percent. The number of people 450 years of age or older has increased by 944,473,296,573,929,042,739,200 percent. The number of people 455 years of age or older has increased by 1,888,946,593,147,858,085,478,400 percent. The number of people 460 years of age or older has increased by 3,777,893,186,295,716,170,956,800 percent. The number of people 465 years of age or older has increased by 7,555,786,372,591,432,341,913,600 percent. The number of people 470 years of age or older has increased by 15,111,572,745,182,864,683,827,200 percent. The number of people 475 years of age or older has increased by 30,223,145,490,365,729,367,654,400 percent. The number of people 480 years of age or older has increased by 60,446,290,980,731,458,735,308,800 percent. The number of people 485 years of age or older has increased by 120,892,581,961,462,917,470,617,600 percent. The number of people 490 years of age or older has increased by 241,785,163,922,925,834,941,235,200 percent. The number of people 495 years of age or older has increased by 483,570,327,845,851,669,882,470,400 percent. The number of people 500 years of age or older has increased by 967,140,655,691,703,339,764,940,800 percent. The number of people 505 years of age or older has increased by 1,934,281,311,383,406,679,529,881,600 percent. The number of people 510 years of age or older has increased by 3,868,562,622,766,813,359,059,763,200 percent. The number of people 515 years of age or older has increased by 7,737,125,245,533,626,718,119,526,400 percent. The number of people 520 years of age or older has increased by 15,474,250,491,067,253,436,239,052,800 percent. The number of people 525 years of age or older has increased by 30,948,500,982,134,506,872,478,105,600 percent. The number of people 530 years of age or older has increased by 61,897,001,964,269,013,744,956,211,200 percent. The number of people 535 years of age or older has increased by 123,794,003,928,538,027,489,912,422,400 percent. The number of people 540 years of age or older has increased by 247,588,007,857,076,054,979,824,844,800 percent. The number of people 545 years of age or older has increased by 495,176,015,714,152,109,959,649,689,600 percent. The number of people 550 years of age or older has increased by 990,352,031,428,304,219,919,299,379,200 percent. The number of people 555 years of age or older has increased by 1,980,704,062,856,608,439,838,598,758,400 percent. The number of people 560 years of age or older has increased by 3,961,408,125,713,216,879,677,197,516,800 percent. The number of people 565 years of age or older has increased by 7,922,816,251,426,433,759,354,395,033,600 percent. The number of people 570 years of age or older has increased by 15,845,632,502,852,867,518,708,790,067,200 percent. The number of people 575

---

\_\_\_\_\_

\_\_\_\_\_

### 5.1.7 interface aggregateport

W

interf

\_\_\_\_\_



|  |                 |   |
|--|-----------------|---|
|  |                 |   |
|  | show interfaces | ⌵ |
|  | S2900           | ⌵ |
|  |                 |   |
|  | -               | - |

5.1.9 interface giagbitEthernet

|  |                                               |   |                 |                 |
|--|-----------------------------------------------|---|-----------------|-----------------|
|  |                                               |   |                 | ⌵               |
|  | interface gigabitEthernet mod-num/port-num    |   |                 |                 |
|  |                                               |   |                 |                 |
|  | mod-num/port-num                              | / | ⌵               |                 |
|  |                                               |   |                 |                 |
|  |                                               |   |                 |                 |
|  | no                                            | ⌵ | show interfaces | show interfaces |
|  | gigabitEthernet                               | ⌵ |                 |                 |
|  | Ruijie(config)# interface gigabitEthernet 1/2 |   |                 |                 |
|  | Ruijie(config-if)#                            |   |                 |                 |
|  | Q.                                            |   |                 |                 |

---

### 5.1.10 interface vlan

switch virtual interface SVI noce

⏏

```
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<br>⏏ A 4 B OK C 4 D<br>Short⏏ A 4 B 4 C 4 D OK⏏ |
| length | ⏏ state OK ⏏<br>⏏ Short Open length<br>⏏                      |

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

### 5.1.12 medium-type

⏏

no

⏏

medium-type { fiber | copper }

**no medium-type**

|               |  |
|---------------|--|
|               |  |
| <b>fiber</b>  |  |
| <b>copper</b> |  |

W

Ap      SVI

W

4 4

W

W

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

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

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

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

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

### 5.1.13 mtu

mtu

**Mtu num**

|            |                  |
|------------|------------------|
|            |                  |
| <i>num</i> | 64 9216( 65536 ) |

1500山

|  |                                                      |   |   |
|--|------------------------------------------------------|---|---|
|  | mtu                                                  | ⏏ | ⏏ |
|  | Ruijie(config)# <b>interface gigabitethernet 1/1</b> |   |   |
|  | Ruijie(config-if)# <b>mtu 9216</b>                   |   |   |
|  |                                                      |   |   |
|  | <b>show interfaces</b>                               |   | ⏏ |
|  |                                                      |   |   |
|  |                                                      |   |   |
|  | -                                                    |   | - |

## 5.1.14 shutdown

|  |                                                  |                        |   |
|--|--------------------------------------------------|------------------------|---|
|  | ⏏                                                | <b>no</b>              | ⏏ |
|  | <b>shutdown</b>                                  |                        |   |
|  | <b>no shutdown</b>                               |                        |   |
|  |                                                  |                        |   |
|  | -                                                |                        | - |
|  |                                                  |                        |   |
|  |                                                  |                        |   |
|  | 4 Ap                                             | 4 SVI                  |   |
|  | ⏏                                                | <b>show interfaces</b> | ⏏ |
|  |                                                  |                        |   |
|  | <b>no shutdown</b>                               |                        |   |
|  | &                                                | ⏏                      |   |
|  |                                                  |                        |   |
|  | 1                                                | Ap 1                   |   |
|  | Ruijie(config)# <b>interface aggregateport 1</b> |                        |   |
|  | Ruijie(config-if)# <b>shutdown</b>               |                        |   |
|  | 2                                                | Ap 1                   |   |
|  | Ruijie(config)# <b>interface aggregateport 1</b> |                        |   |

---

Ruijie(config-if)# no shutdown

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







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

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

|                               | Trunk VLAN 11 vlan-list<br>VLAN VLAN VLAN |
|-------------------------------|-------------------------------------------|
|                               | VLAN ID VLAN ID -                         |
|                               | 11 10-2011 ,                              |
|                               | 1-10,20-25,30,33                          |
| <b>allowed vlan vlan-list</b> | all VLAN VLAN                             |
|                               | add VLAN VLAN                             |
|                               | remove VLAN VLAN                          |
|                               | except VLAN VLAN                          |
|                               | VLAN                                      |
| <b>native vlan vlan-id</b>    | Native VLAN11                             |

VLAN all Native VLAN VLAN 1

Access vlan is 1, Native vlan is 1  
Protected is disabled  
Vlan lists is  
1,3-4094

| <b>show interfaces</b>   | ⏏                            |
|--------------------------|------------------------------|
| <b>switchport access</b> | accessport statics<br>⏏ VLAN |

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

## 5.2

### 5.2.1 show interfaces

⏏

**show interfaces** [*interface-id*] [**counters** | **description** | **status** | **switchport** | **trunk** | **transceiver** [**alarm** | **diagnosis**]]

| <i>interface-id</i> | ⏏ aggregateport ⏏ SVI<br>⏏ loopback ⏏ |
|---------------------|---------------------------------------|
| <b>counters</b>     | ⏏                                     |
| <b>description</b>  | link ⏏                                |
| <b>status</b>       | ⏏ ⏏                                   |
| <b>switchport</b>   | ⏏                                     |
| <b>trunk</b>        | trunking port ⏏ Aggregate port<br>⏏   |
| <b>transceiver</b>  | ⏏                                     |
| <b>alarm</b>        | ⏏ None ⏏ ⏏                            |



## 6 Aggregate Port

### 6.1

#### 6.1.1 aggregateport load-balance

AP                      ㄣ                      no                      ㄣ

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

**no aggregateport load-balance**

| <b>dst-mac</b>     | <div>MAC ㄣ AP</div> <div>MAC</div> <div>MAC ㄣ</div>              |
|--------------------|------------------------------------------------------------------|
| <b>src-mac</b>     | <div>MAC ㄣ AP</div> <div>MAC</div> <div>MAC ㄣ</div>              |
| <b>src-dst-ip</b>  | <div>IP IP ㄣ IP——</div> <div>IP IP——</div> <div>IP ㄣ</div>       |
| <b>dst-ip</b>      | <div>IP ㄣ AP</div> <div>IP</div> <div>IP ㄣ</div>                 |
| <b>src-ip</b>      | <div>IP ㄣ AP</div> <div>IP</div> <div>IP ㄣ</div>                 |
| <b>src-dst-mac</b> | <div>MAC MAC ㄣ</div> <div>MAC—— MAC</div> <div>MAC—— MAC ㄣ</div> |

MAC ㄣ

ㄣ

Aggregate Port

|  |       |    |     |
|--|-------|----|-----|
|  | S2900 |    |     |
|  | Ä     |    | 8   |
|  | Ä     | 31 | APЩ |
|  |       |    |     |
|  |       |    |     |
|  | -     |    | -   |
|  |       |    |     |

6.2

6.2.1 show aggregateport

|                              |                  |
|------------------------------|------------------|
| aggregateport                | Щ                |
|                              |                  |
| <i>aggregate-port-number</i> | Aggregate Port Щ |

Aggregate Port

## 7.1

|                              |                                                                                   |           |                                                                                     |
|------------------------------|-----------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------|
| <b>VLAN</b>                  |  | <b>no</b> |  |
| <b>name</b> <i>vlan-name</i> |                                                                                   |           |                                                                                     |
| <b>no name</b>               |                                                                                   |           |                                                                                     |

|      |      |         |        |            |
|------|------|---------|--------|------------|
| VLAN | VLAN | VLAN ID | VLAN 2 | "VLAN0002" |
|------|------|---------|--------|------------|

|  |                  |      |
|--|------------------|------|
|  | <b>show vlan</b> | vlan |
|--|------------------|------|

[illegible]

### 7.1.2 switchport access

**switchport access vlan *vlan-id***

**no switchport access vlan**

|  |               |             |              |
|--|---------------|-------------|--------------|
|  |               |             |              |
|  |               |             |              |
|  | <b>access</b> | switch port | access portⅢ |
|  | <b>trunk</b>  | switch port | trunk portⅢ  |
|  | <b>hybrid</b> | switch port | hybrid portⅢ |

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

|                                      | Trunk VLAN <input type="checkbox"/> vlan-list<br>VLAN                                              |
|--------------------------------------|----------------------------------------------------------------------------------------------------|
|                                      | VLAN ID VLAN ID -<br><input type="checkbox"/> 10-20 <input type="checkbox"/> ,<br>1-10,20-25,30,33 |
| <b>allowed vlan</b> <i>vlan-list</i> | all VLAN VLAN<br>add VLAN VLAN<br>remove VLAN VLAN<br><br>except VLAN VLAN<br>VLAN                 |
| <b>native vlan</b> <i>vlan-id</i>    | Native VLAN <input type="checkbox"/>                                                               |

VLAN all Native VLAN VLAN 1

### Native VLAN

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

**VLAN**

Trunk VLAN 1 4094 ☐

Trunk VLAN VLAN Trunk ☐

**show interfaces switchport** ☐

VLAN 2 1/15

```
Ruijie(config)# interface fastethernet 1/15
Ruijie(config-if)# switchport trunk allowed vlan remove 2
Ruijie(config-if)# end
Ruijie# show interfaces fastethernet1/15 switchport
Interface  Switchport Mode  Access Native Protected VLAN lists
-----
FigabitEthernet 1/15  enabled  TRUNK  1    1    Disabled  1,3-4094
```

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

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

## 7.2

### 7.2.1 show vlan

VLAN


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

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

|  |             |               |                                                                                       |
|--|-------------|---------------|---------------------------------------------------------------------------------------|
|  | <b>end</b>  | <b>Ctrl+C</b> |  |
|  | <b>exit</b> |               |                                                                                       |

|                               |                     |
|-------------------------------|---------------------|
| Ruijie# <b>show vlan id 1</b> |                     |
| VLAN Name                     | Status Ports        |
| -----                         | -----               |
| 1 VLAN0001                    | STATIC Fa0/1, Fa0/2 |

|                          |      |                                                                                            |
|--------------------------|------|--------------------------------------------------------------------------------------------|
|                          |      |                                                                                            |
| <b>name</b>              | VLAN |       |
| <b>switchport access</b> |      | Vlan  |

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



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

| show protocol-vlan profile            | - |
|---------------------------------------|---|
| show protocol-vlan profile <i>num</i> | - |
| no protocol-vlan profile              | - |
| no protocol-vlan profile <i>num</i>   | - |

RGOS10.1

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

### 8.1.3 protocol-vlan profile num vlan id

profile

| <i>num</i> | profile         |
|------------|-----------------|
| <i>id</i>  | VLAN ID 1- VLAN |

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

|  |                                              |   |
|--|----------------------------------------------|---|
|  |                                              |   |
|  |                                              |   |
|  | <b>show protocol-vlan profile</b>            | - |
|  | <b>show protocol-vlan profile <i>num</i></b> | - |
|  | <b>no protocol-vlan profile</b>              | - |
|  | <b>no protocol-vlan profile <i>num</i></b>   | - |

RGOS10.1

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

# 9 MAC

## 9.1

### 9.1.1 address-bind

ip mac 𐀀

**address-bind** *ip-address mac-address*

**no address-bind** *ip-address*



/

**address-bind install**

**no address-bind install**

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

⏏

fa 0/1

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

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

|  |                                 |  |
|--|---------------------------------|--|
|  |                                 |  |
|  | <b>show address-bind uplink</b> |  |

RGOS10.1

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

9.1.3 address-bind ip-address

ip mac .

**address-bind** *ip-address mac-address*

**no address-bind** *ip-address*

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

MAC

---

|   | IP | MAC |    | IP  | IP |
|---|----|-----|----|-----|----|
| W |    | MAC | IP | MAC |    |

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





MAC

---



|    |     |     |    |     |    |  |    |
|----|-----|-----|----|-----|----|--|----|
| IP |     | MAC |    |     | IP |  | IP |
|    | MAC |     | IP | MAC |    |  |    |

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

|                                |   |
|--------------------------------|---|
|                                |   |
| show mac-address-table dynamic | ▯ |

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

### 9.1.7 clear mac-address-table filtering

▯

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

|                         |      |
|-------------------------|------|
|                         |      |
| filtering               | ▯    |
| address <i>mac-addr</i> | ▯    |
| vlan <i>vlan-id</i>     | VLAN |

```
show mac-address-table filtering
```

▯

```
00d0.f800.0c0c
```

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

|                                  |   |
|----------------------------------|---|
|                                  |   |
| mac-address-table filtering      | ▯ |
| show mac-address-table filtering | ▯ |

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

### 9.1.8 clear mac-address-table static

▮

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

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

**show mac-address-table static**

▮

MAC 00d0.f800.073c

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

|                                      |  |   |
|--------------------------------------|--|---|
|                                      |  |   |
| <b>mac-address-table static</b>      |  | ▮ |
| <b>show mac-address-table static</b> |  | ▮ |

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

### 9.1.9 mac-address-table aging-time

no

**no mac-address-table aging-time**

|                |   |   |
|----------------|---|---|
|                |   |   |
| <i>seconds</i> |   | ⏏ |
|                | ⏏ |   |

300 ⏏

**show mac-address-table aging-time**

⏏

**show mac-address-table dynamic**

⏏

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

|                                          |  |   |
|------------------------------------------|--|---|
|                                          |  |   |
| <b>show mac-address-table aging-time</b> |  | ⏏ |
| <b>show mac-address-table dynamic</b>    |  | ⏏ |

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

**9.1.10 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>         |         | ⏏ |
| <b>vlan</b> <i>vlan-id</i> | VLAN ID | ⏏ |

⏏

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

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

\_\_\_\_\_

\_\_\_\_\_

### 9.1.11 mac-address-table notification

W

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

|                                            |      |   |
|--------------------------------------------|------|---|
|                                            |      |   |
| <b>snmp-server enable traps</b>            | trap | Ш |
| <b>show mac-address-table notification</b> | MAC  |   |

|                                       |   |
|---------------------------------------|---|
|                                       |   |
| <b>show mac-address-table static</b>  | ⏏ |
| <b>clear mac-address-table static</b> | ⏏ |

S2900

Ä MAC 16K  
 Ä MAC 1K

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

### 9.1.13 snmp trap mac-notification

MAC ⏏ **no** ⏏

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

**no snmp trap mac-notification {added | removed}**

|                |   |
|----------------|---|
|                |   |
| <b>added</b>   | ⏏ |
| <b>removed</b> | ⏏ |

⏏

**show mac-address-table notification** *interface* ⏏

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

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

|                                            |          |
|--------------------------------------------|----------|
|                                            |          |
| <b>mac-address-table notification</b>      | MAC ⏏    |
| <b>show mac-address-table notification</b> | MAC<br>⏏ |

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

9.1.14 mac-address-learning

|  |                                            |     |
|--|--------------------------------------------|-----|
|  |                                            | /   |
|  | mac-address-learning                       |     |
|  |                                            |     |
|  |                                            |     |
|  |                                            |     |
|  |                                            | MAC |
|  | 1                                          |     |
|  | Ruijie(config-if)# no mac-address-learning |     |
|  |                                            |     |

9.2

9.2.1 show address-bind

|  |                   |   |
|--|-------------------|---|
|  |                   | 山 |
|  | show address-bind |   |
|  |                   |   |
|  |                   |   |
|  |                   |   |

```
Ruijie# show address-bind
```

```
IP Address      Binding MAC Addr
```

```
-----
```

```
3.3.3.3         00d0.f811.1112
```

```
3.3.3.4         00d0.f811.1117
```

MAC

|                                         |      |
|-----------------------------------------|------|
| <b>show mac-address-table dynamic</b>   | ▮    |
| <b>show mac-address-table interface</b> | ▮    |
| <b>show mac-address-table vlan</b>      | VLAN |
| <b>show mac-address-table count</b>     | ▮    |
| <b>show mac-address-table static</b>    | ▮    |
| <b>show mac-address-table filtering</b> | ▮    |

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

## 9.2.4 show mac-address-table aging-time

▮

**show mac-address-table aging-time**

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

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

|                                     |   |
|-------------------------------------|---|
| <b>mac-address-table aging-time</b> | ▮ |
|-------------------------------------|---|

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

## 9.2.5 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

|                                         |      |   |
|-----------------------------------------|------|---|
|                                         |      |   |
| <b>show mac-address-table static</b>    |      | ▮ |
| <b>show mac-address-table filtering</b> |      | ▮ |
| <b>show mac-address-table dynamic</b>   |      | ▮ |
| <b>show mac-address-table address</b>   |      |   |
| <b>show mac-address-table interface</b> |      |   |
| <b>show mac-address-table vlan</b>      | VLAN | ▮ |

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

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

## 9.2.6 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> | (<br>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 |

|                                        |   |
|----------------------------------------|---|
|                                        |   |
| <b>clear mac-address-table dynamic</b> | ▮ |

|

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

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

## 9.2.7 show mac-address-table filtering

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

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

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

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

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

```
Ruijie# show mac-address-table filtering
Vlan      MAC Address      Type      Interface
-----
1         0000.2222.2222    FILTER    Not available
```

|                                          |   |
|------------------------------------------|---|
|                                          |   |
| <b>clear mac-address-table filtering</b> | ⏏ |
| <b>mac-address-table filtering</b>       | ⏏ |

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

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

## 9.2.8 show mac-address-table interface

⏏

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

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

|                     |                    |
|---------------------|--------------------|
| <i>interface-id</i> | ( AggregatePort) 三 |
| <i>vlan-id</i>      | VLAN 三             |

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 |

|                                         |           |
|-----------------------------------------|-----------|
| <b>show mac-address-table static</b>    | 三         |
| <b>show mac-address-table filtering</b> | 三         |
| <b>show mac-address-table dynamic</b>   | 三         |
| <b>show mac-address-table address</b>   |           |
| <b>show mac-address-table vlan</b>      | VLAN<br>三 |
| <b>show mac-address-table count</b>     | 三         |

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

## 9.2.9 show mac-address-table notification

MAC

三

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

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

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

| <i>mac-addr</i>     | MAC Ⅲ               |
|---------------------|---------------------|
| <i>vlan-id</i>      | VLANⅢ               |
| <i>interface-id</i> | (<br>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 |

| <b>mac-address-table static</b>       | Ⅲ |
|---------------------------------------|---|
| <b>clear mac-address-table static</b> | Ⅲ |

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

### 9.2.11 show mac-address-table vlan

VLAN Ⅲ

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

|--|--|

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

|                                              |                |        |                     |
|----------------------------------------------|----------------|--------|---------------------|
| Ruijie# <b>show mac-address-table vlan 1</b> |                |        |                     |
| 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 |

|                                         |  |
|-----------------------------------------|--|
|                                         |  |
| <b>show mac-address-table static</b>    |  |
| <b>show mac-address-table filtering</b> |  |
| <b>show mac-address-table dynamic</b>   |  |
| <b>show mac-address-table address</b>   |  |
| <b>show mac-address-table interface</b> |  |
| <b>show mac-address-table count</b>     |  |

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

9.2.12 show mac-address-learning

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

```
Ruijie# show mac-address-learning
```

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

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

## 10 DHCP Snooping

## 10.1 DHCP snooping

### 10.1.1 ip dhcp snooping

|               |    |
|---------------|----|
| DHCP Snooping | no |
| DHCP Snooping |    |

```
[no] ip dhcp snooping
```

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

\_\_\_\_\_

\_\_\_\_\_

## DHCP Snooping

```
show ip dhcp snooping
```

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



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

10.1.4 ip dhcp snooping database write-to-flash

DHCP Snoopin

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

### 10.1.5 ip dhcp snooping information option

DHCP                      option82                      卐  
no                                  卍

**[no] ip dhcp snooping information option**

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

卍

DHCP                      option82                      DHCP                      option82  
卍

DHCP                      option82

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





no DHCP 11

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

|                   |                        |
|-------------------|------------------------|
|                   |                        |
| <i>rate-value</i> | PPS[Packet Per Second] |

11

DHCP Snooping VLAN 11

CPP[CPU Protect Protocol] 11CPP DHCP

CPP DHCP Snooping 11

CPP 11

**show ip dhcp snooping** 11

1 100pps

Ruijie# **configure terminal**

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

Ruijie(config-if)# **ip dhcp snooping limit rate 100**

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

Ruijie# **show ip dhcp snooping**

Switch DHCP snooping status ENABLE

Verification of hwaddr field status DISABLE

DHCP snooping database write-delay time: 0 seconds

DHCP snooping option 82 status: ENABLE

DHCP snooping Support Bootp bind status: ENABLE

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

|                              |                  |
|------------------------------|------------------|
|                              |                  |
| <b>show ip dhcp snooping</b> | DHCP snooping 11 |

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

### 10.2.2 ip dhcp snooping suppression

suppression no  
 no suppression no

**[no] ip dhcp snooping suppression**

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

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

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

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

```

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

```

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

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

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

### 10.2.3 ip dhcp snooping trust

```

DHCP snooping          TRUST          11
no                      UNTRUST  11

```

**[no] ip dhcp snooping trust**

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

```

UNTRUST  11

```

```

11

```

```

DHCP          DHCP          TRUST  11TRUST
DHCP          UNTRUST          DHCP          11

```

```

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      Rate limit (pps)
-----

```

```

FastEthernet0/1      YES          unlimited

```

## 10.3 DHCP snooping

### 10.3.1 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 Rate limit (pps)

-----

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

DHCP Snooping  

[illegible]

\_\_\_\_\_

\_\_\_\_\_



W

---

Total number of bindings: 1

| MacAddress     | IpAddress | Lease(sec) | Type          | VLAN | Interface        |
|----------------|-----------|------------|---------------|------|------------------|
| -----          | -----     | -----      | -----         | ---- | -----            |
| 0000.0000.0001 | 1.1.1.1   | 78128      | dhcp-snooping | 1    | FastEthernet 0/1 |

11

|                                       |               |
|---------------------------------------|---------------|
|                                       |               |
| <b>ip dhcp snooping binding</b>       | DHCP snooping |
| <b>clear ip dhcp snooping binding</b> | DHCP snooping |

\_\_\_\_\_

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

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

## 10.4 DHCP snooping

### 10.4.1 clear ip dhcp snooping binding

DHCP Snooping

⏏

**clear ip dhcp snooping binding**

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DHCP snooping

⏏

DHCP snooping

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

Total number of bindings: 0

| MacAddress | IpAddress | Lease(sec) | Type  | VLAN | Interface |
|------------|-----------|------------|-------|------|-----------|
| -----      | ---       | -----      | ----- | ---  | -----     |

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|                                      |  |               |
| <b>show ip dhcp snooping binding</b> |  | DHCP snooping |
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### 10.4.2 debug ip dhcp snooping

## DHCP Snooping

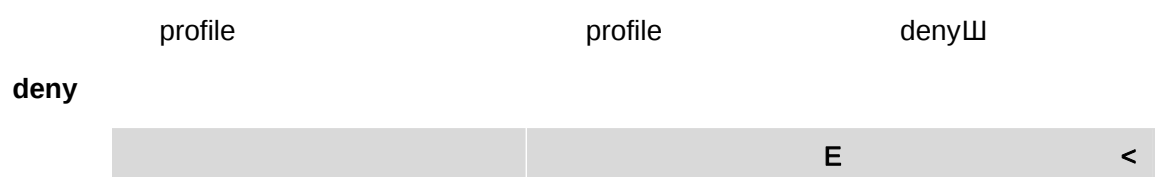
III

**debug ip dhcp snooping {**

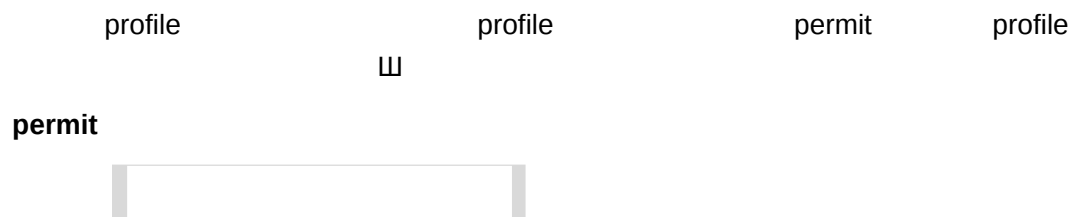
# 11 IGMP Snooping

## 11.1

### 11.1.1 deny



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|--|-----------------------------------------------------|-------------------------------|
|  | high-ip-address                                     |                               |
|  |                                                     |                               |
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|  | profile                                             |                               |
|  |                                                     | profile deny                  |
|  | profile                                             | profile                       |
|  |                                                     | 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 |                               |
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### 11.1.4 ip igmp profile

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```

igmp snooping          ivgl
no                      igmp snooping
ip igmp snooping ivgl

```

| no ip igmp snooping |   |
|---------------------|---|
|                     |   |
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W

Diagram illustrating a network topology with four VLANs and three switches:

- VLAN 100 is connected to Switch 1.
- VLAN 200 is connected to Switch 2.
- VLAN 300 is connected to Switch 3.
- VLAN 400 is connected to Switch 4.

The switches are interconnected in a mesh topology:

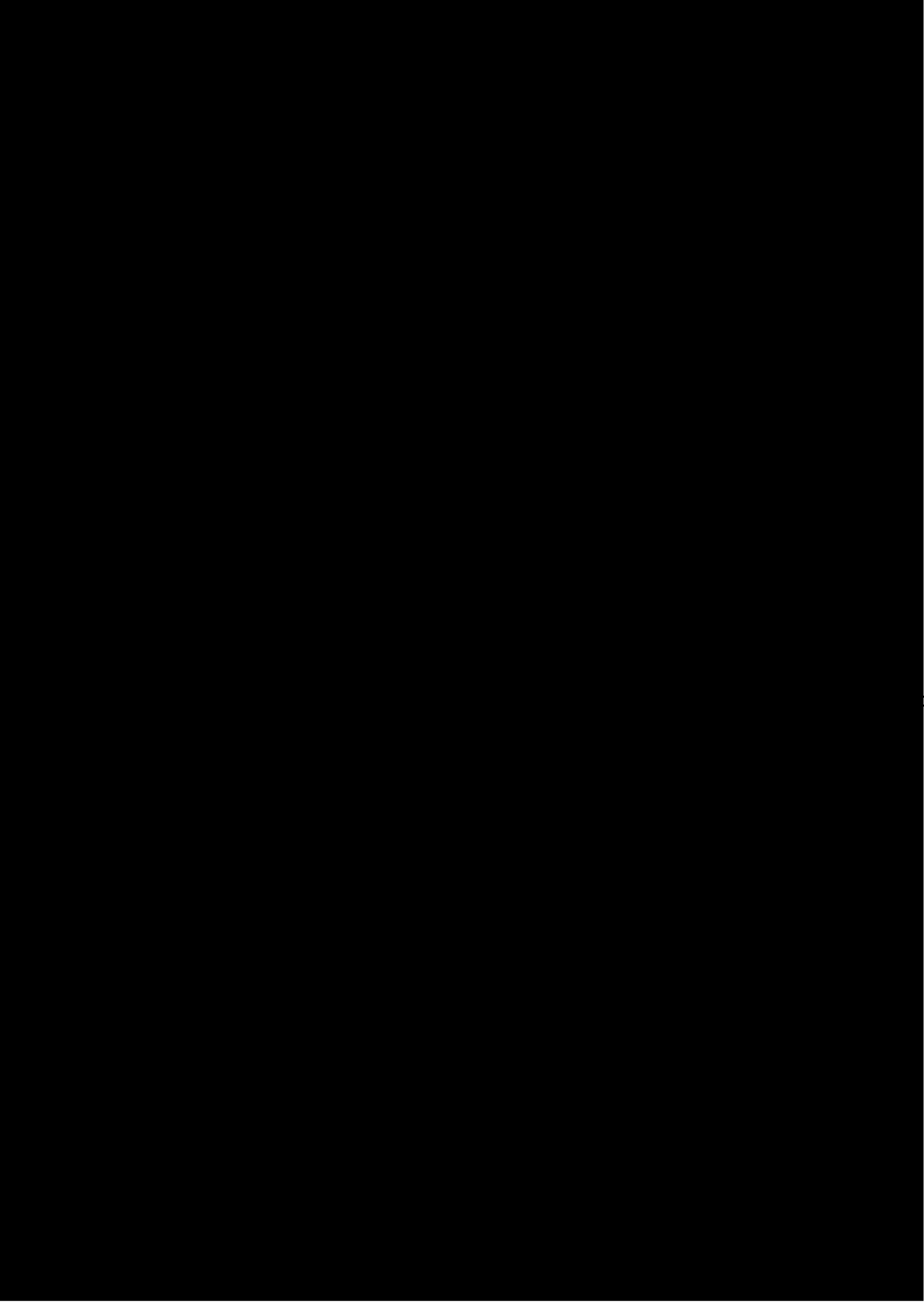
- Switch 1 is connected to Switch 2 and Switch 3.
- Switch 2 is connected to Switch 1 and Switch 4.
- Switch 3 is connected to Switch 1 and Switch 4.
- Switch 4 is connected to Switch 2 and Switch 3.

|  |                                                                                   |                     |               |              |           |
|--|-----------------------------------------------------------------------------------|---------------------|---------------|--------------|-----------|
|  |                                                                                   | pim snooping        | igmp snooping | IVGL         | IVGL-SVGL |
|  |  | no ip igmp snooping | igmp snooping |              |           |
|  |                                                                                   | pim snooping        |               | pim snooping |           |
|  |                                                                                   | III                 |               |              |           |

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|                 |                              |      |
|-----------------|------------------------------|------|
|                 | igmp snooping                | ivgl |
| Ruijie(config)# | <b>ip igmp snooping ivgl</b> |      |

---





IGMP Snooping

**ip igmp**

**no ip ig**

**se-time**

```
graph LR
    S1[Switch S1] --- S2[Switch S2]
    S1 --- S3[Switch S3]
    S2 --- S3
    H1[Host H1] --- S1
    H2[Host H2] --- S2
    H3[Host H3] --- S3
```

1. Enable IGMP Snooping on S1, S2, and S3.

2. Configure S1 as the IGMP Snooping Querier.

3. Configure S1 with a query interval of 120s and a query-max-response-time of 100s.

4. Verify the configuration on S1.

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

| Interface           | IGMP Snooping |
|---------------------|---------------|
| GigabitEthernet0/24 | Enabled       |

| Interface           | IGMP Snooping |
|---------------------|---------------|
| GigabitEthernet0/24 | Enabled       |

| Interface           | IGMP Snooping |
|---------------------|---------------|
| GigabitEthernet0/24 | Enabled       |

**no ip igmp snooping limit-ipmc vlan** *vid address gaddress server saddress*





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

```
vlan
```

|   |   |
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### 11.1.14 ip igmp snooping vlan mrouter interface

```
ip igmp snooping vlan mrouter interface interface-id [no] [enable]
```

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

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

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

```
enable
```

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

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

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11.1.15 ip igmp snooping vlan mrouter learn pim-dvmrp

IGMP Query/Dvmrp/PIM Hello

|     |         |  |
|-----|---------|--|
|     |         |  |
| vid | vlan id |  |

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|      |  |      |    |
| VLAN |  | VLAN | no |

|  |        |                                    |
|--|--------|------------------------------------|
|  | vlan 1 | Ruijie(config)# ip igmp snooping v |
|--|--------|------------------------------------|

|                                          |  |  |
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|                                          |  |  |
| ip igmp snooping mrouter learn pim-dvmrp |  |  |

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11.1.16 ip igmp snooping vlan static interface

igmp snooping  
IGMP                     ┌┐                    ip igmp snooping vlan static interface┌┐  
no                                    ┌┐

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

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

|              |         |
|--------------|---------|
|              |         |
| vid          | vlan id |
| ip-addr      |         |
| interface-id | id      |

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Ruijie(config)# ip igmp snooping vlan 1 static 224.0.0.2 interface  
fastEthernet 0/1

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

┌┐

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

11.1.17 ip igmp snooping filter

profile┌┐                    no                    profile┌┐  
ip igmp snooping filter profile-number

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

▮

IGMP Report

▮

0/1

100

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

Ruijie(config-if)# **ip igmp snooping max-group 100**

[illegible]

### 11.2.2 show ip igmp profile [ profile-number]

|                       |  |         |
|-----------------------|--|---------|
|                       |  |         |
|                       |  | profile |
| <i>profile-number</i> |  | profile |
|                       |  |         |
| EXEC                  |  |         |
| profile               |  |         |
|                       |  |         |
| -                     |  | -       |

IGMP Snooping Debug

▮

no

▮

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

|         | IGMP Snooping |
|---------|---------------|
| event   | IGMP Snooping |
| packet  | IGMP Snooping |
| msf     | IGMP Snooping |
| warning | IGMP Snooping |

EXEC

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

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





dhcipv6 snooping flash IP

1 flash 100  
Ruijie(config)# ipv6 dhcp snooping database write-delay 100

|                         |                  |
|-------------------------|------------------|
|                         |                  |
| show ipv6 dhcp snooping | dhcipv6 snooping |

|      |  |
|------|--|
|      |  |
| 10.4 |  |

12.1.4 ipv6 dhcp snooping database write-to-flash

dhcipv6 snooping flash

ipv6 dhcp snooping database write-to-flash

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

[illegible]

no dhcpv6 snooping

ipv6 dhcp snooping ignore dest-not-found

no ipv6 dhcp snooping ignore dest-not-found

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

DHCPV6 MAC MAC DHCPV6

MAC

4 4 MAC

! DHCPV6\_SNOOPING-5-DEST\_NOT\_FOUND: Could not find destination port.  
Destination MAC [mac-address] DHCPV6

MAC VLAN

1

Ruijie(config)# ipv6 dhcp snooping ignore dest-not-found

|                         |                 |
|-------------------------|-----------------|
|                         |                 |
| show ipv6 dhcp snooping | dhcpv6 snooping |

|      |  |
|------|--|
|      |  |
| 10.4 |  |

12.1.7 ipv6 dhcp snooping link-detection

LINK DOWN

no

ipv6 dhcp snooping link-detection

no ipv6 dhcp snooping link-detection

|  |                                                          |                 |
|--|----------------------------------------------------------|-----------------|
|  |                                                          |                 |
|  |                                                          |                 |
|  |                                                          |                 |
|  | LINK DOWN                                                | LINK DOWN       |
|  | LINK DOWN                                                |                 |
|  | 1 LINK DOWN                                              |                 |
|  | Ruijie(config)# <b>ipv6 dhcp snooping link-detection</b> |                 |
|  |                                                          |                 |
|  | <b>show ipv6 dhcp snooping</b>                           | dhcpv6 snooping |
|  |                                                          |                 |
|  |                                                          |                 |
|  | 10.4                                                     |                 |

12.1.8 ipv6 dhcp snooping trust

|  |                             |                     |                     |
|--|-----------------------------|---------------------|---------------------|
|  | dhcpv6 snooping             | trust               | no                  |
|  | untrust                     |                     |                     |
|  | ipv6 dhcp snooping trust    |                     |                     |
|  | no ipv6 dhcp snooping trust |                     |                     |
|  |                             |                     |                     |
|  | untrust                     |                     |                     |
|  |                             |                     |                     |
|  | dhcpv6 untrust              | trust dhcpv6 Server | trust dhcpv6 Server |

```

1          fastethernet 0/1   trust
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ipv6 dhcp snooping trust

```

|                                |                 |
|--------------------------------|-----------------|
|                                |                 |
| <b>show ipv6 dhcp snooping</b> | dhcpv6 snooping |

|             |  |
|-------------|--|
|             |  |
| <b>10.4</b> |  |

### 12.1.9 Ipv6 dhcp snooping vlan

```

vlan          dhcpv6 snooping          100          no
vlan          dhcpv6 snooping          100

```

**ipv6 dhcp snooping** {*vlan-list* | {*vlan-min* [*vlan-max*]}}

**no ipv6 dhcp snooping** {*vlan-list* | {*vlan-min* [*vlan-max*]}}

|                  |                   |
|------------------|-------------------|
|                  |                   |
| <i>vlan-list</i> | vlan 1,3-5,7,9-11 |
| <i>vlan-min</i>  | vlan id           |
| <i>vlan-max</i>  | vlan id           |

```

dhcpv6 snooping          vlan

```

```

dhcpv6 snooping          vlan          dhcpv6 snooping          100
vlan          dhcpv6 snooping          vlan          dhcpv6 snooping          100

```

```

1          vlan 1          dhcpv6 snooping
Ruijie(config)# no ipv6 dhcp snooping vlan 1

```

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

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

10.4

12.1.11 ipv6 verify source

no

ipv6 verify source [port-security]

no ipv6 verify source

|               |                            |                 |
|---------------|----------------------------|-----------------|
| port-security | MAC + IPV6<br>IPV6<br>IPV6 | MAC<br><br>IPV6 |
|---------------|----------------------------|-----------------|

IPV6 DHCPV6 IPV6

```
1 fastethernet 0/1 MAC+IPV6
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ipv6 verify source port-security
```

10.4

12.2

12.2.1 show ipv6 dhcp snooping

W

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

1. *Journal of Management Studies*, 1997, 34, 103-117.



| <b>vlan</b> <i>vlan_id</i> | VLAN |
|----------------------------|------|
|----------------------------|------|

| <b>interface</b> <i>interface_name</i> |
|----------------------------------------|
|----------------------------------------|

dhcpv6 snooping

山

**1 show ipv6 dhcp snooping prefix**

Total number of prefix: 1

| Mac Address | IPv6 Prefix | Lease(s) | VLAN | Interface |
|-------------|-------------|----------|------|-----------|
|-------------|-------------|----------|------|-----------|

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

|                |                |       |   |        |
|----------------|----------------|-------|---|--------|
| 00d0.f801.0101 | 2001:2002::/64 | 42368 | 2 | fa 0/1 |
|----------------|----------------|-------|---|--------|

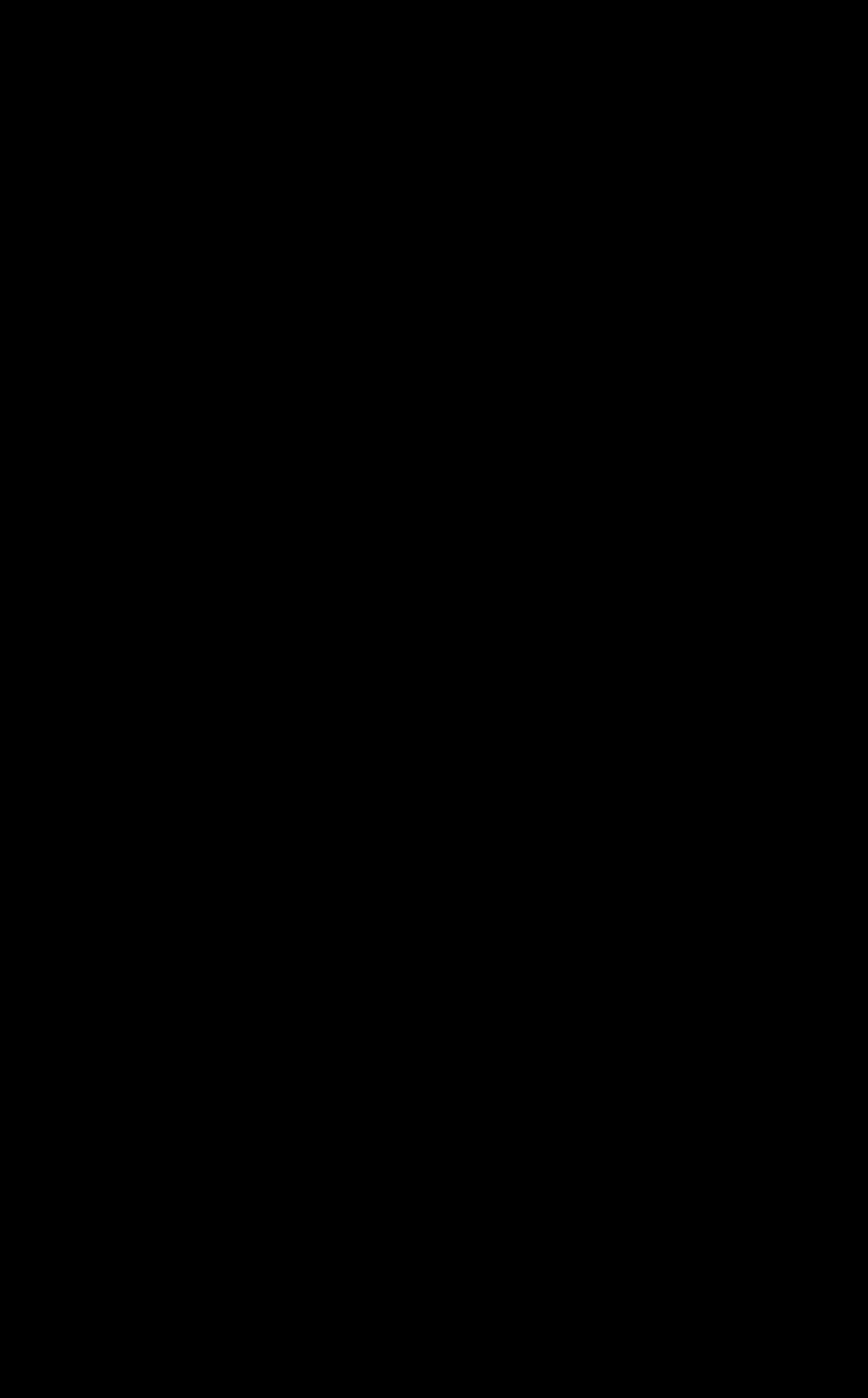
Ö



dhcpv6 snooping

III

**show ipv6 source binding** [*ipv6-address*] [*mac-address*] [**vlan** *vlan\_id*]  
[**interface** *interface\_name*] [**dhcp-snooping** | **static**]



7]



a

|  |                                        |      |
|--|----------------------------------------|------|
|  | <i>ipv6-prefix</i>                     | ipv6 |
|  | <i>mac-address</i>                     | mac  |
|  | <b>vlan</b> <i>vlan_id</i>             | VLAN |
|  | <b>interface</b> <i>interface_name</i> |      |

dhcipv6 snooping

1  
Ruijie#

dhcipv6 snooping  
**clear ipv6 dhcp snooping prefix**

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

|  |      |  |
|--|------|--|
|  |      |  |
|  | 10.4 |  |

12.3.3 clear ipv6 dhcp snooping statistics

dhcipv6 snooping

dhcipv6

**clear ipv6 dhcp snooping statistics**

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

dhcipv6 snooping

dhcipv6



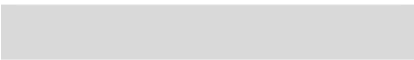
|  |      |  |
|--|------|--|
|  |      |  |
|  |      |  |
|  |      |  |
|  |      |  |
|  |      |  |
|  | 10.4 |  |

# 13 ND Snooping

## 13.1

### 13.1.1 ipv6 nd snooping

|                     |   |    |         |
|---------------------|---|----|---------|
| IPv6 ND snooping    | Ш | no | IPv6 ND |
| Snooping            | Ш |    |         |
| ipv6 nd snooping    |   |    |         |
| no ipv6 nd snooping |   |    |         |



### 13.1.2 ipv6 nd snooping vlan

VLAN IPv6 ND snooping  no VLAN

IPv6 ND Snooping 

**ipv6 nd snooping vlan** {*vlan-rng* | {*vlan-min* [*vlan-max*]}}

**no ipv6 nd snooping vlan** {*vlan-rng* | {*vlan-min* [*vlan-max*]}}

| <i>vlan-rng</i> | vlan |
|-----------------|------|
| <i>vlan-min</i> | vlan |
| <i>vlan-max</i> | vlan |

vlan ipv6 nd snooping

1 VLAN 100 IPv6 ND Snooping

Ruijie# **configure terminal**

Enter configuration commands, one per line. End with CNTL/Z.

Ruijie(config)# **no ipv6 nd snooping vlan 100**

2 VLAN 4 5-7 15 IPv6 ND Snooping

Ruijie# **configure terminal**

Enter configuration commands, one per line. End with CNTL/Z.

Ruijie(config)# **no ipv6 nd snooping vlan 4,5-7,15**

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

**show ipv6 nd snooping**

ipv6 nd snooping

G!5BQ

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

### 13.1.3 ipv6 nd snooping trust

|  |                           |   |    |         |
|--|---------------------------|---|----|---------|
|  | trust                     | ⏏ | no | untrust |
|  | ipv6 nd snooping trust    |   |    |         |
|  | no ipv6 nd snooping trust |   |    |         |
|  |                           |   |    |         |
|  |                           |   |    |         |
|  |                           |   |    |         |

|  |         |
|--|---------|
|  | untrust |
|--|---------|

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

|  |                                                              |       |
|--|--------------------------------------------------------------|-------|
|  | FastEthernet 0/1                                             | Trust |
|  | Ruijie# <b>configure terminal</b>                            |       |
|  | Enter configuration commands, one per line. End with CNTL/Z. |       |
|  | Ruijie(config)# <b>interface fastethernet 0/1</b>            |       |
|  | Ruijie(config-if)# <b>ipv6 nd snooping trust</b>             |       |

|  |                              |                  |
|--|------------------------------|------------------|
|  |                              |                  |
|  | <b>show ipv6 nd snooping</b> | ipv6 nd snooping |

|  |         |  |
|--|---------|--|
|  |         |  |
|  | 10.4(2) |  |
|  |         |  |

### 13.1.4 ipv6 nd snooping check address-resolution

ND                      Ⅲ                      no                      ND  
Ⅲ

**ipv6 nd snooping check address-resolution [key-node-only ]**

**no ipv6 nd snooping check address-resolution**

| key-node-only | ND |
|---------------|----|

ND                                              Ⅲ

1              ND

Ruijie# **configure terminal**

Enter configuration commands, one per line. End with CNTL/Z.

Ruijie(config)#**ipv6 nd snooping check address-resolution**

2              ND

Ruijie# **configure terminal**

Enter configuration commands, one per line. End with CNTL/Z.

Ruijie(config)#**ipv6 nd snooping check address-resolution  
key-node-only**

| show ipv6 nd snooping | ipv6 nd snooping |
|-----------------------|------------------|

| 10.4(2) |  |
|---------|--|

### 13.1.5 ipv6 nd snooping detect gateway

Ⅲ                                              no                                              Ⅲ  
**ipv6 nd snooping detect gateway ra**

**no ipv6 nd snooping detect gateway ra**

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

VLAN                      Ⅲ

Ruijie# **configure terminal**

Enter configuration commands, one per line. End with CNTL/Z.

Ruijie(config)# **ipv6 nd snooping auto-gateway ra**

|                              |                  |
|------------------------------|------------------|
|                              |                  |
| <b>show ipv6 nd snooping</b> | nd snooping<br>Ⅲ |

|         |  |
|---------|--|
|         |  |
| 10.4(2) |  |
|         |  |

### 13.1.6 ipv6 nd snooping detect gateway vlan

VLAN                      Ⅲ                      no                      VLAN  
Ⅲ

**ipv6 nd snooping detect gateway vlan {vlan-rng}{vlan-min [vlan-max]}**

**no ipv6 nd snooping detect gateway vlan {vlan-rng}{vlan-min [vlan-max]}**

|                 |             |
|-----------------|-------------|
|                 |             |
| <i>vlan-rng</i> | <i>vlan</i> |

|

|

|

|

VALN

Ruijie# **configure terminal**  
Enter configuration commands, one per line. End with CNTL/Z.  
Ruijie(config)# **ipv6 nd snooping detect gateway vlan 8**

|

|                              |                 |
|------------------------------|-----------------|
|                              |                 |
| <b>show ipv6 nd snooping</b> | nd snooping<br> |

|

|

|         |  |
|---------|--|
|         |  |
| 10.4(2) |  |
|         |  |

13.1.7 ipv6 nd snooping key-node



```
Ruijie(config)#no ipv6 nd snooping monitor stateless-user
```

```
G i ZĚo Q ViA`5° Dr é • !G6u `6 P GBiđ F rnöfpC” rnřf„f...@$5>óah hT Cjř #pC”–Ug„T>G Hl%“>ûa`D†ÂY6x F
show ipv6 nd snooping stateless-user
```

|                              |                  |
|------------------------------|------------------|
| <b>show ipv6 nd snooping</b> | ipv6 nd snooping |
|------------------------------|------------------|

|         |  |
|---------|--|
| 10.4(2) |  |
|---------|--|

### 13.1.10 ipv6 nd snooping stateless-user address-bind

IPv6

⏏

no

⏏

**ipv6 nd snooping stateless-user address-bind [strict] [ip-mac]**

**no ipv6 nd snooping stateless-user address-bind**

|               |            |            |
|---------------|------------|------------|
| <b>strict</b> | link-local | link-local |
|               | link-local | ⏏          |

|               |        |    |
|---------------|--------|----|
| <b>ip-mac</b> | IP+MAC | IP |
|               | ⏏      |    |

1

```
Ruijie# configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
Ruijie(config)# ipv6 nd snooping stateless-user address-bind
```

2

IP+MAC

```
Ruijie# configure terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
Ruijie(config)#ipv6 nd snooping stateless-user address-bind strict ip-mac
```

|                              |                  |
|------------------------------|------------------|
| <b>show ipv6 nd snooping</b> | ipv6 nd snooping |
|------------------------------|------------------|

|         |  |
|---------|--|
| 10.4(2) |  |
|---------|--|

### 13.1.11 ipv6 nd snooping stateless-user station-move

▮

ipv6 nd snooping stateless-user station-move

no ipv6 nd snooping stateless-user station-move

▮

Ruijie# **configure terminal**

Enter configuration commands, one per line. End with CNTL/Z.

Ruijie(config)# **ipv6 nd snooping stateless-user station-move**

|         |  |
|---------|--|
| 10.4(2) |  |
|---------|--|

### **13.1.12    ipv6 nd snooping stateless-user limit**

▮

|            |      |      |
|------------|------|------|
|            |      |      |
| <i>num</i> | VLAN | IPv6 |

~~510.0206-10.02~~510.0206-10.02-4( s84 6n6-4(oo6-4(p)-4(i)-3(fg).994 2.245 0 Td 134D 13B80 19<2C58>]TJTf0TT Tr 05B5164387

└───

Ruijie# **clear ipv6 nd snooping key-node**

└───

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

└───

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

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

13.1.16 clear ipv6 nd snooping prefix

|  |                                                  |      |
|--|--------------------------------------------------|------|
|  | VLAN                                             |      |
|  | clear ipv6 nd snooping prefix [vid <i>vlan</i> ] |      |
|  |                                                  |      |
|  | <i>vlan</i>                                      | VLAN |

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

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

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

|  |                                       |  |
|--|---------------------------------------|--|
|  | IPv6                                  |  |
|  | Ruijie# clear ipv6 nd snooping prefix |  |

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

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

|  |         |  |
|--|---------|--|
|  |         |  |
|  | 10.4(2) |  |
|  |         |  |

13.2

13.2.1 show ipv6 nd snooping

IPv6 nd snooping  
show ipv6 nd snooping [interface]

|  |                               |  |
|--|-------------------------------|--|
|  |                               |  |
|  | interface                     |  |
|  |                               |  |
|  |                               |  |
|  |                               |  |
|  | IPv6 nd snooping              |  |
|  | Ruijie# show ipv6 nd snooping |  |
|  |                               |  |
|  |                               |  |
|  |                               |  |
|  | 10.4(2)                       |  |

13.2.2 show ipv6 nd snooping key-node

|  |                                |  |
|--|--------------------------------|--|
|  | show ipv6 nd snooping key-node |  |
|  |                                |  |

\_\_\_\_\_

The first step in the process of identifying a problem is to recognize that a problem exists. This is often done by comparing current performance with a desired state or goal. Once a problem is identified, the next step is to define the problem more precisely. This involves determining the scope of the problem, the resources available, and the constraints that may be present. The third step is to analyze the problem, which involves identifying the causes of the problem and the factors that may be contributing to it. This is often done using a variety of tools and techniques, such as flowcharts, fishbone diagrams, and the 5 Whys technique. The final step in the process is to develop a solution, which involves identifying the best course of action to address the problem and implementing that solution.

### 13.2.3 show ipv6 nd snooping stateless-user

```
ipv6
show ipv6 nd snooping stateless-user
```

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

```
Ruijie# show ipv6 nd snooping stateless-user
```

**show ipv6 nd snooping prefix**

# 14 MSTP

## 14.1

### 14.1.1 bpdu src-mac-check

bpdu mac

no bpdu mac

bpdu src-mac-check H.H.H

no bpdu src-mac-check

|       |          |
|-------|----------|
|       |          |
| H.H.H | mac bpdu |
| no    | bpdu     |

Ruijie(config)# interface gigabitethernet 1/1

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

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

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

### 14.1.2 clear spanning-tree detected-protocols

RSTP BPDU      BPDU      卐

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

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

卐

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

|                                     |     |   |
|-------------------------------------|-----|---|
|                                     |     |   |
| <b>show spanning-tree interface</b> | STP | 卐 |

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

### 14.1.3 spanning-tree

MSTP      MSTP      MSTP      卐  
no      spanning-tree      no  
spanning tree卐

**spanning-tree** [ **forward-time** *seconds* | **hello-time** *seconds* | **max-age** *seconds* ]

**no spanning-tree** [**forward-time** | **hello-time** | **max-age**]

|                                    |      |   |
|------------------------------------|------|---|
|                                    |      |   |
| <b>forward-time</b> <i>seconds</i> | 卐    |   |
| <b>hello-time</b> <i>seconds</i>   | BPDU | 卐 |
| <b>max-age</b> <i>seconds</i>      | BPDU | 卐 |

spanning-tree      卐

1

**forward-time** 4 **hello-time** 4 **max-age**

2

$2 * (\text{Hello Time} + 1.0\text{snd}) \leq \text{Max-Age Time} \leq 2 * (\text{Forward-Delay} - 1.0\text{snd})$

3

1 spanning-tree

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

2 BridgeForwardDelay

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

| <b>show spanning-tree</b>              | STP         | 3         |
|----------------------------------------|-------------|-----------|
| <b>spanning-tree mst cost</b>          | STP         | PathCost3 |
| <b>spanning-tree tx-hold-count STP</b> | TxHoldCount | 3         |

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

#### 14.1.4 spanning-tree autoedge

1 Autoedge 3 disabled Autoedge

2

**spanning-tree autoedge [disabled]**

| <b>disabled</b> | Autoedge 3 |
|-----------------|------------|

3

4

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

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

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

14.1.6 spanning-tree bpduguard

BPDU Guard     W                    enabled    disabled  
BPDU Guard     W

spanning-tree bpduguard [enabled | disabled]

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

|  |   |
|--|---|
|  | W |
|--|---|

|  |   |
|--|---|
|  | W |
|--|---|

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

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

|                              |     |   |
|------------------------------|-----|---|
|                              |     |   |
| show spanning-tree interface | STP | W |

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

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

14.1.7 spanning-tree compatible enable

MSTI

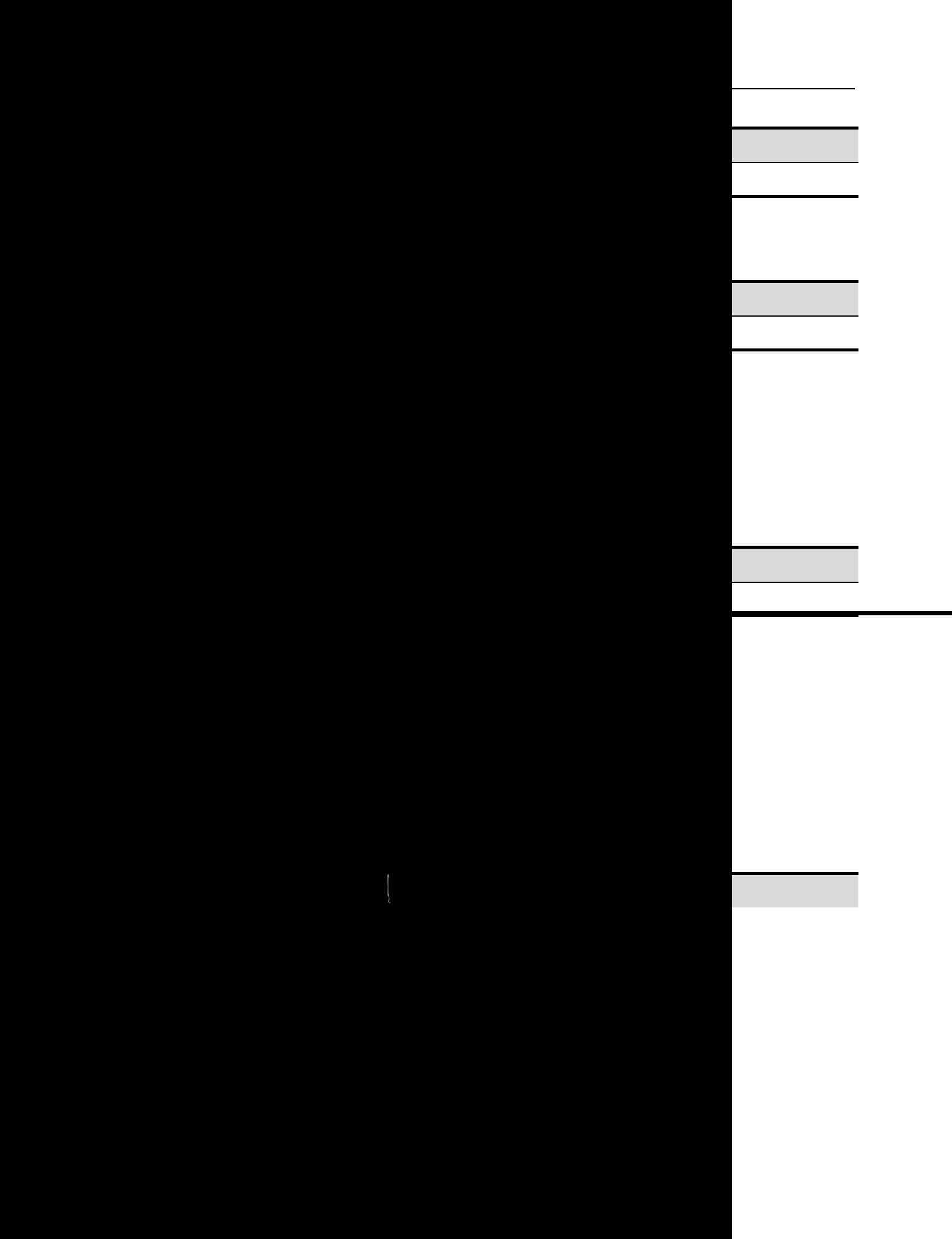
W

spanning-tree compatible enable  
no spanning-tree compatible enable

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

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

Ruijie(config-if)#



W

**no spanning-tree guard root**

[illegible]





14.1.14 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 |  |  |

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

14.1.15 spanning-tree mst configure

MST    MSTP Region    no  
name 4 revision 4 vlan map     

spanning-tree mst configuration

no spanning-tree mst configuration

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



|  |                                                 |            |     |
|--|-------------------------------------------------|------------|-----|
|  | VLAN 3                                          | Instance 1 | MST |
|  | Ruijie(config-mst)# <b>no instance 1 vlan 3</b> |            |     |
|  | Instance 1                                      |            |     |
|  | Ruijie(config-mst)# <b>no instance 1</b>        |            |     |
|  | MST                                             | show       | 山   |
|  |                                                 |            |     |
|  |                                                 |            |     |

MSTP

MSTP

Region

山

mst 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***

山

\_\_\_\_\_

```

Instance 20                                     8192
Ruijie(config-if)# spanning-tree mst 20 priority 8192
show spanning-tree mst instance interface interface-id

```

|                                        |            |
|----------------------------------------|------------|
|                                        |            |
| <b>show spanning-tree mst</b>          | MSTP Ⅲ     |
| <b>spanning-tree mst cost</b>          | Ⅲ          |
| <b>spanning-tree mst port-priority</b> | Instance Ⅲ |

100

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

no

no spanning-tree pathcost method

[illegible]

|        |           |   |
|--------|-----------|---|
| 802.1T | Path-cost | 山 |
|--------|-----------|---|

100

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

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

|  |                                     |     |   |
|--|-------------------------------------|-----|---|
|  | <b>show spanning-tree interface</b> | STP | ⏏ |
|  |                                     |     |   |
|  |                                     |     |   |
|  | -                                   | -   |   |

### 14.1.20 spanning-tree portfast

|  |                                                                                                          |     |          |          |   |
|--|----------------------------------------------------------------------------------------------------------|-----|----------|----------|---|
|  | Portfast                                                                                                 | ⏏   | disabled | Portfast | ⏏ |
|  | <b>spanning-tree portfast [disabled]</b>                                                                 |     |          |          |   |
|  |                                                                                                          |     |          |          |   |
|  | <b>disabled</b>                                                                                          |     | Portfast | ⏏        |   |
|  |                                                                                                          |     |          |          |   |
|  |                                                                                                          | ⏏   |          |          |   |
|  |                                                                                                          | ⏏   |          |          |   |
|  | -                                                                                                        |     |          |          |   |
|  | Ruijie(config)# <b>interface gigabitethernet 1/1</b><br>Ruijie(config-if)# <b>spanning-tree portfast</b> |     |          |          |   |
|  |                                                                                                          |     |          |          |   |
|  | <b>show spanning-tree interface</b>                                                                      | STP | ⏏        |          |   |
|  |                                                                                                          |     |          |          |   |

**no spanning-tree portfast bpdufilter default**

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

BPDU filter

⏏

BPDU Filter

⏏

BPDU⏏

**show spanning-tree**

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

|                                     |     |   |
|-------------------------------------|-----|---|
|                                     |     |   |
| <b>show spanning-tree interface</b> | STP | ⏏ |

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

**14.1.22 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

**show spanning-tree**

BPDU

⏏

error-disabled

⏏

Ruijie(config)# spanning-tree portfast bpduguard default

|                              |     |
|------------------------------|-----|
|                              |     |
| show spanning-tree interface | STP |

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

14.1.23 spanning-tree portfast default

Portfast

no

Portfast

spanning-tree portfast default

no spanning-tree portfast default

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

-

Portfast

14.1.24 spanning-tree reset

spanning-tree

no

spanning-tree reset

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

spanning-tree

no

spanning-tree reset

|                              |     |
|------------------------------|-----|
|                              |     |
| show spanning-tree           | STP |
| show spanning-tree interface | STP |

spanning-tree

no

spanning-tree reset

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

14.1.25 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**

|

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

|

|

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

**14.1.26 spanning-tree tc-protection**

tc- protection    ▮                      no                      tc- protection    ▮

**spanning-tree tc- protection**  
**no spanning-tree tc- protection**

|

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

|

tc- protection    ▮

|

▮

#                      € «    A    N                      € «    ℓ



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

14.1.27 spanning-tree tc-protection tc-guard

tc- guard    卩                    no                    tc- guard    卩                    tc-guard  
tc                    卩

spanning-tree tc-protection tc-guard  
no spanning-tree tc-protection tc-guard

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

tc- guard    卩

卩

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

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

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

14.1.28 spanning-tree tx-hold-count

STP            TxHoldCount                    BPDU    卩                    no  
                                                 卩

spanning-tree tx-hold-count *tx-hold-count*  
no spanning-tree tx-hold-count



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

|  |           |          |
|--|-----------|----------|
|  | link-type | linktype |
|--|-----------|----------|

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

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

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

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

Ruijie# show spanning-tree interface gigabitethernet 1/5

|                           |             |  |
|---------------------------|-------------|--|
|                           |             |  |
| spanning-tree bpdupfilter | BPDU filter |  |
| spanning-tree portfast    | portfast    |  |
| spanning-tree bpduguard   | BPDU guard  |  |
| spanning-tree link-type   | “  ”        |  |

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

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

14.2.3 show spanning-tree mst

MST Instance

W

show spanning-tree mst { configuration | instance-id [ interface interface-id ] }

|               |          |
|---------------|----------|
|               |          |
| configuration | mst      |
| instance-id   | Instance |
| interface-id  |          |

InstanceW

.

Ruijie# show spanning-tree mst configuration



# 15 SPAN

## 15.1

### 15.1.1 monitor session

SPAN . no

⏏

**monitor session** *session\_number* {**source interface** *interface-id* [**both** | **rx** | **tx**] | **destination interface** *interface-id* { **encapsulation** | **switch** } | **mac** {**source** *mac-addr* | **destination** *mac-addr* } [**both** | **rx** | **tx**]} [**acl** *name*]

**no monitor session** *session\_number* [**source interface** *interface-id* [**both** | **rx** | **tx**] | **destination interface** *interface-id* { **encapsulation** | **switch** }] | **mac** {**source** *mac-addr* | **destination** *mac-addr* } [**both** | **rx** | **tx**] [**acl** *name*]

**no monitor session all**

| <i>session_number</i>                            | SPAN ⏏                        |
|--------------------------------------------------|-------------------------------|
| <b>source interface</b> <i>interface-id</i>      | ⏏ <i>interface-id</i><br>SVI⏏ |
| <b>destination interface</b> <i>interface-id</i> | ⏏ <i>interface-id</i><br>SVI⏏ |
| <b>mac source</b> <i>mac-addr</i>                |                               |





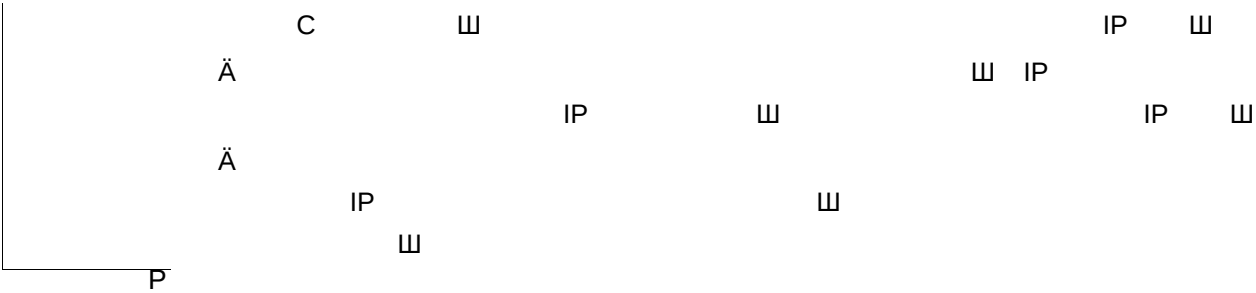
# 16 IP

## 16.1

### 16.1.1 ip address

IP

no



```
ip address 10.10.10.1 255.255.255.0
```

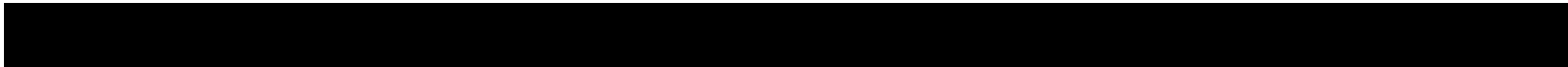
|                |  |
|----------------|--|
|                |  |
| show interface |  |



IP

ARP

⌵



RGOS

ARP

32

IP

48

MAC

⌵

⌵

clear

⌵ <

,

```
1 SVI 1 ARP Ⅲ
Ruijie(config)# interface vlan 1
Ruijie(config-if)# arp gratuitous-send interval 1
2 SVI 1 ARP
Ruijie(config)# interface vlan 1
Ruijie(config-if)# no arp gratuitous-send
```

w

Q

IP

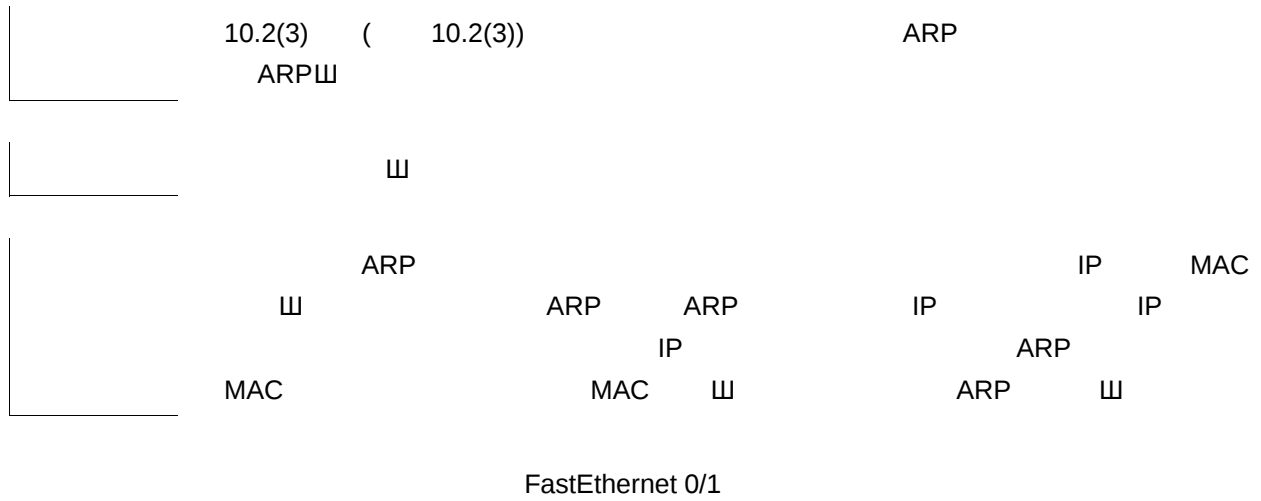
|  |                                      |     |
|--|--------------------------------------|-----|
|  | <b>Arp retry times</b> <i>number</i> | ARP |
|  |                                      |     |



[illegible]

### 16.2.7 ip proxy-arp

|                 | ARP | ip proxy-arp |
|-----------------|-----|--------------|
| ARP             |     |              |
| ip proxy-arp    |     |              |
| no ip proxy-arp |     |              |



IP

---

mask

ARP

*mask*

|  |                            |     |     |     |     |
|--|----------------------------|-----|-----|-----|-----|
|  | <b>vrf</b> <i>vrf_name</i> | VRF | VRF | ARP | Ш   |
|  | <b>trusted</b>             |     | ARP |     | VRF |

|                                                                                                                                 |   |     |
|---------------------------------------------------------------------------------------------------------------------------------|---|-----|
| Age (min)                                                                                                                       | ⏏ | “_” |
| Hardware                                                                                                                        | ⏏ |     |
| Type                                                                                                                            | ⏏ |     |
| Interface                                                                                                                       | ⏏ |     |
| <div> <div>show arp 192.168.195.68</div> <div>show arpProtocol</div> <div>Address</div> <div>Age(min)</div> <div>H</div> </div> |   |     |

|  |   |   |
|--|---|---|
|  |   |   |
|  | - | - |
|  | ⏏ |   |
|  |   |   |
|  | - | - |

16.3.3

⏏show arp counter

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

|  |                                                                                                                    |   |
|--|--------------------------------------------------------------------------------------------------------------------|---|
|  | -                                                                                                                  | - |
|  |                                                                                                                    |   |
|  |                                                                                                                    |   |
|  |                                                                                                                    |   |
|  | <b>show arp counter</b><br>Ruijie# <b>show arp counter</b><br>The Arp Entry counter:0<br>The Unresolve Arp Entry:0 |   |
|  |                                                                                                                    |   |
|  | -                                                                                                                  | - |
|  |                                                                                                                    |   |
|  |                                                                                                                    |   |
|  | -                                                                                                                  | - |

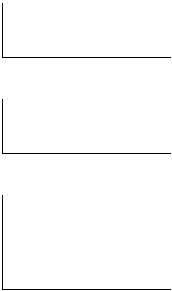
### 16.3.4 show arp detail

ARP

山

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

| <i>interface-type interface-number</i> | ARP         |
|----------------------------------------|-------------|
| <i>ip</i>                              | ip ip ARP   |
| <i>ip mask</i>                         | ip mask ARP |
| <i>mac-address</i>                     | mac ARP     |
| <b>static</b>                          | arp         |
| <b>complete</b>                        | arp         |
| <b>incomplete</b>                      | arp         |



ARP ARP 4 4 4 4

show arp detail

Ruijie# show arp detail

| IP Address   | MAC Address    | Type    | Age(min) |         | Interface | Port |
|--------------|----------------|---------|----------|---------|-----------|------|
| 20.1.1.1     | 000f.e200.0001 | Static  | --       | --      | --        |      |
| 20.1.1.1     | 000f.e200.0001 | Static  | --       | VI3     | --        |      |
| 20.1.1.1     | 000f.e200.0001 | Static  | --       | VI3     | Gi2/0/1   |      |
| 193.1.1.70   | 00e0.fe50.6503 | Dynamic | 1        | VI3     | Gi2/0/1   |      |
| 192.168.0.1  | 0012.a990.2241 | Dynamic | 10       | Gi2/0/3 | Gi2/0/3   |      |
| 192.168.0.1  | 0012.a990.2241 | Dynamic | 20       | Ag1     | Ag1       |      |
| 192.168.0.1  | 0012.a990.2241 | Dynamic | 30       | VI2     | Ag2       |      |
| 192.168.0.39 | 0012.a990.2241 | Local   | --       | VI3     | --        |      |
| 192.168.0.39 | 0012.a990.2241 | Local   | --       | Gi2/0/3 | --        |      |
| 192.168.0.1  | 0012.a990.2241 | Local   | --       | VI3     | --        |      |
| 192.168.0.1  | 0012.a990.2241 | Local   | --       | Gi2/3/2 | --        |      |

ARP

| IP Address  | IP        |
|-------------|-----------|
| MAC Address | IP        |
| Type        | ARP 4 4 4 |
| Age         | ARP       |
| Interface   | IP        |
| Port        | ARP       |



## 16.3.6 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
Internet 192.168.7.1    50  00d0.f84e.1c7f  ARPA FastEthernet 0/0
Internet 192.168.7.215   36  00d0.f80d.1090  ARPA FastEthernet 0/0
Internet 192.168.7.127  0   0060.97bd.ebee  ARPA FastEthernet 0/0
Internet 192.168.7.195  57  0060.97bd.ef2d  ARPA FastEthernet 0/0
Internet 192.168.7.183  --  00d0.f8fb.108b  ARPA FastEthernet 0/0

```

ARP

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

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

RGOS

W

U

P

L

W

W

RGOS

U

P

L

W

```

show ip interface
Ruijie# show ip interface FastEthernet 0/1
IP interface state is: UP
IP interface type is: BROADCAST
IP interface metric is: 0
IP interface MTU is: 1500
IP address is:
192.168.5.133/24 (primary)
IP address negotiate is: OFF

```

Forward direct-boardcast is: ON  
ICMP mask reply is: ON  
Send ICMP redirect is: ON  
Send ICMP unreachableled is: ON  
DHCP relay is: OFF  
Fast switch is: ON

---



---

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

### 16.3.8 show ip redirects

⌵

**show ip redirects**

---

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

---



---



---

⌵

---

**show ip redirects**

⌵

Ruijie# **show ip redirects**

Default Gateway: 192.168.195.1

---

|                           |   |
|---------------------------|---|
|                           |   |
| <b>ip default-gateway</b> | ⌵ |

---



---

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

## 16.4

### 16.4.1 ip default-gateway

ip default-gateway 192.168.1.1

no

192.168.1.1

ip default-gateway

no ip default-gateway

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

|  |                   |             |
|--|-------------------|-------------|
|  |                   | 192.168.1.1 |
|  | show ip redirects | 192.168.1.1 |

|  |                                |             |
|--|--------------------------------|-------------|
|  | 192.168.1.1                    | 192.168.1.1 |
|  | ip default-gateway 192.168.1.1 |             |

|  |                   |             |
|--|-------------------|-------------|
|  |                   |             |
|  | show ip redirects | 192.168.1.1 |

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



|            |              |    |
|------------|--------------|----|
| DHCP Relay | option dot1x | no |
| no         |              |    |

[no] ip dhcp relay information option dot1x

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

|

|

option dot1x

山

|

|

DHCP

option82

Ruijie# **configure terminal**

Ruijie(config)# **Ip dhcp relay information option82**

|  |                                               |                   |
|--|-----------------------------------------------|-------------------|
|  | <b>ip dhcp relay information option dot1x</b> | DHCP option dot1x |
|  |                                               |                   |
|  |                                               |                   |
|  | -                                             | -                 |

### 17.1.5 ip dhcp relay suppression

DHCP Relay no  
DHCP relay no

**[no] ip dhcp relay suppression**

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

DHCP no

1 DHCP relay no

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

|  |                     |      |
|--|---------------------|------|
|  |                     |      |
|  | <b>service dhcp</b> | DHCP |

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

## 17.1.6 ip helper-address

|      |         |    |
|------|---------|----|
|      | DHCP    | no |
|      | no DHCP |    |
| [no] |         |    |

DHCP

Ш

no

Ш

**[no] service dhcp**



# 18 DNS

## 18.1

### 18.1.1 ip domain-lookup

DNS

⏏

no

DNS

⏏

ip domain-lookup

no ip domain-lookup

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

DNS

⏏

DNS

DNS

⏏

DNS

Ruijie(config)# ip domain-lookup

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

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

### 18.1.2 ip name-server

|    |  |         |   |   |
|----|--|---------|---|---|
|    |  | IP/IPv6 | ⏏ | ⏏ |
| no |  |         | ⏏ |   |



|  |                                                     |     |
|--|-----------------------------------------------------|-----|
|  | <i>ip-address</i>                                   | IP  |
|  |                                                     |     |
|  |                                                     |     |
|  | <b>no ip host host-name ip-address</b>              |     |
|  | Ruijie(config)# <b>ip host switch 192.168.5.243</b> |     |
|  | <b>show hosts</b>                                   | DNS |
|  |                                                     |     |
|  |                                                     |     |
|  | -                                                   | -   |

18.1.4 ipv6 host

|  |                                                                |      |    |  |
|--|----------------------------------------------------------------|------|----|--|
|  | IPV6                                                           |      | no |  |
|  | <b>ipv6 host host-name ipv6-address</b>                        |      |    |  |
|  | <b>no ipv6 host host-name ipv6-address</b>                     |      |    |  |
|  |                                                                |      |    |  |
|  | <i>host-name</i>                                               |      |    |  |
|  | <i>ipv6-address</i>                                            | IPV6 |    |  |
|  |                                                                |      |    |  |
|  |                                                                |      |    |  |
|  | <b>no ipv6 host host-name ipv6-address</b>                     |      |    |  |
|  | Ruijie(config)# <b>ipv6 host ruijie 2001:0DB8:700:20:1::12</b> |      |    |  |



## 18.2.2 show hosts

DNS

山

**show hosts** [*hostname*]

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

DNS

山

Ruijie# **show hosts**

Name servers are:

static

| host           | type    | address       |
|----------------|---------|---------------|
| switch         | static  | 192.168.5.243 |
| www.ruijie.com | dynamic | 192.168.5.123 |

|                       |      |
|-----------------------|------|
|                       |      |
| <b>ip host</b>        | IP   |
| <b>ipv6 host</b>      | IPV6 |
| <b>ip name-server</b> | DNS  |

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

# 19 SNTP

## 19.1

### 19.1.1 sntp enable

SNTP

no

—Disable

[no] sntp enable

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

SNTP

Disable

show sntp

SNTP

Ruijie(config)# sntp enable



**show sntp**          SNTP

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

| <b>show sntp</b>   | SNTP |
|--------------------|------|
| <b>sntp enable</b> | SNTP |

RGOS10.0

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

19.2

Ä    show sntp

19.2.1 show sntp

SNTP          Ⅲ

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

**show sntp**          SNTP

Ruijie# **show sntp**  
SNTP state            : Enable  
SNTP server           : 192.168.4.12



## 20 NTP

## 20.1 NTP

### 20.1.1 no ntp

The diagram illustrates the evolution of NTP and time synchronization across five stages. Each stage shows a set of nodes with their respective NTP and 'no ntp' sections.

- Stage 1:** A single node with 'ntp' and 'no ntp' sections.
- Stage 2:** Two nodes. The first node has 'ntp' and 'no ntp' sections. The second node has 'ntp' and 'no ntp' sections.
- Stage 3:** Three nodes. The first node has 'ntp' and 'no ntp' sections. The second and third nodes have 'ntp' and 'no ntp' sections.
- Stage 4:** Four nodes. The first node has 'ntp' and 'no ntp' sections. The second, third, and fourth nodes have 'ntp' and 'no ntp' sections.
- Stage 5:** Five nodes. The first node has 'ntp' and 'no ntp' sections. The second, third, fourth, and fifth nodes have 'ntp' and 'no ntp' sections.

### 20.1.2 ntp access-group

NTP no 11

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

| peer               | NTP<br>Ш          |
|--------------------|-------------------|
| serve              | NTP<br>Ш          |
| serve-only         | NTP<br>Ш          |
| query-only         | NTP<br>Ш          |
| access-list-number | IP 1 99 1300 1999 |
| access-list-name   | IP Ш              |

NTP Ш

Ш

NTP Ш  
NTP Ш  
NTP Ш

Ш peer Ч serve Ч serve-only Ч query-onlyШ



Ш

Ш

Ш

Ш

1

Ч

2

Ш

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

| ip access-list | IP Ш |
|----------------|------|



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>   | 0  |

|     |                                                                                                                     |     |       |   |    |   |  |
|-----|---------------------------------------------------------------------------------------------------------------------|-----|-------|---|----|---|--|
| NTP |                                                                                                                     |     |       |   |    |   |  |
|     | <table> <tr> <td>-</td><td>-</td></tr> </table>                                                                     | -   | -     |   |    |   |  |
| -   | -                                                                                                                   |     |       |   |    |   |  |
|     | NTP ㄱ                                                                                                               |     |       |   |    |   |  |
|     | ㄱ                                                                                                                   |     |       |   |    |   |  |
|     | <table> <tr> <td>NTP</td><td>NTP ㄱ</td></tr> <tr> <td>⚡</td><td>IP</td></tr> <tr> <td>ㄱ</td><td></td></tr> </table> | NTP | NTP ㄱ | ⚡ | IP | ㄱ |  |
| NTP | NTP ㄱ                                                                                                               |     |       |   |    |   |  |
| ⚡   | IP                                                                                                                  |     |       |   |    |   |  |
| ㄱ   |                                                                                                                     |     |       |   |    |   |  |
|     | NTP ㄱ                                                                                                               |     |       |   |    |   |  |
|     | no ntp                                                                                                              |     |       |   |    |   |  |
|     | <table> <tr> <td></td><td></td></tr> <tr> <td>-</td><td>-</td></tr> </table>                                        |     |       | - | -  |   |  |
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| -   | -                                                                                                                   |     |       |   |    |   |  |

20.1.6 ntp master

|                      |     |     |  |   |
|----------------------|-----|-----|--|---|
|                      |     | NTP |  | ⏏ |
| no                   | NTP | ⏏   |  |   |
| ntp master [stratum] |     |     |  |   |
| no ntp master        |     |     |  |   |
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11 of 11

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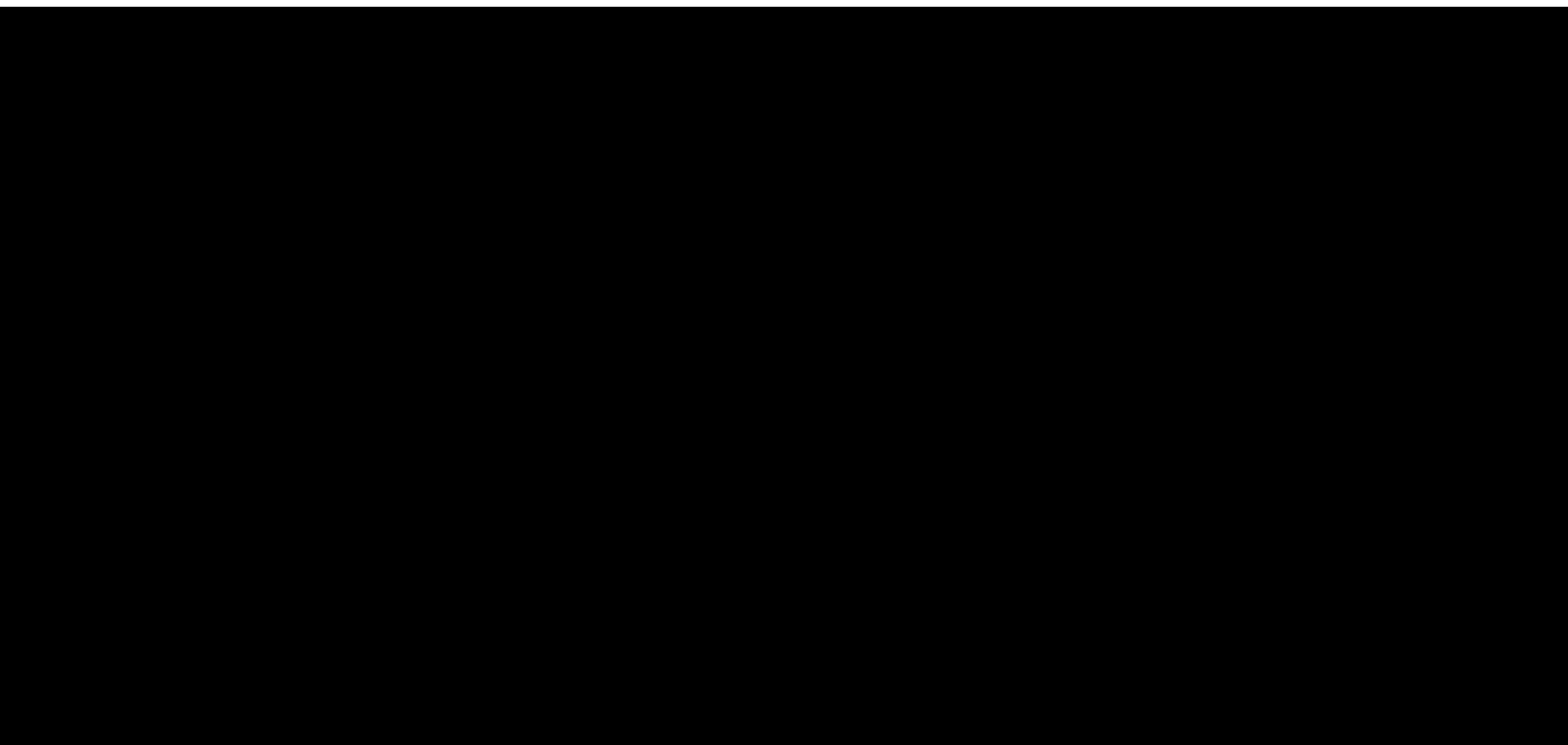
15 JULY 2004

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100

| ntp trusted-key <i>key-id</i>    |    | ID |
|----------------------------------|----|----|
| no ntp trusted-key <i>key-id</i> |    |    |
| <i>key-id</i>                    | ID |    |







# 21 FTP Server

## 21.1

### 21.1.1 debug ftpserver

|                                               |                 |     |
|-----------------------------------------------|-----------------|-----|
| FTP                                           | no              | ☐   |
| debug ftpserver                               |                 |     |
| no debug ftpserver                            |                 |     |
|                                               |                 |     |
|                                               |                 |     |
|                                               | ☐               |     |
|                                               | ☐               |     |
|                                               | debug ftpserver | FTP |
|                                               |                 | ☐   |
| 1                                             |                 |     |
| Ruijie# debug ftpserver                       |                 |     |
| FTPSRV_DEBUG:(RECV) SYST                      |                 |     |
| FTPSRV_DEBUG:(REPLY) 215 RGOS Type: L8        |                 |     |
| FTPSRV_DEBUG:(RECV) PORT 192,167,201,82,7,120 |                 |     |
| FTPSRV_DEBUG:(REPLY) 200 PORT Command okay.   |                 |     |
| 2                                             |                 |     |
| Ruijie# no debug ftpserver                    |                 |     |
|                                               |                 |     |
|                                               |                 |     |
|                                               |                 |     |

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

## 21.1.2 ftp-server enable

FTP

no

FTP

山

**ftp-server enable**

**no ftp-server enable**



**ftp-server password** [*type*] *password*

**no ftp-server password**

|                 |              |
|-----------------|--------------|
|                 |              |
| <i>type</i>     | 0 7Ш0<br>7 Ш |
| <i>password</i> |              |

SpCG%EB=I6P-p

## 21.1.4 ftp-server topdir

|     |   |   |    |
|-----|---|---|----|
| FTP |   | W | no |
| FTP | W |   |    |

**ftp-server topdir** *directory*

**no ftp-server topdir**





三

FTP

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IP 4 Port

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IP 4 Port

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FTP

Ruijie# **show ftp-server**

ftp-server information

=====

enable : Y

topdir : /

timeout: 20min

username config : Y

password config : Y

type: BINARY

control connect : Y

ftp-server: ip=192.167.201.245 port=21

ftp-client: ip=192.167.201.82 port=4978

port data connect : Y

ftp-server: ip=192.167.201.245 port=22

ftp-client: ip=192.167.201.82 port=4982

passive data connect : N

-

-

## 22 UDP-Helper

### 22.1

#### 22.1.1 ip forward-protocol

UDP    **no**    UDP

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

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

EN"Ö%kU#A#8B\$NE"RYHd m\G64(p0f4G76T540019Tm'vq&Fle16qmba06R"/E2869)PQ

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

| <b>udp-helper enable</b>   | UDP |
|----------------------------|-----|
| <b>ip forward-protocol</b> | UDP |

|  |          |   |
|--|----------|---|
|  | RGOS10.1 | W |
|  |          |   |
|  | -        | - |

### 22.1.3 udp-helper enable

|                      |     |                       |
|----------------------|-----|-----------------------|
| udp-helper enable    | UDP | Wno udp-helper enable |
| UDP                  | W   |                       |
| UDP                  | W   |                       |
| udp-helper enable    |     |                       |
| no udp-helper enable |     |                       |

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

|  |     |
|--|-----|
|  | UDP |
|--|-----|

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

|     |   |   |
|-----|---|---|
| UDP | Y | s |
|-----|---|---|

|      |   |     |     |    |
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| igmp | 8 | VS* | S*! | 4P |
|------|---|-----|-----|----|

# 23 SNMP

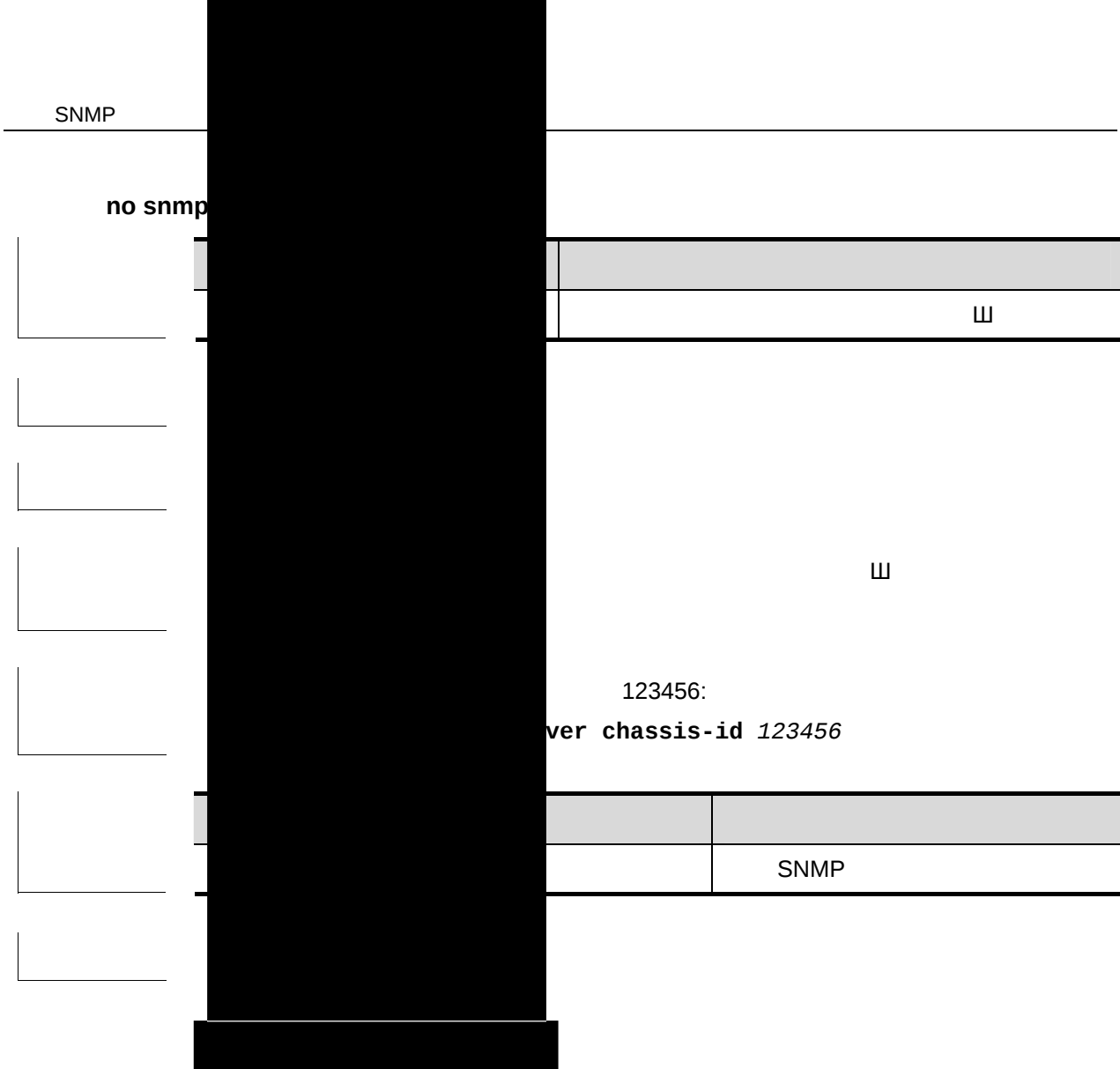
## 23.1

### 23.1.1 no snmp-server

|                                |      |                |
|--------------------------------|------|----------------|
|                                | SNMP | no snmp-server |
| no snmp-server                 |      |                |
|                                |      |                |
|                                |      |                |
|                                | SNMP |                |
|                                |      |                |
|                                |      |                |
|                                | SNMP |                |
|                                |      |                |
|                                | SNMP |                |
| Ruijie(config)# no snmp-server |      |                |
|                                |      |                |
|                                |      |                |
|                                |      |                |
|                                |      |                |
|                                |      |                |
|                                |      |                |

### 23.1.2 snmp-server chassis-id

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





|             |  |
|-------------|--|
|             |  |
| <i>text</i> |  |

山

SNMP i-net800@i-net.com.cn  
Ruijie(config)# snmp-server contact \_\$uFpHG7CNbEW1 B#\$1 !56wR>7a.t,tAet\$e...#

**snmp-server host**

山

SNMP

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

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

|  |                     |             |          |   |
|--|---------------------|-------------|----------|---|
|  | <i>ipv6_aclname</i> | ipv6<br>MIB | ipv6 NMS | Ш |
|--|---------------------|-------------|----------|---|

|                          |      |
|--------------------------|------|
| <i>port-num</i>          | snmp |
| <i>notification-type</i> | snmp |

|      |  |
|------|--|
| SNMP |  |
|      |  |

|                          |           |
|--------------------------|-----------|
| snmp-server enable traps | NMS       |
| SNMP                     |           |
| vrf                      | [ 4 vrf ] |
|                          |           |

|                                                             |      |
|-------------------------------------------------------------|------|
| SNMP                                                        | SNMP |
| Ruijie(config)# snmp-server host 192.168.12.219 public snmp |      |

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

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

23.1.8 snmp-server location

|      |                      |    |
|------|----------------------|----|
| SNMP | snmp-server location | no |
| SNMP |                      |    |

snmp-server location *text*

no snmp-server location

|             |  |
|-------------|--|
| <i>text</i> |  |
|-------------|--|

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



|  |                          |      |
|--|--------------------------|------|
|  | snmp-server queue-length | SNMP |
|  |                          |      |
|  |                          |      |
|  | -                        | -    |

23.1.10 snmp-server queue-length

snmp-server queue-length

snmp-server queue-length length

|  |                                            |        |
|--|--------------------------------------------|--------|
|  |                                            |        |
|  | length                                     | 1 1000 |
|  | 10                                         |        |
|  |                                            |        |
|  |                                            |        |
|  | 4                                          |        |
|  | Ruijie(config)# snmp-server queue-length 4 |        |
|  | snmp-server packetsize                     | SNMP   |
|  |                                            |        |
|  |                                            |        |
|  | -                                          | -      |

23.1.11 snmp-server system-shutdown

SNMP

no

SNMP

⌵

**snmp-server system-shutdown**⌵**snmp-server system-shutdown****no snmp-server system-shutdown**

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

SNMP

SNMP

RGOS

reload/reboot

NMS

⌵

SNMP

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

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

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

### 23.1.12 snmp-server trap-source

SNMP

⌵

**snmp-server trap-source**⌵

no

**snmp-server trap-source** *interface***no snmp-server trap-source**

|                  |      |  |
|------------------|------|--|
|                  |      |  |
| <i>interface</i> | SNMP |  |

SNMP

IP

⌵

SNMP IP IP SNMP

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

|                          |     |
|--------------------------|-----|
|                          |     |
| snmp-server enable traps |     |
| snmp-server enable host  | NMS |

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

23.1.13 snmp-server trap-timeout

no

snmp-server trap-timeout

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

|         |          |
|---------|----------|
|         |          |
| seconds | 1 – 1000 |

30

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

|                                 |     |
|---------------------------------|-----|
|                                 |     |
| <b>snmp-server queue-length</b> |     |
| <b>snmp-server enable host</b>  | NMS |

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

### 23.1.14 snmp-server user

SNMP **snmp-server user** **no**

**snmp-server user** *username groupname {v1 | v2 | v3 [encrypted] [auth {md5 | sha} auth-password ] [priv des56 priv-password]] [access {[ipv6 ipv6\_aclname ] [aclnum | aclname]]}*

**no snmp-server user** *username groupname {v1 | v2c | v3 }*

|                     |                  |
|---------------------|------------------|
|                     |                  |
| <i>username</i>     |                  |
| <i>groupname</i>    |                  |
| <b>v1   v2   v3</b> | SNMP v3          |
|                     |                  |
| <b>encrypted</b>    | MD5 16<br>SHA 20 |
|                     |                  |
| <b>auth</b>         |                  |

SHA



└──

default

MIB

山

└──

└──

└──

MIB-2      oid    1.3.6.1

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

└──

|                       |      |
|-----------------------|------|
|                       |      |
| <b>show snmp view</b> | SNMP |

└──

└──

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

**23.1.16    snmp trap link-status**

ᄇ

Ю山

**23.2**

**23.2.1 show snmp**

SNMP

**show snmp**山

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

└──

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

└──

└──

└──

**show snmp**

SNMP

```
show snmp mib          snmp mib
show snmp user         snmp
show snmp view         snmp
show snmp group        snmp
show snmp host
```

```
SNMP
Ruijie# show snmp
Chassis: 60FF60
0 SNMP packets input
0 Bad SNMP version errors
0 Unknown community name
0 Illegal operation for community name supplied
0 Encoding errors
0 Number of requested variables
0 Number of altered variables
0 Get-request PDUs
0 Get-next PDUs
0 Set-request PDUs
0 SNMP packets output
0 Too big errors (Maximum packet size 1500)
0 No such name errors
0 Bad values errors
0 General errors
0 Response PDUs
0 Trap PDUs
SNMP global trap: disabled
SNMP logging: disabled
SNMP agent: enabled
```

|                                      |      |
|--------------------------------------|------|
|                                      |      |
| <b>snmp-server</b> <i>chassis-id</i> | SNMP |

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

## 24 RMON

## 24.1

### 24.1.1 rmon alarm

MIB                      山                      no                      山

```

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

```

**no rmon alarm** *number*

[illegible]

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

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

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

MIB

## 24.1.2 rmon collection history

|||      **no**      |||

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

**no rmon collection history** *index*



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

1

山

Ruijie(config)# **interface fast-Ethernet 0/1**

Ruijie(config-if)# **rmon collection stats 1 zhansan**

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

f0.0005 T6 619.748 513 0 Tdown rmon collect (x) T1/5T0 1/0024 5c 51305 0 (j( )Tj/TT1 1 Tf0.0019 T.276305 0 Tdbucke)6(sta(x))TJ/TT



4 trap 3

Ruijie(config)# **rmon event**

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

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

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

24.2.2 show rmon event

⏏

show rmon event

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

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

| <b>rmon event</b> <i>number</i> [ <b>log</b> ] [ <b>trap community</b> ]<br>[ <i>description-string</i> ] |  |
|-----------------------------------------------------------------------------------------------------------|--|

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

### 24.2.3 show rmon history

▮

**show rmon history**

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

```

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

| <b>rmon collection history</b> <i>index</i> [owner<br>ownername] [buckets bucket-number]<br>[interval seconds] |  |
|----------------------------------------------------------------------------------------------------------------|--|

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





[illegible]

25

IPv6

25.1

25.1.1 ping ipv6

IPV6

山

ping ipv6 [ipv6-address]

|             |   |
|-------------|---|
|             |   |
| ipv6-addres | s |

山

Ruijie# ping ipv6 fec0::1

ping

|   |          |
|---|----------|
|   |          |
| ! |          |
| . |          |
| U |          |
| R |          |
| F |          |
| A |          |
| D | Down     |
|   | IPV6 ( ) |
| ? |          |

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

---



---

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

## 25.1.2 ipv6 address

IPV6 , no Ⅲ

**ipv6 address** *ipv6-address/prefix-length*

**ipv6 address** *ipv6-prefix/prefix-length eui-64*

**ipv6 address** *prefix-name sub-bits/prefix-length [eui-64]*

**no ipv6 address**

**no ipv6 address** *ipv6-address/prefix-length*

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

**no ipv6 address** *prefix-name sub-bits/prefix-length [eui-64]*

|                      |                         |
|----------------------|-------------------------|
|                      |                         |
| <i>ipv6-address</i>  | IPV6 RFC4291 16         |
| <i>ipv6-prefix</i>   | IPV6 RFC4291 16         |
| <i>prefix-length</i> | IPV6 IPV6 Ⅲ             |
| <i>prefix-name</i>   | Ⅲ Ⅲ                     |
| <i>sub-bits</i>      | Ⅲ Ⅲ Ⅲ                   |
| <b>eui-64</b>        | RFC4291 IPV6 64<br>ID Ⅲ |

---



---

IPV6

UP IPV6

@ ↑

|



山

**default**

|                                                                     |                            |            |
|---------------------------------------------------------------------|----------------------------|------------|
| <b>IPv6</b>                                                         | <b>ipv6 general-prefix</b> | <b>W</b>   |
| <b>ipv6 general-prefix prefix-name ipv6-prefix/prefix-length</b>    |                            |            |
| <b>no ipv6 general-prefix prefix-name ipv6-prefix/prefix-length</b> |                            |            |
|                                                                     |                            |            |
| <i>prefix-name</i>                                                  |                            | <b>W</b>   |
| <i>ipv6-prefix</i>                                                  | RFC4291                    | <b>W W</b> |
| <i>prefix-length</i>                                                |                            | <b>W</b>   |
|                                                                     |                            |            |
|                                                                     | <b>W</b>                   |            |
| <b>W</b>                                                            |                            | <b>W</b>   |

my-prefix

Ruijie(config)# **ipv6 general-prefix** my-prefix 2001:1111:2222::/48

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

**ipv6 address** prefix-name  
sub-bits/prefix-length

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

25.1.7 ipv6 nd dad attempts

|  |                                           |                        |
|--|-------------------------------------------|------------------------|
|  | IPV6                                      | (NS)                   |
|  | no                                        |                        |
|  | ipv6 nd dad attempts value                |                        |
|  | no ipv6 nd dad attempts                   |                        |
|  |                                           |                        |
|  | value                                     | (NS) 0 :<br>ipv6 0-600 |
|  | 1                                         |                        |
|  |                                           |                        |
|  | IPV6                                      |                        |
|  | "tentative" ( )                           |                        |
|  | EUI-64                                    |                        |
|  | (                                         | IPV6 )                 |
|  | down/up                                   |                        |
|  | down up                                   |                        |
|  | Ruijie(config)# interface vlan 1          |                        |
|  | Ruijie(config-if)# ipv6 nd dad attempts 3 |                        |
|  |                                           |                        |
|  | show ipv6 interface                       |                        |
|  |                                           |                        |



no  

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

**no ipv6 neighbor** *ipv6-address interface-id*

|                         |                                                                                              |
|-------------------------|----------------------------------------------------------------------------------------------|
|                         |                                                                                              |
| <i>ipv6-address</i>     | IPv6 RFC4291<br><span style="border: 1px solid black; padding: 0 5px;"> </span>              |
| <i>interface-id</i>     | Routed Port,L3 AP<br>SVI <span style="border: 1px solid black; padding: 0 5px;"> </span>     |
| <i>hardware-address</i> | XXXX.XXXX.XXXX 48<br>MAC 'X' <span style="border: 1px solid black; padding: 0 5px;"> </span> |

ARP IPv6  
NDP  
  Reachble   IPv6  
mac  
  inactive show ipv6 neighbor static  
   
**clear ipv6 neighbors** ( NDP)    
**show ipv6 neighbors**  

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

|                             |  |
|-----------------------------|--|
|                             |  |
| <b>show ipv6 neighbors</b>  |  |
| <b>clear ipv6 neighbors</b> |  |



`ns-linklocal-srd` no ipv6  
 RFC3484 IPv6

`ipv6 ns-linklocal-src`

`no ipv6 ns-linklocal-src`

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

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

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

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

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

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

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

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

### 25.1.11 ipv6 route

IPV6

no

`ipv6 route ipv6-prefix/prefix-length {ipv6-address | interface-id [ipv6-address]}`

`no ipv6 route ipv6-prefix/prefix-length {ipv6-address | interface-id [ipv6-address]}`

|                      |      |         |
|----------------------|------|---------|
|                      |      |         |
| <i>ipv6-prefix</i>   | IPV6 | RFC4291 |
| <i>prefix-length</i> | IPV6 | '/'     |

|  |                     |                                                           |
|--|---------------------|-----------------------------------------------------------|
|  | <i>ipv6-address</i> | <div>RFC4291</div> <div>⏏</div> <div>⏏</div> <div>⏏</div> |
|  | <i>interface-id</i> | <div>⏏</div> <div>⏏</div> <div>⏏</div>                    |

|  |              |                           |
|--|--------------|---------------------------|
|  |              |                           |
|  | <div>⚡</div> | <div>⏏</div> <div>⏏</div> |

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

|  |                        |      |
|--|------------------------|------|
|  |                        |      |
|  | <b>show ipv6 route</b> | IPv6 |

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

25.1.12    **ipv6 source-route**

IPv6    ⏏    IPv6    no

**ipv6 source-route**

**no ipv6 source-route**

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

IPv6

0 IPv6 0

Ruijie(conifg)# no ipv6 source-route

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

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

25.2

25.2.1 clear ipv6 neighbors

clear ipv6 neighbors

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



1

| RGOS10.4 | RGOS10.4 1 |
|----------|------------|

### 25.2.3 show ipv6 interface

IPV6

1

**show ipv6 interface** [*interface-id*] [*ra-info*]

| <i>interface-id</i> | 4 aggregateport 4 SVI |
|---------------------|-----------------------|
| <b>ra-info</b>      | RA 1                  |

IPV6

4 ND

1

```

Ruijie# show ipv6 interface vlan 1
Interface vlan 1 is Up, ifindex: 2001
address(es):
Mac Address: 00:00:00:00:00:01
INET6: fe80::200:ff:fe00:1 , subnet is fe80::/64
INET6: 2001::1 , subnet is 2001::/64 [TENTATIVE]
Joined group address(es):
ff01:1::1
ff02:1::1
ff02:1::2
ff02:1::1:ff00:1
MTU is 1500 bytes
ICMP error messages limited to one every 10 milliseconds
ICMP redirects are enabled
ND DAD is enabled, number of DAD attempts: 1
ND reachable time is 30000 milliseconds
ND advertised reachable time is 0 milliseconds
  
```

ND retransmit interval is 1000 milliseconds  
 ND advertised retransmit interval is 0 milliseconds  
 ND router advertisements are sent every 200 seconds<240--160>  
 ND router advertisements live for 1800 seconds

INET6: 2001::1, subnet is 2001::/64

[TENTATIVE]

INET6

[]

| ANYCAST    | ⏏          |
|------------|------------|
| TENTATIVE  | (DAD)<br>⏏ |
| DUPLICATED | ⏏          |
| DEPRECATED | ⏏          |
| NODAD      | ⏏          |
| AUTOIFID   | EUI-64 ⏏   |
| PRE        | ⏏          |
| GEN        | ⏏          |

Ruijie# show ipv6 interface vlan 1 ra-info

vlan 1: DOWN

RA timer is stopped

waits: 0, initcount: 3

statistics: RA(out/in/inconsistent): 4/0/0, RS(input): 0

Link-layer address: 00:00:00:00:00:01

Physical MTU: 1500

ND router advertisements live for 1800 seconds

ND router advertisements are sent every 200 seconds<240--160>

Flags: !M!O, Adv MTU: 1500

ND advertised reachable time is 0 milliseconds

ND advertised retransmit time is 0 milliseconds

ND advertised CurHopLimit is 64

Prefixes: (total: 1)

fec0:1:1:1::/64(Def,Auto,vltime:2592000,pltime:604800, flags: LA)

ra-info ANDY-RA-hb@1500/1500 f = 1

|                         |                                       |
|-------------------------|---------------------------------------|
| waits                   | ⏏                                     |
| initcount               | RA<br>⏏                               |
| RA(out/in/inconsistent) | Out ⏏<br>in ⏏<br>inconsistent ⏏       |
| RS(input)               | ⏏                                     |
| Link-layer address      | ⏏                                     |
| Physical MTU            | MTU ⏏                                 |
| !M   M                  | !M ⏏<br>managed-config-flag ⏏<br>M: ⏏ |
| !O   O                  | !O ⏏<br>other-config-flag ⏏<br>O ⏏    |
| ra-info                 | (Prefix)                              |

```


```

```


```

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

## 25.2.4 show ipv6 neighbors

IPv6



**show ipv6 neighbors** { [**verbose**] [*interface-id*] [*ipv6-address*] | [**static**] }

```


```

| <b>verbose</b>      |  |
|---------------------|--|
| <i>interface-id</i> |  |
| <i>ipv6-address</i> |  |
| <b>static</b>       |  |

```


```

```


```

```


```

```

1      SVI 1

```

```

Ruijie# show ipv6 neighbors vlan 1

```

```

IPv6 Address Linklayer Addr  Interface

```

```

fa::1          00d0.0000.0002  vlan 1

```

```

fe80::200:ff:fe00:2 00d0.0000.0002  vlan 1

```

```

2

```

```

Ruijie# show ipv6 neighbors verbose

```

```

IPv6 Address Interface fa:80

```

Age

Asked

UD

'expired'

NUD

'\_'

| IPv6 Address   | IPv6                                  |
|----------------|---------------------------------------|
| Linklayer Addr | Mac                                   |
| Interface      |                                       |
| State          | STATE<br>ACTIVE—<br>INACTIVE—<br>IPV6 |
|                | mac      ▯                            |

| ipv6 neighbor |  |
|---------------|--|

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

## 25.2.5 show ipv6 route

IPv6      ▯

**show ipv6 route [static] [local] [connected]**

| static    |  |
|-----------|--|
| local     |  |
| connected |  |

|  | ▯ |
|--|---|

```
Ruijie# show ipv6 route
```

```
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
```

```
       I1 - ISIS L1, I2 - ISIS L2, IA - IIS interarea
```

```

L   ::1/128
    via ::1, loopback 0
C   fa::/64
    via ::, vlan 1
L   fa::1/128
    via ::, loopback 0
C   2001::/64
    via ::, vlan 2
L   2001::1/128
    via ::, loopback 0
L   fe80::/10
    via ::1, Null0
C   fe80::/64
    via ::, vlan 1
L   fe80::200:ff:fe00:1/128
    via ::, loopback 0
C   fe80::/64
    via ::, vlan 2

```

|            |  |
|------------|--|
|            |  |
| ipv6 route |  |

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

## 25.2.6 show ipv6 router

IPv6



```
show ipv6 router
```



```
show ipv6 router [interface-type interface-number]
```



## 26 MLD Snooping

### 26.1

#### 26.1.1 ipv6 mld profile

MLD profile ▮ profile ▮ profile-number mld  
 profile ▮  
**ipv6 mld profile** *profile-number*

**no ipv6 mld profile** *profile-number*

| <i>profile-number</i> | profile 1-1024 |
|-----------------------|----------------|

▮

▮

MLD Profiles ▮ SVGL ▮ ▮ ▮ profile  
▮ ▮ MLD Filtering ▮  
 profile ▮

1 profile profile ▮  
 Ruijie(config)# **ipv6 mld profile 1**  
 Ruijie(config-profile)#

| range  | profile        |
|--------|----------------|
| deny   | profile deny   |
| permit | profile permit |

|  |      |  |
|--|------|--|
|  |      |  |
|  | 10.4 |  |

26.1.3 deny

|  |                                                |         |        |
|--|------------------------------------------------|---------|--------|
|  | profile                                        | profile | deny   |
|  | deny                                           |         |        |
|  |                                                |         |        |
|  | profile                                        | deny    |        |
|  | profile                                        |         |        |
|  | profile                                        | range   |        |
|  | FF77::100                                      | profile | :      |
|  | Ruijie(config)# <b>ipv6 mld profile 1</b>      |         |        |
|  | Ruijie(config-profile)# <b>range FF77::100</b> |         |        |
|  | Ruijie(config-profile)# <b>deny</b>            |         |        |
|  |                                                |         |        |
|  | ipv6 mld profile                               | profile |        |
|  | range                                          |         |        |
|  | permit                                         | profile | permit |
|  |                                                |         |        |
|  |                                                |         |        |
|  | 10.4                                           |         |        |

26.1.4 permit

|  |         |         |        |
|--|---------|---------|--------|
|  | profile | profile | permit |
|  | permit  |         |        |
|  |         |         |        |



|                                        |      |              |      |
|----------------------------------------|------|--------------|------|
|                                        | VLAN | 三            | VLAN |
| VLAN                                   |      | 三            |      |
| mld snooping                           |      |              | ivgl |
| Ruijie(config)# ipv6 mld snooping ivgl |      |              |      |
|                                        |      |              |      |
| ipv6 mld snooping svgl                 |      | mld snooping | svgl |
| ipv6 mld snooping ivgl-svgl            |      | mld snooping |      |
|                                        |      |              |      |
|                                        |      |              |      |
|                                        |      |              |      |
|                                        |      |              |      |
| 10.4                                   |      |              |      |

### 26.1.6 ipv6 mld snooping dyn-mr-aging-time

|                                                                                                         |        |                                                                                              |
|---------------------------------------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------------------|
| <b>ipv6 mld snooping dyn-mr-aging-time</b> <i>time</i><br><b>no ipv6 mld snooping dyn-mr-aging-time</b> |        |         |
| <b>ipv6 mld snooping dyn-mr-aging-time</b> <i>time</i><br><b>no ipv6 mld snooping dyn-mr-aging-time</b> |        |                                                                                              |
|                                                                                                         |        |                                                                                              |
| <i>time</i>                                                                                             | 1-3600 |                                                                                              |
| 300s                 |        |                                                                                              |
| Hello                                                                                                   |        | MLD<br> |
|                                                                                                         |        | IPv6 PIM                                                                                     |
| 500s                                                                                                    |        |                                                                                              |

|

Ruijie(config)# **ipv6 mld snooping dyn-mr-aging-time 500**

|

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

|

|

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



MLD query PIM  
ipv6 mld snooping vlan mrouter learn no

ipv6 mld snooping vlan vid mrouter learn  
no ipv6 mld snooping vlan vid mrouter learn

| vid | vlan | id | 1-4094 |
|-----|------|----|--------|

VLAN fl

**ipv6 mld snooping vlan *vid* mrouter interface *interface-id***

|                                                 |                                                                                                                                                                  |            |                |                                                 |  |                     |  |
|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------|-------------------------------------------------|--|---------------------|--|
|                                                 | <table><tr><td><i>vid</i></td><td>vlan id 1-4094</td></tr><tr><td><i>ipv6-multiaddr</i></td><td></td></tr><tr><td><i>interface-id</i></td><td></td></tr></table> | <i>vid</i> | vlan id 1-4094 | <i>ipv6-multiaddr</i>                           |  | <i>interface-id</i> |  |
| <i>vid</i>                                      | vlan id 1-4094                                                                                                                                                   |            |                |                                                 |  |                     |  |
| <i>ipv6-multiaddr</i>                           |                                                                                                                                                                  |            |                |                                                 |  |                     |  |
| <i>interface-id</i>                             |                                                                                                                                                                  |            |                |                                                 |  |                     |  |
|                                                 |                                                                                                                                                                  |            |                |                                                 |  |                     |  |
|                                                 |                                                                                                                                                                  |            |                |                                                 |  |                     |  |
|                                                 | ⏏                                                                                                                                                                |            |                |                                                 |  |                     |  |
|                                                 | FF88::1                                                                                                                                                          |            |                |                                                 |  |                     |  |
|                                                 | Ruijie(config)# <b>ipv6 mld snooping vlan 1 static FF88::1 interface fastEthernet 0/1</b>                                                                        |            |                |                                                 |  |                     |  |
|                                                 | <table><tr><td></td><td></td></tr><tr><td><b>ipv6 mld snooping vlan mrouter interface</b></td><td></td></tr></table>                                             |            |                | <b>ipv6 mld snooping vlan mrouter interface</b> |  |                     |  |
|                                                 |                                                                                                                                                                  |            |                |                                                 |  |                     |  |
| <b>ipv6 mld snooping vlan mrouter interface</b> |                                                                                                                                                                  |            |                |                                                 |  |                     |  |
|                                                 |                                                                                                                                                                  |            |                |                                                 |  |                     |  |
|                                                 | <table><tr><td></td><td></td></tr><tr><td><b>10.4</b></td><td></td></tr></table>                                                                                 |            |                | <b>10.4</b>                                     |  |                     |  |
|                                                 |                                                                                                                                                                  |            |                |                                                 |  |                     |  |
| <b>10.4</b>                                     |                                                                                                                                                                  |            |                |                                                 |  |                     |  |

26.1.12 ipv6 mld snooping fast-leave enable

|                                               |                                                                                                                                                                                                                                                                                                                                                               |                         |                          |                            |                                  |           |  |                                            |  |                                               |  |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------|----------------------------|----------------------------------|-----------|--|--------------------------------------------|--|-----------------------------------------------|--|
|                                               | <table><tr><td>mld snooping fast-leave</td><td><b>ipv6 mld snooping</b></td></tr><tr><td><b>fast-leave enable</b>⏏</td><td><b>mld snooping fast-leave</b>⏏</td></tr><tr><td><b>no</b></td><td></td></tr><tr><td><b>ipv6 mld snooping fast-leave enable</b></td><td></td></tr><tr><td><b>no ipv6 mld snooping fast-leave enable</b></td><td></td></tr></table> | mld snooping fast-leave | <b>ipv6 mld snooping</b> | <b>fast-leave enable</b> ⏏ | <b>mld snooping fast-leave</b> ⏏ | <b>no</b> |  | <b>ipv6 mld snooping fast-leave enable</b> |  | <b>no ipv6 mld snooping fast-leave enable</b> |  |
| mld snooping fast-leave                       | <b>ipv6 mld snooping</b>                                                                                                                                                                                                                                                                                                                                      |                         |                          |                            |                                  |           |  |                                            |  |                                               |  |
| <b>fast-leave enable</b> ⏏                    | <b>mld snooping fast-leave</b> ⏏                                                                                                                                                                                                                                                                                                                              |                         |                          |                            |                                  |           |  |                                            |  |                                               |  |
| <b>no</b>                                     |                                                                                                                                                                                                                                                                                                                                                               |                         |                          |                            |                                  |           |  |                                            |  |                                               |  |
| <b>ipv6 mld snooping fast-leave enable</b>    |                                                                                                                                                                                                                                                                                                                                                               |                         |                          |                            |                                  |           |  |                                            |  |                                               |  |
| <b>no ipv6 mld snooping fast-leave enable</b> |                                                                                                                                                                                                                                                                                                                                                               |                         |                          |                            |                                  |           |  |                                            |  |                                               |  |
|                                               | <table><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table>                                                                                                                                                                                                                                                                                         |                         |                          |                            |                                  |           |  |                                            |  |                                               |  |
|                                               |                                                                                                                                                                                                                                                                                                                                                               |                         |                          |                            |                                  |           |  |                                            |  |                                               |  |
|                                               |                                                                                                                                                                                                                                                                                                                                                               |                         |                          |                            |                                  |           |  |                                            |  |                                               |  |
|                                               |                                                                                                                                                                                                                                                                                                                                                               |                         |                          |                            |                                  |           |  |                                            |  |                                               |  |
|                                               |                                                                                                                                                                                                                                                                                                                                                               |                         |                          |                            |                                  |           |  |                                            |  |                                               |  |

|  |                         |
|--|-------------------------|
|  | mld snooping fast-leave |
|--|-------------------------|

```
Ruijie(config)# ipv6 mld snooping fast-leave
```

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

[illegible]

### 26.1.13 ipv6 mld snooping suppression enable

| mld snooping suppression  |    | ipv6 mld snooping        |
|---------------------------|----|--------------------------|
| <b>suppression enable</b> | no | mld snooping suppression |

```

ipv6 mld snooping suppression enable
no ipv6 mld snooping suppression enable

```

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



mld snooping suppression

MLD Snooping

|  |      |  |
|--|------|--|
|  |      |  |
|  | 10.4 |  |

**clear ipv6 mld snooping gda-table**

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

⏏

Ruijie# **clear ipv6 mld snooping gda-table**

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

|      |  |
|------|--|
|      |  |
| 10.4 |  |

**26.1.17 debug mld-snp**

mld , debug mld-snp ⏏

**debug mld-snp**  
**undebug mld-snp**

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

mld ⏏

mld

```
Ruijie# debug mld-snp
```

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

|      |  |
|------|--|
|      |  |
| 10.4 |  |

## 26.2

### 26.2.1 show ipv6 mld snooping

mld snooping      Ⅲ

Show ipv6 mld snooping [gda-table | interfaces | mrouter| statistics [vlan *vlan-id*] ]

|                                         |                        |
|-----------------------------------------|------------------------|
|                                         |                        |
|                                         | mld snooping           |
| <b>gda-table</b>                        |                        |
| <b>interfaces</b>                       | mld snooping Filtering |
| <b>mrouter</b>                          | Ⅲ                      |
| <b>statistics [vlan <i>vlan-id</i>]</b> | snooping               |

Ⅲ

mld snooping

```

1      show ipv6 mld snooping      mld snooping
Ruijie# show ipv6 mld snooping
MLD-snooping mode      : IVGL
SVGL vlan-id           : 1
SVGL profile number    : 0
Source check port      : Disabled
```

Query max response time : 10(Seconds)␣

2       **show ipv6 mld snooping statistics**                   mld snooping

Ruijie# **show ipv6 mld snooping statistics**

| GROUP   | Interface | Last report<br>time | Last leave<br>time | Last<br>reporter |
|---------|-----------|---------------------|--------------------|------------------|
| -----   |           |                     |                    |                  |
| FF88::1 | VL1:Gi4/2 | 0d:0h:0m:7s         | ----               | 2003::1111       |
|         |           | Report pkts: 1      |                    | Leave pkts: 0    |

3       **show ipv6 mld snooping mrouter**                   mld snooping

Ruijie# **show ipv6 mld snooping mrouter**

| Vlan  | Interface            | State   | MLD profile number |
|-------|----------------------|---------|--------------------|
| ----- |                      |         |                    |
| 1     | GigabitEthernet 0/7  | static  | 1                  |
| 1     | GigabitEthernet 0/12 | dynamic | 0                  |

4       **show ipv6 mld snooping gda-table**               GDA

Ruijie# **show ipv6 mld snooping gda-table**

Abbr: M - mrouter

      D - dynamic

      S - static

| VLAN  | Address | Member ports           |
|-------|---------|------------------------|
| ----- |         |                        |
| 1     | FF88::1 | GigabitEthernet 0/7(S) |

5

|  |      |  |
|--|------|--|
|  | 10.4 |  |
|--|------|--|

## 26.2.2 show ipv6 mld profile

---

# 27

## 27.1

### 27.1.1 strom-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*}]

| <b>broadcast</b> | ⌘                      |
|------------------|------------------------|
| <b>multicast</b> | ⌘                      |
| <b>unicast</b>   | ⌘                      |
| <i>percent</i>   | 20 20%                 |
| <i>packets</i>   | pps packets per second |
| <i>Rate-bps</i>  | ⌘                      |
| <i>64k-2M</i>    | 64k ⌘                  |
| <i>2-100M</i>    | 1M ⌘                   |
| <i>100M</i>      | 8M ⌘                   |

⌘

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



1

### 27.1.2 switch

\_\_\_\_\_

\_\_\_\_\_

1

└──

-

└──

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

## 27.1.3 switchport port-security

no

no

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

no switchport port-security [violation]

└──

|                    |      |
|--------------------|------|
|                    |      |
| port-security      |      |
| violation protect  |      |
| violation restrict | trap |
| violation shutdown | Trap |

└──

no

└──

└──

) ( MAC IP( ) 1 M

GigabitEthernet 1/1

shutdown



|  |                    |   |
|--|--------------------|---|
|  | show port-security | 三 |
|  |                    |   |
|  |                    |   |
|  |                    |   |
|  | -                  | - |

### 27.1.5 switchport port-security binding

IP+      MAC      IP

no

```
[no] switchport port-security binding mac-address vlan vlan_id ipv4-address |
ipv6-address
```

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

| <i>mac-address</i>  | MAC  |     |
|---------------------|------|-----|
| <i>Vlan_id</i>      | MAC  | VID |
| <i>lpv4-address</i> | lpv4 | lp  |
| <i>lpv6-address</i> | lpv6 | lp  |

```

1      192.168.1.100      10
Ruijie(config)#inter g0/10
Ruijie(config-if)# switchport port-security binding 192.168.1.100
2      192.168.1.100 MAC      00d0.f800.5555, VID= 1      10
Ruijie(config)#inter g0/10
Ruijie(config-if)# switchport port-security binding 00d0.f800.5555
vlan 1 192.168.1.100

```



```

1      192.168.1.100      10
Ruijie(config)# switchport port-security binding interface g0/10
192.168.1.100
2      192.168.1.100 MAC      00d0.f800.5555, VID= 1      10
Ruijie(config)# switchport port-security binding interface g0/10 00d0.f800.5555
vlan 1 192.168.1.100

```

|  |                                             |  |
|--|---------------------------------------------|--|
|  |                                             |  |
|  | <b>switchport port-security</b>             |  |
|  | <b>switchport port-security binding</b>     |  |
|  | <b>Switchport port-security mac-address</b> |  |
|  | <b>switchport port-security aging</b>       |  |
|  | <b>show port-security</b>                   |  |





---

|   |       |    |
|---|-------|----|
| 1 | TRUNK | 10 |
|---|-------|----|

---

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





|  |                                      |   |
|--|--------------------------------------|---|
|  |                                      |   |
|  | switchport port-security             | ☐ |
|  | switchport port-security aging       | ☐ |
|  | switchport port-security mac-address | ☐ |
|  |                                      |   |
|  |                                      |   |
|  |                                      |   |
|  | -                                    | - |

# 28 802.1X

## 28.1 dot1x

### 28.1.1 dot1x auto-req

802.1X

dot1x auto-req

no

▮

[no] dot1x auto-req

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

▮

▮

▮

802.1x

show dot1x auto-req

▮

802.1x

Ruijie# configure terminal

Ruijie(config)# dot1x auto-req

Ruijie(config)# end

Ruijie# show dot1x auto-req

Ruijie(config)# dot1x auto-req

Auto-Req: Enabled

User-Detect : Enabled

Packet-Num : 0

Req-Interval: 30 Second

|                     |  |   |
|---------------------|--|---|
|                     |  |   |
| show dot1x auto-req |  | ▮ |

▮



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

### 28.1.3 dot1x auto-req req-interval

no

dot1x auto-req req-interval *interval*

no dot1x auto-req req-interval

|  |                 |  |
|--|-----------------|--|
|  |                 |  |
|  |                 |  |
|  |                 |  |
|  | <i>interval</i> |  |

28.1.4 dot1x auto-req user-detect

no Ⅲ

dot1x auto-req user-detect  
no dot1x auto-req user-detect

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

Ⅲ

show dot1x auto-req  
Ⅲ

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

|                            |  |   |
|----------------------------|--|---|
|                            |  |   |
| <b>show dot1x auto-req</b> |  | Ⅲ |

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



Client Oline Probe: Disabled

Eapol Tag TT(655seabled)-6( )T20 9 295.14 46-0.0028 Tc 9 0 0 Tm(6 )TjET60.8

```

Re-authen Period:    1000 sec
Quiet Timer Period:  1000 sec
Tx Timer Period:     3 sec
Supplicant Timeout:  3 sec
Server Timeout:      5 sec
Re-authen Max:       3 times
Maximum 2Request:    3 times
Filter Non-RG Supp:  Disabled
Client Oline Probe:  Disabled
Eapol Tag Enable:    Disabled
Authorization Mode:   Group Server

```

|                   |        |
|-------------------|--------|
|                   |        |
| <b>show dot1x</b> | 802.1x |

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

### 28.2.3 dot1x timeout server-timeout

no

no

**dot1x timeout server-timeout** *seconds*

**no dot1x timeout server-timeout**

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

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

|                   |        |
|-------------------|--------|
|                   |        |
| <b>show dot1x</b> | 802.1x |



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

## 28.2.5 dot1x timeout tx-period

no W

**dot1x timeout tx-period** *seconds*

**no dot1x timeout tx-period**

|                |   |          |
|----------------|---|----------|
|                |   |          |
| <i>seconds</i> | W | 0 65535W |

3 W

W

**show dot1x** 802.1x W

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 |

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

28.3 dot1x

28.3.1 dot1x re-authentication

|                              |    |
|------------------------------|----|
|                              |    |
|                              | no |
| [no] dot1x re-authentication |    |
|                              |    |
| -                            | -  |

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



```

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

```

| <b>show dot1x</b> | 802.1x | 山 |
|-------------------|--------|---|

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

## 28.4 dot1x

### 28.4.1 dot1x probe-timer

**dot1x probe-timer**{interval | alive}*interval*

**no dot1x probe-timer**



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

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

|   |
|---|
| ⏏ |
|---|

|   |
|---|
| ⏏ |
|---|

```
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 | ⏏ |

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

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



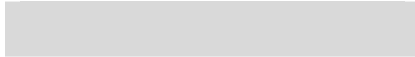
## 28.5.2 dot1x auth-address-table

802.1X

▮

no

▮

**dot1x auth-address-table address** *mac-addr* **interface** *interface***no dot1x auth-address-table address** *mac-addr* **interface** *interface*

**dot1x auth-fail max-attempt** *num*

**no dot1x auth-fail max-attempt**

|  |                                                      |        |       |
|--|------------------------------------------------------|--------|-------|
|  |                                                      |        |       |
|  | <i>num</i>                                           | VLAN   | , 1-3 |
|  | 3                                                    |        |       |
|  |                                                      | ⏏      |       |
|  | show dot1x                                           | ⏏      |       |
|  |                                                      | VLAN   |       |
|  | Ruijie# <b>configure terminal</b>                    |        |       |
|  | Ruijie(config)# <b>dot1x auth-fail max-attempt 5</b> |        |       |
|  | Ruijie(config)# <b>end</b>                           |        |       |
|  | Ruijie#write                                         |        |       |
|  |                                                      |        |       |
|  | show dot1x                                           | 802.1x | ⏏     |
|  |                                                      |        |       |
|  |                                                      |        |       |
|  | 10.3(5)                                              |        |       |

## 28.5.4 dot1x auth-fail vlan

802.1x      vlan⏏

**dot1x auth-fail vlan** *vid*

**no dot1x auth-fail vlan**

|  |            |      |     |
|--|------------|------|-----|
|  |            |      |     |
|  | <i>vid</i> | vlan | vid |
|  |            |      |     |
|  |            | vlan |     |

▮

**show dot1x interface**

▮

802.1x      vlan

Ruijie# **configure terminal**

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

Ruijie(config-if)# **dot1x auth-fail vlan 2**

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

Ruijie#write

**show dot1x interface**

802.1x

▮

**10.3(5)**

## 28.5.5 dot1x auth-mode

802.1x

▮

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

**no dot1x auth-mode**

**eap-md5**

802.1x

EAP-MD5

▮

**chap**

802.1x

CHAP

▮

**pap**

802.1x

PAP

▮

EAP-MD5

▮

**show dot1x**

802.1x

▮





## 28.5.8 dot1x guest-vlan

```
                guest vlan                    no                  
dot1x dynamic-vlan <1 - 4094>  
no dot1x guest-vlan
```

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

28.5.9 dot1x eapol-tag

|  |                                 |     |   |
|--|---------------------------------|-----|---|
|  | EAPOL                           | TAG | ☐ |
|  | dot1x eapol-tag                 |     |   |
|  | no dot1x eapol-tag              |     |   |
|  |                                 |     |   |
|  |                                 |     |   |
|  |                                 |     |   |
|  | ☐                               |     |   |
|  | show dot1x 802.1x ☐             |     |   |
|  | 802.1X tag                      |     |   |
|  | Ruijie# configure terminal      |     |   |
|  | Ruijie(config)# dot1x eapol-tag |     |   |
|  | Ruijie(config)# end             |     |   |
|  | Ruijie#                         |     |   |
|  |                                 |     |   |
|  | show dot1x 802.1x ☐             |     |   |
|  |                                 |     |   |
|  |                                 |     |   |

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

|  |     |
|--|-----|
|  | MAC |
|--|-----|

|  |   |
|--|---|
|  | Ш |
|--|---|

**show dot1x port-control interface**

```
show run      802.1x      ㄣ
```

```
802.1x MAC
```

```
Ruijie# configure terminal
```

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

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

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

```
Ruijie#write
```

|                                   |               |
|-----------------------------------|---------------|
|                                   |               |
| show dot1x port-control interface | 802.1x      ㄣ |

|         |  |
|---------|--|
|         |  |
| 10.3(5) |  |

## 28.5.12 dot1x mac-auth-bypass violation

```
802.1x MAC
```

```
ㄣ
```

```
dot1x mac-auth-bypass violation
```

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

```
ㄣ
```

```
show run      802.1x      ㄣ
```

```
802.1x MAC
```

```
Ruijie# configure terminal
```

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

```
Ruijie(config-if)# dot1x mac-auth-bypass violation
```

Ruijie(config-if)#

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

28.5.14 dot1x private-supplicant-only

no

W

dot1x private-supplicant-only

no dot1x private-supplicant-only

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

W

W

show dot1x private-supplicant-only

802.1x                      MAC



**dot1x port-control-mode {mac-based | {port-based [single-host]} }**

**no dot1x port-control-mode**

| <b>mac-based</b>   | mac 802.1X |
|--------------------|------------|
| <b>port-based</b>  | 802.1X     |
| <b>single-host</b> | 802.1x     |

mac-based



**show dot1x port-control**

802.1x



s26 802.1X

802.1X



single-host

802.1x

**show dot1x port-control**

port-based

**show running-config**

**dot1x port-control-mode**

**port-based single-host**

single-host

default-user-limit

single-host



single-host

default-user-limit

single-host



1 802.1x

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

Ruijie(config-if)# **dot1x port-control auto**

Ruijie(config-if)# **dot1x port-control-mode port-based**

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

Ruijie#

2 802.1x

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

Ruijie(config-if)# **dot1x port-control auto**

Ruijie(config-if)# **dot1x port-control-mode port-based single-host**

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

Ruijie#

802.1x

802.1X

┌

**dot1x stationarity enable**

**no dot1x stationarity enable**

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

┌

┌

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┌

802.1x

Ruijie# **configure terminal**

Ruijie(config)# **dot1x stationarity enable**

Ruijie(config)# **end**

Ruijie#

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

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

## 28.5.18 dot1x redirect url

802.1x  
URL  
http://ruijie.net/web  
url  
http://  
https://  
url 11 no

**dot1x redirect url** [*url-string*]

**[no ] dot1x redirect url**

|                   |     |  |
|-------------------|-----|--|
|                   |     |  |
| <i>url-string</i> | URL |  |

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

|                                                        |       |     |
|--------------------------------------------------------|-------|-----|
|                                                        |       |     |
| <b>dot1x redirect for special tcp-destination port</b> | ip ip | web |
| <b>dot1x redirect time-out</b>                         |       |     |
| <b>dot1x redirect num for special source-ip</b>        |       |     |
| <b>show dot1x</b>                                      | dot1x |     |

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

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

### 28.5.19 dot1x redirect for special tcp-destination port

|      |        |                                                        |     |           |
|------|--------|--------------------------------------------------------|-----|-----------|
|      | ip     | ip                                                     | web | 80 4 8080 |
| port | 16 TCP | no dot1x redirect for special tcp-destination port_mum |     |           |

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

|                 |     |  |
|-----------------|-----|--|
|                 |     |  |
| <i>port num</i> | TCP |  |

|  |     |    |      |    |
|--|-----|----|------|----|
|  | tcp | 80 | 8080 | no |
|--|-----|----|------|----|

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

|  |     |         |
|--|-----|---------|
|  | TCP | 1-65535 |
|--|-----|---------|

|  |                                                                     |     |      |
|--|---------------------------------------------------------------------|-----|------|
|  | 1                                                                   | TCP | 8443 |
|  | Ruijie(config)#dot1x redirect for special tcp-destination port 8443 |     |      |

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

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

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

### 28.5.20 dot1x redirect time-out



**no dot1x redirect num for special source-ip**

|  |            |  |
|--|------------|--|
|  |            |  |
|  | <i>num</i> |  |

1

1

3

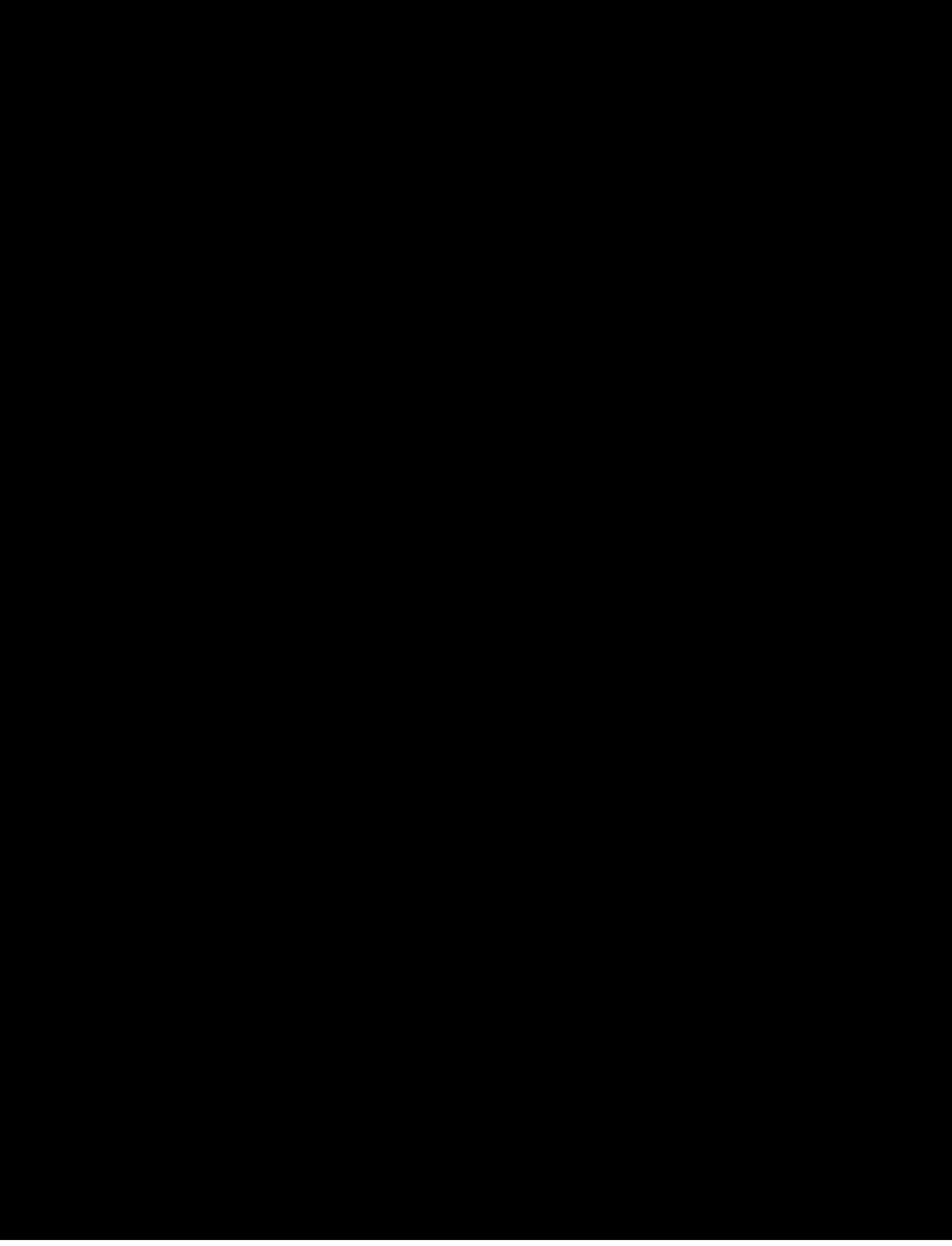
Ruijie(config)# **dot1x redirect num for special source-ip 3**

|                                                        |       |       |
|--------------------------------------------------------|-------|-------|
|                                                        |       |       |
| <b>dot1x redirect url</b>                              |       |       |
| <b>dot1x redirect for special tcp-destination port</b> | web   | ip ip |
| <b>dot1x redirect time-out</b>                         |       |       |
| <b>show dot1x</b>                                      | dot1x |       |

III

```
Ruijie# show dot1x
802.1X Status:      Enabled
Authentication Mode: EAP-MD5
Authed User Number: 0
Re-authen Enabled:  Disabled
Re-authen Period:   3600 sec
Quiet Timer Period:  10 sec
Tx Timer Period:     3 sec
Supplicant Timeout:  3 sec
Server Timeout:      5 sec
Re-authen Max:       3 times
Maximum Request:     3 times
Filter Non-RG Supp:  Disabled
Client Oline Probe:  Disabled
Eapol Tag Enable:    Disabled
Authorization Mode:   Group Server
Ruijie#
```

| <b>dot1x auth-mode</b>             | 802.1x | III |
|------------------------------------|--------|-----|
| <b>dot1x max-req</b>               |        | III |
| <b>dot1x port-control auto</b>     |        | III |
| <b>dot1x reauth-max</b>            |        |     |
| <b>dot1x re-authentication</b>     |        | III |
| <b>dot1x timeout quiet-period</b>  | III    |     |
| <b>dot1x timeout re-authperiod</b> |        | III |



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W

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

Req-Interval: 30 Seconds

| <b>dot1x auth-mode</b>              | 802.1x      Ⅲ |
|-------------------------------------|---------------|
| <b>dot1x max-req</b>                | Ⅲ             |
| <b>dot1x port-control auto</b>      | Ⅲ             |
| <b>dot1x reauth-max</b>             |               |
| <b>dot1x re-authentication</b>      | Ⅲ             |
| <b>dot1x timeout quiet-period</b>   | Ⅲ             |
| <b>dot1x timeout re-authperiod</b>  | Ⅲ             |
| <b>dot1x timeout server-timeout</b> | Ⅲ             |
| <b>dot1x timeout supp-timeout</b>   | Ⅲ             |
| <b>dot1x timeout tx-period</b>      | Ⅲ             |

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

## 28.6.4 show dot1x private-supPLICANT-only

Ⅲ

show dot1x private-supPLICANT-only

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

Ⅲ



## 28.6.5 show dot1x max-req

▮

show dot1x max-req

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

└─┘

└─┘

└─┘

```
Ruijie# show dot1x max-req
max-req: 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      | ▮        |

└─┘





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

## 28.6.8 show dot1x re-authentication

show dot1x re-authentication

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

| <b>dot1x auth-mode</b>              | 802.1x      Ⅲ |
|-------------------------------------|---------------|
| <b>dot1x max-req</b>                | Ⅲ             |
| <b>dot1x port-control auto</b>      | Ⅲ             |
| <b>dot1x reauth-max</b>             |               |
| <b>dot1x re-authentication</b>      | Ⅲ             |
| <b>dot1x timeout quiet-period</b>   | Ⅲ             |
| <b>dot1x timeout re-authperiod</b>  | Ⅲ             |
| <b>dot1x timeout server-timeout</b> | Ⅲ             |
| <b>dot1x timeout supp-timeout</b>   | Ⅲ             |
| <b>dot1x timeout tx-period</b>      | Ⅲ             |

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

## 28.6.9 show dot1x reauth-max

show dot1x reauth-max

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

Ⅲ

Ⅲ

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

| dot1x auth-mode              | 802.1x    Ⅲ |
|------------------------------|-------------|
| dot1x max-req                | Ⅲ           |
| dot1x port-control auto      | Ⅲ           |
| dot1x reauth-max             |             |
| dot1x re-authentication      | Ⅲ           |
| dot1x timeout quiet-period   | Ⅲ           |
| dot1x timeout re-authperiod  | Ⅲ           |
| dot1x timeout server-timeout | Ⅲ           |
| dot1x timeout supp-timeout   | Ⅲ           |
| dot1x timeout tx-period      | Ⅲ           |

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

## 28.6.10 show dot1x summary

802.1X

show dot1x summary

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

⏏

Ruijie# **show dot1x summary**

ID    MAC            Interface VLAN Auth-State

Backend-State Port-Status Type

-----

1 00d0f8000000 Gi0/1            1 Authenticated Idle

Authed        Static

Ruijie#

| <b>dot1x auth-mode</b>              | 802.1x      ⏏ |
|-------------------------------------|---------------|
| <b>dot1x max-req</b>                | ⏏             |
| <b>dot1x port-control auto</b>      | ⏏             |
| <b>dot1x reauth-max</b>             |               |
| <b>dot1x re-authentication</b>      | ⏏             |
| <b>dot1x timeout quiet-period</b>   | ⏏             |
| <b>dot1x timeout re-authperiod</b>  | ⏏             |
| <b>dot1x timeout server-timeout</b> | ⏏             |
| <b>dot1x timeout supp-timeout</b>   | ⏏             |
| <b>dot1x timeout tx-period</b>      | ⏏             |

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

## 28.6.11 show dot1x user id

802.1X

**show dot1x user id** *<id>*

|                                     |   |
|-------------------------------------|---|
| <b>dot1x max-req</b>                | ⏏ |
| <b>dot1x port-control auto</b>      | ⏏ |
| <b>dot1x reauth-max</b>             |   |
| <b>dot1x re-authentication</b>      | ⏏ |
| <b>dot1x timeout quiet-period</b>   | ⏏ |
| <b>dot1x timeout re-authperiod</b>  | ⏏ |
| <b>dot1x timeout server-timeout</b> | ⏏ |
| <b>dot1x timeout supp-timeout</b>   | ⏏ |
| <b>dot1x timeout tx-period</b>      | ⏏ |

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

## 28.6.12 show dot1x timeout

802.1X

show dot1x timeout quiet-period

show dot1x timeout re-authperiod

show dot1x timeout server-timeout

show dot1x timeout supp-timeout

show dot1x timeout tx-period

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



**no dot1x redirect**

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

HTTP IP 丅

HTTP 丅

```
Ruijie# configure terminal
Ruijie(config)# http redirect 172.16.0.1
Ruijie(config)# end
```

| show http redirect     | HTTP |
|------------------------|------|
| http redirect homepage | 丅    |

| 10.2(5) |  |
|---------|--|

### 28.7.3 http redirect direct-site

丅 no

丅

**http redirect direct-site** *ip-address* [*ip-mask*] [**arp**]

**no http redirect direct-site** *ip-address* [*ip-mask*] [**arp**]

| <i>ip-address</i> | IP                          |
|-------------------|-----------------------------|
| <i>ip-mask</i>    | IP 丅                        |
| <b>arp</b>        | ARP CHECK<br>ARP <b>arp</b> |
|                   | 丅                           |

丅



\_\_\_\_\_

[illegible]

10/10/2014

\_\_\_\_\_

|  |                    |      |
|--|--------------------|------|
|  |                    |      |
|  |                    |      |
|  | show http redirect | HTTP |
|  |                    |      |
|  |                    |      |
|  |                    |      |
|  | 10.2(5)            |      |
|  |                    |      |

## 28.7.6 http redirect session-limit

HTTP      HTTP  
 3Щ      no      HTTP

**http redirect session-limit** *session-num* [**port** *port-session-num*]

**no http redirect session-limit**

**show http redirect 2.1X**

10.2(5)

## 28.7.8 show http redirect

HTTP 山

**show http redirect**

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

HTTP

Ruijie# **show http redirect**

HTTP redirection settings:

server: 192.168.32.123

port: 80 8000

homepage: http://192.168.32.123:8888/ePortal/index.jsp

session-limit: 10

timeout: 5

Direct sites:

| Address       | MASK            | ARP Binding |
|---------------|-----------------|-------------|
| 61.233.3.215  | 255.255.255.255 | On          |
| 61.233.3.220  | 255.255.255.255 | Off         |
| 192.168.5.140 | 255.255.255.255 | Off         |
| 218.30.66.101 | 255.255.0.0     | Off         |
| 218.30.66.101 | 255.255.255.255 | Off         |

|                                  |         |
|----------------------------------|---------|
|                                  |         |
| <b>http redirect</b>             | HTTP IP |
| <b>http redirect direct-site</b> |         |
| <b>http redirect homepage</b>    |         |





Ruijie(config)# **aaa authentication dot1x rds\_d1x group radius local**

|                             |        |
|-----------------------------|--------|
|                             |        |
| <b>aaa new-model</b>        | AAA    |
| <b>dot1x authentication</b> | 802.1X |
| <b>username</b>             |        |

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

29.1.2 aaa authentication enable

AAA      Enable                      **aaa authentication enable**      Enable  
    ⌵              no                      ⌵

**aaa authentication enable default** *method1* [*method2...*]

**no aaa authentication enable default**

|                |                               |
|----------------|-------------------------------|
|                |                               |
| <b>default</b> | ⌵Enable      Enable<br>⌵      |
| <i>method</i>  | ┆ local 4 none 4 group 4<br>4 |
| <b>local</b>   |                               |
| <b>none</b>    |                               |
| <b>group</b>   | TACACS+      RADIUS           |

⌵

AAA Enable                      AAA      Enable      ⌵  
**aaa authentication enable**                      Enable      ⌵  
                                 ⌵



Enable

Enable

W

15 JULY 2004

---

Login

Login

W

Login

Login

list-1

## AAA Login

W

RADIUS

RADIUS

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

---

[illegible]

AAA

|                  |       |   |
|------------------|-------|---|
| <b>default</b>   | Login | ⏏ |
| <i>list-name</i> | Login | ⏏ |

⏏

Login ⏏

Login ⏏ Login

⏏

list-1 AAA Login ⏏

⏏ VTY 0 - 4 ⏏

Ruijie(config)# **aaa authentication login list-1 local**

Ruijie(config)# **line vty 0 4**

Ruijie(config-line)# **login authentication list-1**

|                             |       |
|-----------------------------|-------|
| <b>aaa new-model</b>        | AAA   |
| <b>username</b>             |       |
| <b>login authentication</b> | Login |

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

## 29.2

### 29.2.1 aaa authorization commands

NAS CLI AAA

⏏ **aaa authorization**

commands⏏ no AAA ⏏

**aaa authorization commands level {default | list-name} method1 [method2...]**

**no aaa authorization commands** *level* {**default** | *list-name*}

| <i>level</i>     | 0~15<br>⏏             |
|------------------|-----------------------|
| <b>default</b>   |                       |
| <i>list-name</i> | ⏏                     |
| <i>method</i>    | ! none 4 group 4<br>4 |
| <b>none</b>      |                       |
| <b>group</b>     | TACACS+               |

AAA ⏏

⏏

RGOS AAA

⏏

14 14 ⏏

⏏

TACACS+ 15

Ruijie(config)# **aaa authorization commands 15 default group tacacs+**

| <b>aaa new-model</b>          | AAA |
|-------------------------------|-----|
| <b>authorization commands</b> |     |

-

-





AAA

AAA

|         |                  |         |
|---------|------------------|---------|
|         |                  |         |
|         |                  |         |
|         |                  |         |
| default |                  | Network |
| method  | ! none 4 group 4 |         |
| none    |                  |         |
| group   | TACACS+          | RADIUS  |

=

4

authorization

commands 0 no 0

authorization commands level {default | list-name}

no authorization commands level

| level     | 0~15  0 |
|-----------|---------|
| default   | 0       |
| list-name | 0       |

|     |   |
|-----|---|
| AAA | 0 |
| 0   |   |
| 0   | 0 |
| 0   | 0 |
| 0   | 0 |

|                                                                      |    |           |
|----------------------------------------------------------------------|----|-----------|
| cmd                                                                  | 15 | TACACS+   |
| none                                                                 | 0  | 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 |

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

29.2.7 authorization exec

Exec authorization exec 卩  
no Exec 卩

authorization exec {default | list-name}  
no authorization exec

|           |        |
|-----------|--------|
|           |        |
| default   | Exec 卩 |
| list-name | Exec 卩 |

AAA Exec 卩

卩

Exec 卩  
Exec 卩  
Exec 卩  
卩 Exec

exec-1 Exec RADIUS  
none 卩 VTY 0 – 4  
Ruijie(config)# **aaa authorization exec exec-1 group radius none**  
Ruijie(config)# **line vty 0 4**  
Ruijie(config-line)# **authorization exec exec-1**

|                            |          |
|----------------------------|----------|
|                            |          |
| aaa new-model              | AAA      |
| aaa authorization commands | AAA Exec |

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

29.3 ccountingmaa

## NAS

**aaa accounting commands** **no**

**aaa accounting commands** *level* {**default** | *list-name*} **start-stop** *method1* [*method2...*]

**no aaa accounting commands** *level* {**default** | *list-name*}

| <i>level</i>     | 0~15<br>Ш        |
|------------------|------------------|
| <b>default</b>   | Ш                |
| <i>list-name</i> | Ш                |
| <i>method</i>    | 1 none 4 group 4 |
| <b>none</b>      |                  |
| <b>group</b>     | TACACS+          |

Ш

RGOS

none

Ш

Ш

Ш

TACACS+

15

Ruijie(config)# **aaa accounting commands 15 default start-stop group tacacs+**

| <b>aaa new-model</b>       | AAA |
|----------------------------|-----|
| <b>aaa authentication</b>  | AAA |
| <b>accounting commands</b> |     |

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

## 29.3.2 aaa accounting exec

accounting exec **no** **Exec** **aaa**

**aaa accounting exec {default | list-name} start-stop method1 [method2...]**

**no aaa accounting exec {default | list-name}**

|                  |                          |
|------------------|--------------------------|
|                  |                          |
| <b>default</b>   | <b>Exec</b>              |
| <i>list-name</i> | <b>Exec</b>              |
| <i>method</i>    | <b>none</b> <b>group</b> |
| <b>none</b>      |                          |
| <b>group</b>     | <b>RADIUS</b>            |
|                  | <b>TACACS+</b>           |

**no**

**RGOS**

**Exec**

**none**

**Exec**

**NAS CLI**

**Start**

**Stop**

**no**

**Start**

**Stop**

**no**

**Exec**

**no**

**RADIUS**

**NAS**

Ruijie(config)# **aaa accounting exec default start-stop group radius**

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

|                            |      |
|----------------------------|------|
| <b>aaa new-model</b>       | AAA  |
| <b>aaa authentication</b>  | AAA  |
| <b>accounting commands</b> | Exec |

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

### 29.3.3 aaa accounting network

**aaa accounting network** ☐ ☐ ☐ no ☐ ☐

**aaa accounting network** {default | list-name} **start-stop** method1 [method2...]

**no aaa accounting network** {default | list-name}

|                   |                                  |
|-------------------|----------------------------------|
|                   |                                  |
| <b>default</b>    | Network <input type="checkbox"/> |
| <i>list-name</i>  | <input type="checkbox"/>         |
| <b>start-stop</b> | <input type="checkbox"/>         |
| <i>method</i>     | 4                                |
| <b>none</b>       |                                  |
| <b>group</b>      | TACACS+ RADIUS                   |

☐

RGOS ☐ ☐ **start-stop**

☐

RADIUS

Ruijie(config)# **aaa accounting network default start-stop group radius**

|                           |     |
|---------------------------|-----|
|                           |     |
| aaa new-model             | AAA |
| aaa authorization network | AAA |
| aaa authentication        | AAA |
| username                  |     |

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

29.3.4 aaa accounting update

**aaa accounting update**

no

**aaa accounting update**

**no aaa accounting update**

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

AAA

Ruijie(config)# **aaa new-model**  
Ruijie(config)#

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

AAA

|  |                        |     |
|--|------------------------|-----|
|  | aaa new-model          | AAA |
|  | aaa accounting network |     |



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

29.3.6 accounting commands

accounting commands

no

accounting commands *level* {default | *list-name*}

no accounting commands *level*

|                  |      |  |
|------------------|------|--|
|                  |      |  |
| <i>level</i>     | 0~15 |  |
| default          |      |  |
| <i>list-name</i> |      |  |

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

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

Exec                          accounting exec

no                          Exec                         

**no accounting exec**

|                  |      |   |
|------------------|------|---|
|                  |      |   |
| <b>default</b>   | Exec | 山 |
| <i>list-name</i> | Exec | 山 |

The diagram illustrates a sequence of operations. It features a vertical line on the left and a horizontal line at the bottom. The operations are arranged in a grid-like pattern:

- Top row: Exec, Exec, Exec
- Bottom row: Exec, Exec, Exec

The operations are connected by lines, forming a continuous path.

```

exec-1  Exec          RADIUS
none    111          VTY 0 – 4
Ruijie(config)# aaa accounting exec exec-1 group radius none
Ruijie(config)# line vty 0 4
Ruijie(config-line)# accounting exec exec-1

```

|                         |          |
|-------------------------|----------|
|                         |          |
| aaa new-model           | AAA      |
| aaa accounting commands | AAA Exec |

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

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

29.4 AAA

29.4.1 aaa domain

no

aaa domain {default | domain-name}  
no aaa domain {default | domain-name}

|  |             |  |
|--|-------------|--|
|  |             |  |
|  | default     |  |
|  | domain-name |  |

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

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

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

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

AAA default  
domain-name  
32

Ruijie(config)# aaa domain ruijie.com  
Ruijie(config-aaa-domain)#

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

29.4.2 aaa domain enable

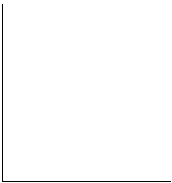
|                      |                                   |    |     |
|----------------------|-----------------------------------|----|-----|
|                      | AAA                               |    | ⏏   |
| AAA                  | ⏏                                 | no | ⏏   |
| aaa domain enable    |                                   |    |     |
| no aaa domain enable |                                   |    |     |
|                      |                                   |    |     |
|                      | -                                 |    | -   |
|                      |                                   |    |     |
|                      | AAA                               |    | ⏏   |
|                      |                                   |    |     |
|                      | ⏏                                 |    |     |
|                      |                                   |    |     |
|                      | AAA                               |    | ⏏   |
|                      |                                   |    |     |
|                      | AAA                               |    |     |
|                      | Ruijie(config)# aaa domain enable |    |     |
|                      |                                   |    |     |
|                      | aaa new-model                     |    | AAA |
|                      | show aaa domain                   |    |     |
|                      |                                   |    |     |
|                      |                                   |    |     |
|                      | -                                 |    | -   |

29.4.3 access-limit

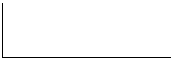
|                  |            |    |   |
|------------------|------------|----|---|
|                  | IEEE802.1x | no | ⏏ |
| access-limit num |            |    |   |

**no access-limit**

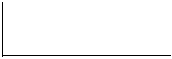
|  |            |            |
|--|------------|------------|
|  |            |            |
|  | <i>num</i> | IEEE802.1x |



default      Ⅲ



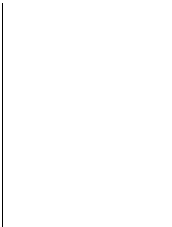
Ⅲ



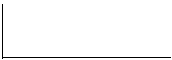
Network      Ⅲ



Network  
Ruijie(config)# **aaa domain** *ruijie.com*  
Ruijie(config-aaa-domain)# **accounting network default**

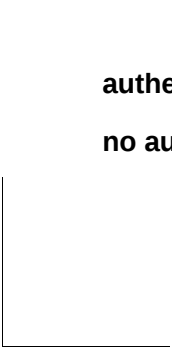


| aaa new-model     | AAA |
|-------------------|-----|
| aaa domain enable | AAA |
| show aaa domain   |     |



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

29.4.5 authentication dot1x

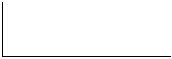


IEEE802.1x      no      Ⅲ  
**authentication dot1x {default | list-name}**  
**no authentication dot1x**

| default   |  |
|-----------|--|
| list-name |  |



Ⅲ      default



Ⅲ



Ruijie(config-aaa-domain)# **authorization network default**

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

AAA

|                          |     |
|--------------------------|-----|
| <b>aaa new-model</b>     | AAA |
| <b>aaa domain enable</b> | AAA |

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

## 29.4.9 username-format

NAS

no

▮

**username-format {without-domain | with-domain}**

**no username-format**

|                       |  |
|-----------------------|--|
| <b>without-domain</b> |  |
| <b>with-domain</b>    |  |

▮

▮

NAS

▮

Ruijie(config)# **aaa domain** *ruijie.com*

Ruijie(config-aaa-domain)# **username-domain without-domain**

|                          |     |
|--------------------------|-----|
| <b>aaa new-model</b>     | AAA |
| <b>aaa domain enable</b> | AAA |
| <b>show aaa domain</b>   |     |

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

## 29.5 AAA

### 29.5.1 aaa group server

AAA

⏏

no

⏏

**aaa group server {radius | tacacs+} name**

**no aaa group server {radius | tacacs+} name**

|             |             |                              |
|-------------|-------------|------------------------------|
|             |             |                              |
| <i>name</i> | ⏏ tacacs+ ⏏ | ⏏ radius ⏏<br>RADIUS TACACS+ |

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

|   |
|---|
| ⏏ |
|---|

|     |
|-----|
| AAA |
|-----|

RADIUS

TACACS+

⏏

|                                                   |
|---------------------------------------------------|
| ⏏                                                 |
| Ruijie(config)# <b>aaa group server radius ss</b> |
| Ruijie(config-gs-radius)# <b>end</b>              |
| Ruijie# show aaa group                            |
| Group Name: ss                                    |
| Group Type: radius                                |
| Referred: 1                                       |
| Server List:                                      |

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

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

## 29.5.2 ip vrf forwarding

AAA vrf no Ⅲ

**ip vrf forwarding** *vrf\_name*

**no ip vrf forwarding**

|  |                 |     |
|--|-----------------|-----|
|  |                 |     |
|  | <i>vrf_name</i> | vrf |

Ⅲ

vrfⅢ

Ⅲ

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

|  |                         |     |
|--|-------------------------|-----|
|  |                         |     |
|  | <b>aaa group server</b> | aaa |
|  | <b>show aaa group</b>   | aaa |

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

## 29.5.3 server

AAA

no


**server** *ip-addr* [**authen-port** *port1*] [**acct-port** *port2*]

**no server** *ip-addr* [**authen-port** *port1*] [**acct-port** *port2*]

| <i>ip-addr</i> | ip     |
|----------------|--------|
| <i>port1</i>   | RADIUS |
| <i>port2</i>   | RADIUS |





Ruijie(config)# **aaa group server radius ss**

Ruijie(config-gs-radius)# **server** *192.168.4.12*
**acct-port** *5* **authen-port** *6*

Ruijie(config-gs-radius)# **end**

Ruijie# **show aaa group**

Group Name: *ss*

Group Type: *radius*

Referred: *2*

Server List:

IP Address: *192.168.4.12*

Authentication Port: *6*

Accounting Port: *5*

Referred: *1*

| <b>aaa group server</b> | aaa |
|-------------------------|-----|
| <b>show aaa group</b>   | aaa |

AAA

---

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

## 29.5.4 show aaa group

AAA

山

show aaa group



## 29.6.1 aaa local authentication attempts

login

**aaa local authentication attempts** *max-attempts*

| <i>max-attempts</i> | 1~2147483647 |
|---------------------|--------------|

3

W

Login

Ruijie# **configure terminal**

Ruijie(config)# **aaa local authentication attempts 6**

| <b>Show running-config</b> |       |
|----------------------------|-------|
| <b>Show aaa logout</b>     | login |

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

## 29.6.2 aaa local authentication logout-time

login

**aaa local authentication logout-time** *logout-time*

| <i>logout-time</i> | 1~2147483647 |
|--------------------|--------------|

15

AAA

login

```
Ruijie# configure terminal
Ruijie(config)# aaa local authentication logout-time 5
```

|                     |       |
|---------------------|-------|
|                     |       |
| Show running-config |       |
| Show aaa logout     | login |

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

29.6.3 aaa new-model

RGOS AAA aaa new-model AAA  
no AAA

aaa new-model  
no aaa new-model

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

AAA

AAA

AAA AAA aaa new-model  
AAA AAA

```
AAA  
Ruijie(config)# aaa new-model
```

\_\_\_\_\_

[illegible]

\_\_\_\_\_

\_\_\_\_\_

2. Debug aaa

AAA                    ㄴ                    no                    ㄴ

g aaa event

debug aaa event

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

EXEC                    ㄴ

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

AAA

山

AAA

山

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

/"5n0ARtGp2H+T  
p5noARtGp2H+T

W

Ruijie# show aaa user logout all

| show running-config |       |
|---------------------|-------|
| show aaa logout     | login |

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

# 30 RADIUS

## 30.1 RADIUS

RADIUS

### 30.1.1 ip radius source-interface

radius ip radius source-interface

no RADIUS

ip radius source-interface interface

no radius source-interface

|           |        |
|-----------|--------|
|           |        |
| Interface | radius |

radius

radius nas radius

ip radius

radius fastEthernet 0/0 ip radius

Ruijie(config)# ip radius source-interface fastEthernet 0/0

|                    |        |
|--------------------|--------|
|                    |        |
| radius-server host | RADIUS |
| ip address         | ip     |

RADIUS

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

|    |                 |    |
|----|-----------------|----|
| 20 | proxy-avoid     | 20 |
| 21 | dailup-avoid    | 21 |
| 22 | ip privilege    | 22 |
| 23 | login privilege | 42 |

| id |                      | type |
|----|----------------------|------|
| 1  | max down-rate        | 76   |
| 2  | qos                  | 77   |
| 3  | user ip              | 3    |
| 4  | vlan id              | 4    |
| 5  | version to client    | 5    |
| 6  | net ip               | 6    |
| 7  | user name            | 7    |
| 8  | password             | 8    |
| 9  | file-diractory       | 9    |
| 10 | file-count           | 10   |
| 11 | file-name-0          | 11   |
| 12 | file-name-1          | 12   |
| 13 | file-name-2          | 13   |
| 14 | file-name-3          | 14   |
| 15 | file-name-4          | 15   |
| 16 | max up-rate          | 75   |
| 17 | version to server    | 17   |
| 18 | flux-max-high32      | 18   |
| 19 | flux-max-low32       | 19   |
| 20 | proxy-avoid          | 20   |
| 21 | dailup-avoid         | 21   |
| 22 | ip privilege         | 22   |
| 23 | login privilege      | 42   |
| 24 | limit to user number | 50   |



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

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

### 30.1.5 radius-server host

RADIUS **radius-server** **no**  
RADIUS

**radius-server host** { *ipv4-address* | *ipv6-address* } [**auth-port** *port-number*] [**acct-port** *port-number*]

**no radius-server host** { *ipv4-address* | *ipv6-address* }

|                     |              |
|---------------------|--------------|
|                     |              |
| <i>ipv4-address</i> | RADIUS IPv4  |
| <i>ipv6-address</i> | RADIUS IPv6  |
| <i>auth-port</i>    | RADIUS UDP   |
| <i>port-number</i>  | RADIUS UDP 0 |
| <i>acct-port</i>    | Radius UDP   |
| <i>port-number</i>  | RADIUS UDP 0 |

RADIUS

RADIUS AAA RADIUS  
**radius-server** RADIUS

IPv4 RADIUS  
Ruijie(config)# **radius-server host** 192.168.12.1  
IPv6 RADIUS  
Ruijie(config)# **radius-server host** 3000::100

|                           |        |
|---------------------------|--------|
|                           |        |
| <b>aaa authentication</b> | AAA    |
| <b>radius-server key</b>  | RADIUS |

**radius-server key** *text-string*

**no radius-server key**

|                    |  |
|--------------------|--|
|                    |  |
| <i>text-string</i> |  |

RADIUS RADIUS

```
RADIUS                                     aaa
```

```
Ruijie(config)# radius-server key aaa
```

|  |                                 |        |
|--|---------------------------------|--------|
|  |                                 |        |
|  |                                 |        |
|  | <b>radius-server host</b>       | RADIUS |
|  | <b>radius-server retransmit</b> | RADIUS |
|  | <b>radius-server timeout</b>    | RADIUS |

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

RADIUS

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

**radius-server timeout** *seconds*

**no radius-server timeout**

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

*seconds*

W

qos                  cos                  dscp

Ruijie(config)# radius set qos cos

|                               |                            |
|-------------------------------|----------------------------|
|                               |                            |
| radius vendor-specific extend | Radius                  id |

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

### 30.2.1 debug radius

[illegible]

---

30-11

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 |

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

**30.2.3 show radius server**

RADIUS

⏏

**show radius server**

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

1

2 radius

3

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 |

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

### 30.2.4 show radius vendor-specific

RADIUS

1

**show radius vendor-specific**

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

⏏

radius

⏏

Ruijie# **show radius vendor-specific**

| id | vendor-specific | type-value |
|----|-----------------|------------|
|----|-----------------|------------|

-----

|   |               |    |
|---|---------------|----|
| 1 | max down-rate | 76 |
|---|---------------|----|

|   |     |    |
|---|-----|----|
| 2 | qos | 77 |
|---|-----|----|

|   |         |   |
|---|---------|---|
| 3 | user ip | 3 |
|---|---------|---|

|   |         |   |
|---|---------|---|
| 4 | vlan id | 4 |
|---|---------|---|

|   |                   |   |
|---|-------------------|---|
| 5 | version to client | 5 |
|---|-------------------|---|

|   |        |   |
|---|--------|---|
| 6 | net ip | 6 |
|---|--------|---|

|   |           |   |
|---|-----------|---|
| 7 | user name | 7 |
|---|-----------|---|

|   |          |   |
|---|----------|---|
| 8 | password | 8 |
|---|----------|---|

[illegible]

# 31 TACACS+

## 31.1 TACACS+

### 31.1.1 aaa group server tacacs+

TACACS+

TACACS+

Ш

aaa group server tacacs+ group-name

no aaa group server tacacs+ group-name

|            |         |
|------------|---------|
|            |         |
| group-name | TACACS+ |

TACACS+

Ш

Ш

TACACS+

ч

ч

Ш

tac1

TACACS+

1.1.1.1

TACACS+

Ruijie(config)# aaa group server tacacs+ tac1

Ruijie(config-gs-tacacs)# server 1.1.1.1

|                   |                |
|-------------------|----------------|
|                   |                |
| server            | TACACS+ server |
| ip vrf forwarding | TACACS+ VRF    |

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

## 31.1.2 ip tacacs source-interface

TACACS+ 

**ip tacacs source-interface** *interface*

**no ip tacacs source-interface**

6 re 81 T f 0 T c 0 T r 2.0 12 5 3 7.4 6.5 re f 6 3 4 6.8 4 2.0 12 5 3 7.4 6.6 3.1 1 re 6

|  |                 |            |
|--|-----------------|------------|
|  | <i>vrf-name</i> | <i>vrf</i> |
|--|-----------------|------------|

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

|         |   |
|---------|---|
| TACACS+ | ▮ |
|---------|---|

|         |            |   |
|---------|------------|---|
| TACACS+ | <i>vrf</i> | ▮ |
|---------|------------|---|

|                                                         |     |      |
|---------------------------------------------------------|-----|------|
| TACACS+                                                 | VRF | vpn1 |
| Ruijie(config)# <b>aaa group server tacacs+ tac1</b>    |     |      |
| Ruijie(config-gs-radius)# <b>server 1.1.1.1</b>         |     |      |
| Ruijie(config-gs-radius)# <b>ip vrf forwarding vpn1</b> |     |      |

|                                 |         |        |
|---------------------------------|---------|--------|
|                                 |         |        |
| <b>aaa group server tacacs+</b> | TACACS+ |        |
| <b>server</b>                   | TACACS+ | server |

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

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

### 31.1.4 server(TACACS+)

|         |   |
|---------|---|
| TACACS+ | ▮ |
|---------|---|

**server** {*ip-address* | *ipv6-address*}

**no server** {*ip-address* | *ipv6-address*}

|                   |                               |
|-------------------|-------------------------------|
|                   |                               |
| <i>ip-address</i> | TACACS+<br>\$10B"t"#B?A<br>no |

|             |         |                                 |                      |   |
|-------------|---------|---------------------------------|----------------------|---|
|             |         | <b>aaa group server tacacs+</b> | TACACS+              | ⏏ |
| TACACS+     |         |                                 | <b>tacacs-server</b> |   |
| <b>host</b> | ⏏       |                                 |                      |   |
|             | TACACS+ |                                 |                      |   |
|             | ⏏       |                                 |                      |   |

|                            |                                      |         |         |
|----------------------------|--------------------------------------|---------|---------|
|                            | tac1                                 | TACACS+ | 1.1.1.1 |
| TACACS+                    |                                      |         |         |
| Ruijie(config)#            | <b>aaa group server tacacs+ tac1</b> |         |         |
| Ruijie(config-gs-tacacs+)# | <b>server 1.1.1.1</b>                |         |         |

| <b>aaa group server tacacs+</b> | TACACS+     |
|---------------------------------|-------------|
| <b>ip vrf forwarding</b>        | TACACS+ VRF |

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

31.1.5 tacacs-server host

|                                                                                                                                                                     |    |   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---|
| TACACS+                                                                                                                                                             | IP | ⏏ |
| <b>tacacs-server host</b> { <i>ip-address</i>   <i>ipv6-address</i> } [ <b>port</b> <i>integer</i> ] [ <b>timeout</b> <i>integer</i> ] [ <b>key</b> <i>string</i> ] |    |   |
| <b>no tacacs-server host</b> <i>ip-address</i>                                                                                                                      |    |   |

| <i>ip-address</i>             | TACACS+ IP ⏏     |
|-------------------------------|------------------|
| <i>ipv6-address</i>           | TACACS+ IPV6 ⏏   |
| <b>port</b> <i>integer</i>    | TACACS+ TCP      |
| <b>timeout</b> <i>integer</i> | TACACS+ ⏏        |
| <b>key</b> <i>string</i>      | TACACS+ client ⏏ |

|         |   |
|---------|---|
| TACACS+ | ⏏ |
|---------|---|

[illegible]

\_\_\_\_\_



### 31.1.6 tacacs-server key

tacac

no ta

---

\_\_\_\_\_



key host key

TACACS+ aaa  
Ruijie(config)#tacacs-server key aaa

|                       |         |
|-----------------------|---------|
|                       |         |
| tacacs-server host    | TACACS+ |
| tacacs-server timeout | TACACS+ |

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

31.1.7 tacacs-server timeout

TACACS+ 1000

tacacs-server timeout seconds

no tacacs-server timeout

|         |             |
|---------|-------------|
|         |             |
| seconds | 1000 1-1000 |

5

1000

1000

host timeout 1000

10

Ruijie(config)# tacacs-server timeout 10

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

**no debug tacacs+**

[illegible]



# 32 SSH

## 32.1 SSH

### 32.1.1 crypto key generate

crypto key generate {rsa | dsa}

|     |     |
|-----|-----|
|     |     |
| rsa | RSA |
| dsa | DSA |

SSH Server

|                           |               |               |
|---------------------------|---------------|---------------|
| SSH Server                | SSH           |               |
| enable service ssh-server | SSH Server    | SSH 1 RSA SSH |
| 2 RSA DSA                 | RSA SSH1 SSH2 |               |
| DSA                       | SSH2          |               |
| no crypto key generate    |               |               |
| crypto key zeroize        |               |               |

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

|             |            |
|-------------|------------|
| show ip ssh | SSH Server |
|-------------|------------|

crypto key zeroize {rsa | dsa}

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

### 32.1.2 crypto key zeroize

SSH

crypto key zeroize {rsa | dsa}

|     |     |  |
|-----|-----|--|
|     |     |  |
| rsa | RSA |  |
| dsa | DSA |  |

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

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

|  |            |                              |         |
|--|------------|------------------------------|---------|
|  | SSH Server | SSH Server                   | DISABLE |
|  |            | no enable service ssh-server |         |

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

|                               |            |     |
|-------------------------------|------------|-----|
|                               |            |     |
| show ip ssh                   | SSH Server |     |
| crypto key generate {rsa dsa} | DSA        | RSA |

RGOS10.1

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

### 32.1.3 ip ssh authentication-retries

SSH Server

no

ip ssh authentication-retries *retry times*

no ip ssh authentication-retries



SSH Server  
120s  
SSH server

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

|                    |            |
|--------------------|------------|
|                    |            |
| <b>show ip ssh</b> | ssh-server |

RGOS10.1

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

32.1.5 ip ssh version

SSH server SSH no SSH

ip ssh version {1 | 2}

no ip ssh version

|          |                 |
|----------|-----------------|
|          |                 |
| <b>1</b> | SSH Server SSH1 |
| <b>2</b> | SSH Server SSH2 |

SSH 1 2 SSH  
SSH no ip ssh version SSH

SSH Server SSH SSH Server  
SSH1 SSH2 SSH 1 SSH 2  
1 2 SSH

```
2
Ruijie# configure terminal
Ruijie(config)# ip ssh version 2
```

|             |              |
|-------------|--------------|
|             |              |
| show ip ssh | SSH Server 卐 |

RGOS10.1

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

32.2

32.2.1 disconnect ssh

SSH 卐  
disconnect ssh [vty] session-id

|            |       |
|------------|-------|
|            |       |
| session-id | SSH 卐 |

SSH SSH 卐 SSH 卐 VTY

```
Ruijie# disconnect ssh 1

Ruijie# disconnect ssh vty
```

SSH

---

|  |                                          |     |   |
|--|------------------------------------------|-----|---|
|  | <b>Clear line vty</b> <i>line_number</i> | VTY | Ш |
|--|------------------------------------------|-----|---|

|  |          |
|--|----------|
|  | RGOS10.1 |
|--|----------|

show ip ssh

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

|            |     |     |              |   |
|------------|-----|-----|--------------|---|
| SSH Server | SSH | 4   | SSH Server 4 | 4 |
| SSH        |     |     |              |   |
| SSH        | SSH | SSH |              |   |

Ruijie# show ip ssh

|                                           |                |
|-------------------------------------------|----------------|
|                                           |                |
| ip ssh version {1   2}                    | SSH Server SSH |
| ip ssh time-out time                      | SSH Server SSH |
| ip ssh authentication-retries retry times | SSH Server SSH |

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

32.2.4 show ssh

|          |     |
|----------|-----|
| SSH      | SSH |
| show ssh |     |
|          |     |
| -        | -   |



# 33 CPU

## 33.1

### 33.1.1 cpu-protect cpu bandwidth *bandwidth\_value*

CPU

cpu-protect cpu bandwidth *bandwidth\_value*

|                        |    |               |
|------------------------|----|---------------|
|                        |    |               |
| <i>bandwidth_value</i> | 64 | 1000000(kbps) |

S2900 CPU 100000kbps

CPU 2000 kbps  
Ruijie# configure terminal

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

33.1.2 cpu-protect mac-address storm-control enable *value*

cpu-protect mac-address storm-control enable *value*

|  |              |  |
|--|--------------|--|
|  |              |  |
|  | <i>value</i> |  |

**cpu-protect traffic-class id** *id\_num* **bandwidth** *bandwidth\_value*

| <i>id_num</i>          | ID 0 7          |
|------------------------|-----------------|
| <i>bandwidth_value</i> | 32 131072(kbps) |

S2900 7 100000kbps 1000kbps

W

7 312(kbps)

Ruijie#**configure terminal**

Ruijie(config)# **cpu-protect traffic-class id 7 bandwidth 312**

Ruijie(config)#**end**

Ruijie# **show cpu-protect traffic-class id 7**

%\*\*\*\*\*traffic class bandwidth(kbps)\*\*\*\*\*

7 312

| <b>cpu-protect type</b> packet-type <b>traffic-class</b> |  |
|----------------------------------------------------------|--|
| <i>traffic-class-num</i>                                 |  |
| <b>cpu-protect traffic-class all bandwidth</b>           |  |
| <i>bandwidth_value</i>                                   |  |

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

### 33.1.4 cpu-protect traffic-class all bandwidth *bandwidth\_value*

W

**cpu-protect traffic-class id** *id\_num* **bandwidth** *bandwidth\_value*

|--|--|

*bandwidth\_*

S2900



### 33.2.1 show cpu-protect cpu

```
show cpu-protect cpu
```

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

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

15 JULY 2004

11/11/2010

|                                                 |                 |
|-------------------------------------------------|-----------------|
|                                                 |                 |
| <b>show cpu-protect type</b> <i>packet-type</i> |                 |
| <b>show cpu-protect traffic-class id</b> id_num | id_num      0 7 |
| <b>show cpu-protect traffic-class all</b>       |                 |

|                                  | 2019   | 2020   |
|----------------------------------|--------|--------|
| 1. <b>Operating income</b>       | 10,000 | 10,000 |
| 2. <b>Operating expenses</b>     | 8,000  | 8,000  |
| 3. <b>Operating profit</b>       | 2,000  | 2,000  |
| 4. <b>Non-operating income</b>   | 0      | 0      |
| 5. <b>Non-operating expenses</b> | 0      | 0      |
| 6. <b>Non-operating profit</b>   | 0      | 0      |
| 7. <b>Profit before taxes</b>    | 2,000  | 2,000  |
| 8. <b>Taxes</b>                  | 500    | 500    |
| 9. <b>Net income</b>             | 1,500  | 1,500  |

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

33.2.2 show cpu-protect traffic-class id id\_num

W

show cpu-protect traffic-class id id\_num

|  |         |      |
|--|---------|------|
|  |         |      |
|  | idt_num | 0-7W |

W

Ri

W

1 CPU W

Ruijie#show cpu-protect traffic-class id 1  
%\*\*\*\*\*traffic class bandwidth(kbps)\*\*\*\*\*  
1000

show cpu-protect type packet-type

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

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

|   |
|---|
| ⏏ |
|---|

|   |
|---|
| ⏏ |
|---|

|                                                   |               |                      |
|---------------------------------------------------|---------------|----------------------|
| <b>show cpu-protect traffic-class all</b>         |               |                      |
| Ruijie# <b>show cpu-protect traffic-class all</b> |               |                      |
| %*****                                            | traffic class | bandwidth(kbps)***** |
| 0                                                 |               | 1000                 |
| 1                                                 |               | 1000                 |
| 2                                                 |               | 1000                 |
| 3                                                 |               | 1000                 |
| 4                                                 |               | 1000                 |
| 5                                                 |               | 1000                 |
| 6                                                 |               | 1000                 |
| 7                                                 |               | 100000               |

|                                                 |        |          |
|-------------------------------------------------|--------|----------|
|                                                 |        |          |
| <b>show cpu-protect type <i>packet-type</i></b> |        |          |
| <b>show cpu-protect traffic-class id id_num</b> | id_num | ⏏<br>0 7 |
| <b>show cpu-protect cpu</b>                     | CPU    | ⏏        |

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

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

### 33.2.4 show cpu-protect type packet-type

⏏

**show cpu-protect type *packet-type***

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

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

### show cpu-protect type all

```
%*****packet type      traffic-class*****
      bpdud              6
      arp                5
      tpp                6
      dot1x              3
      gvrp               3
      rldp               6
      dhcp               2
      unknown-ipv6-mc    1
      known-ipv6-mc      1
      unknown-ipv4-mc    1
      known-ipv4-mc      1
      udp-helper         0
      dvmrp              5
      igmp               3
      icmp               5
      ospf               5
      pim                5
      rip                5
      vrrp               5
      mld                3
      ns                 5
      error-ttl          0
      error-hop-limit    0
      local-telnet       5
      local-snmp         5
      local-http         5
      local-tftp         5
      local-other        5
```



|         |   |
|---------|---|
| ipv4-uc | 4 |
| ipv6-uc | 4 |
| other   | 0 |



| <b>show cpu-protect traffic-class id <i>id_num</i></b> |  | id_num | 0 7 |
|--------------------------------------------------------|--|--------|-----|
| <b>show cpu-protect traffic-class all</b>              |  |        | Q@  |



# 34 GSN

## 34.1

### 34.1.1 security address-bind enable

▮

security address-bind enable  
no security address-bind enable

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

AP AP ▮

▮  
▮

GSN

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

|                     |     |
|---------------------|-----|
|                     |     |
| security gsn enable | GSN |

RGOS10.1 ▮

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

**security { [**

| 5

|

|

⌘ show security event interval ⌘

|

Ruijie(config)# security event interval 10

|

|                              |   |
|------------------------------|---|
|                              |   |
| show security event interval | ⌘ |

|

RGOS10.1

|

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

34.1.4 security gsn enable

GSN ⌘no

security gsn enable

no security gsn enable

|

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

|

|

|

GSN GSN ⌘

|

Ruijie# configure terminal  
Ruijie(config)# security gsn enable

|

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

|                                              |               |
|----------------------------------------------|---------------|
| smp-server ip                                |               |
| smp-server host ip-address                   |               |
| no smp-server host                           |               |
|                                              |               |
| ip-address                                   | smp server ip |
| smp server                                   |               |
|                                              |               |
| show smp-server                              |               |
| Ruijie(config)#smp-server host 192.168.4.243 |               |
|                                              |               |
| show smp-server                              | smp server    |
| RGOS10.1                                     |               |
|                                              |               |
| -                                            | -             |

### 34.2.1 show security evnet interval

|  |                                             |   |
|--|---------------------------------------------|---|
|  | ⏏                                           |   |
|  |                                             |   |
|  | -                                           | - |
|  |                                             |   |
|  |                                             |   |
|  | ⏏                                           |   |
|  | Ruijie# <b>show security event interval</b> |   |
|  | Event sending interval(Seconds):5           |   |
|  |                                             |   |
|  | security event interval <i>interval</i>     |   |
|  | ⏏                                           |   |

|  |                             |                 |
|--|-----------------------------|-----------------|
|  | SMP-Server IP 192.168.20.30 |                 |
|  |                             |                 |
|  | smp-server host             | smp server ip 山 |
|  | RGOS10.1 山                  |                 |
|  |                             |                 |
|  | -                           | -               |

## 35 DAI

### 35.1 VLAN DAI

#### 35.1.1 ip arp inspection vlan

|                | <i>vlan-id</i> | VLAN | DAI | no | VLAN |
|----------------|----------------|------|-----|----|------|
| <i>vlan-id</i> | VLAN           | DAI  |     |    |      |
| DAI            |                |      |     |    |      |

**ip arp inspection vlan** *vlan-id*

**no ip arp inspection vlan** [*vlan-id*]



### 35.3.1 ip arp inspection limit-rate limit-rate

no ARP ip arp inspection limit-rate

ip arp inspection limit-rate {*limit-rate* | none }

no ip arp inspection limit-rate





36

arp

36.1

arp

36.1.1 anti-arp-spoofing ip

arp

⌵

no

⌵

anti-arp-spoofing ip ip-address

no anti-arp-spoofing ip ip-address

</

36.2

arp

arp 三

show anti-arp-spoofing

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

|                               |             |
|-------------------------------|-------------|
| Ruijie#show anti-arp-spoofing |             |
| port                          | ip          |
| -----                         | -----       |
| Fa0/1                         | 192.168.1.1 |

|                      |     |
|----------------------|-----|
|                      |     |
| anti-arp-spoofing ip | arp |

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

## 37 IP Source Guard

### 37.1 IP Source Guard

#### 37.1.1 ip source binding

IP **no** **no**

[no] **ip source binding** *mac-address* **vlan** *vlan-id* *ip-address* **interface** *interface-id*

| <i>mac-address</i>  | MAC     |
|---------------------|---------|
| <i>vlan-id</i>      | vlan id |
| <i>ip-address</i>   | IP      |
| <i>interface-id</i> |         |

**no**

**no**

IP Source Guard

DHCP

**no**

1

Ruijie# **configure terminal**

Ruijie(config)# **ip source binding** 0000.0000.0001 **vlan** 1 1.1.1.1  
**interface** FastEthernet 0/1

Ruijie(config)# **end**

Ruijie# **show ip source binding**

| MacAddress     | IpAddress | Lease(sec) | Type   | VLAN | Interface        |
|----------------|-----------|------------|--------|------|------------------|
| 0000.0000.0001 | 1.1.1.1   | infinite   | static | 1    | FastEthernet 0/1 |

Total number of bindings: 1

|  |                               |    |
|--|-------------------------------|----|
|  | <b>show ip source binding</b> | IP |
|  |                               |    |
|  |                               |    |
|  | -                             | -  |

## 37.2 IP Source Guard

### 37.2.1 ip verify source

|  |                                                   |                 |                 |
|--|---------------------------------------------------|-----------------|-----------------|
|  | IP Source Guard                                   | no              | ⏏               |
|  | [no] ip verify source [port-security]             |                 |                 |
|  |                                                   |                 |                 |
|  | port-security                                     | IP Source Guard | IP+MAC ⏏        |
|  | ⏏                                                 |                 |                 |
|  | ⏏                                                 |                 |                 |
|  | IP Source Guard                                   | IP              |                 |
|  | IP+MAC                                            |                 |                 |
|  | IP Source Guard                                   | DHCP Snooping   | Trust           |
|  | DHCP Snooping                                     | IP Source Guard | IP Source Guard |
|  | ⏏                                                 |                 |                 |
|  | 1                                                 | IP Source Guard |                 |
|  | Ruijie# <b>configure terminal</b>                 |                 |                 |
|  | Ruijie(config)# <b>interface fastEthernet 0/1</b> |                 |                 |
|  | Ruijie(config-if)# <b>ip verify source</b>        |                 |                 |
|  | Ruijie(config-if)# <b>end</b>                     |                 |                 |
|  |                                                   |                 |                 |

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

## 37.3 IP Source Guard

### 37.3.1 show ip source binding

IP

III

**show ip source binding** [*ip-address*] [*mac-address*] [**dhcp-snooping**] [**static**] [**vlan** *vlan-id*] [**interface** *interface-id*]



[illegible]

[illegible]





**cpu-protect sub-interface** {*manage|protocol|route*} **percent** *percent\_vaule*

|                      |   |     |
|----------------------|---|-----|
|                      |   |     |
| <i>percent_vaule</i> | 1 | 100 |

|                             |                                                                                                                                                                                                                                                           |          |  |  |                       |   |                             |  |                           |  |                            |  |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--|--|-----------------------|---|-----------------------------|--|---------------------------|--|----------------------------|--|
|                             | pps                                                                                                                                                                                                                                                       | [1,9999] |  |  |                       |   |                             |  |                           |  |                            |  |
|                             | IP<br>200                                                                                                                                                                                                                                                 | MAC<br>8 |  |  |                       |   |                             |  |                           |  |                            |  |
|                             | NFPP                                                                                                                                                                                                                                                      |          |  |  |                       |   |                             |  |                           |  |                            |  |
|                             |                                                                                                                                                                                                                                                           |          |  |  |                       |   |                             |  |                           |  |                            |  |
|                             | Ruijie(config)# nfpp<br>Ruijie(config-nfpp)# arp-guard attack-threshold per-src-ip 2<br>Ruijie(config-nfpp)# arp-guard attack-threshold per-src-mac 3<br>Ruijie(config-nfpp)# arp-guard attack-threshold per-port 50                                      |          |  |  |                       |   |                             |  |                           |  |                            |  |
|                             | <table><tr><td></td><td></td></tr><tr><td>nfpp arp-guard policy</td><td></td></tr><tr><td>show nfpp arp-guard summary</td><td></td></tr><tr><td>show nfpp arp-guard hosts</td><td></td></tr><tr><td>clear nfpp arp-guard hosts</td><td></td></tr></table> |          |  |  | nfpp arp-guard policy |   | show nfpp arp-guard summary |  | show nfpp arp-guard hosts |  | clear nfpp arp-guard hosts |  |
|                             |                                                                                                                                                                                                                                                           |          |  |  |                       |   |                             |  |                           |  |                            |  |
| nfpp arp-guard policy       |                                                                                                                                                                                                                                                           |          |  |  |                       |   |                             |  |                           |  |                            |  |
| show nfpp arp-guard summary |                                                                                                                                                                                                                                                           |          |  |  |                       |   |                             |  |                           |  |                            |  |
| show nfpp arp-guard hosts   |                                                                                                                                                                                                                                                           |          |  |  |                       |   |                             |  |                           |  |                            |  |
| clear nfpp arp-guard hosts  |                                                                                                                                                                                                                                                           |          |  |  |                       |   |                             |  |                           |  |                            |  |
|                             |                                                                                                                                                                                                                                                           |          |  |  |                       |   |                             |  |                           |  |                            |  |
|                             | <table><tr><td></td><td></td></tr><tr><td>-</td><td>-</td></tr></table>                                                                                                                                                                                   |          |  |  | -                     | - |                             |  |                           |  |                            |  |
|                             |                                                                                                                                                                                                                                                           |          |  |  |                       |   |                             |  |                           |  |                            |  |
| -                           | -                                                                                                                                                                                                                                                         |          |  |  |                       |   |                             |  |                           |  |                            |  |

### 38.3.2 arp-guard enable

|   |                                                                         |   |  |  |   |   |
|---|-------------------------------------------------------------------------|---|--|--|---|---|
|   | ARP                                                                     | 山 |  |  |   |   |
|   | arp-guard enable                                                        |   |  |  |   |   |
|   | <table><tr><td></td><td></td></tr><tr><td>-</td><td>-</td></tr></table> |   |  |  | - | - |
|   |                                                                         |   |  |  |   |   |
| - | -                                                                       |   |  |  |   |   |
|   |                                                                         |   |  |  |   |   |
|   | ARP                                                                     |   |  |  |   |   |
|   | NFPP                                                                    |   |  |  |   |   |

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard enable
```

|                                    |     |
|------------------------------------|-----|
|                                    |     |
| <b>nfpp arp-guard enable</b>       | ARP |
| <b>show nfpp arp-guard summary</b> |     |

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

38.3.3 arp-guard isolate-period

山

arp-guard isolate-period {seconds | permanent}

|           |                |
|-----------|----------------|
|           |                |
| seconds   | 0 [30, 86400]山 |
| permanent |                |

0 山

NFPP

†

|  |                |               |
|--|----------------|---------------|
|  |                |               |
|  | <i>seconds</i> | [180, 86400]ш |

\_\_\_\_\_

W

---

### 38.3.5 arp-guard monitored-host-limit

▮

arp-guard monitored-host-limit *number*

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

|                    |           |
|--------------------|-----------|
| <b>per-src-ip</b>  | IP        |
| <b>per-src-mac</b> | MAC       |
| <b>per-port</b>    |           |
| <i>pps</i>         | [1,9999]Ш |

|     |     |   |
|-----|-----|---|
| IP  | MAC | 4 |
| 100 | Ш   |   |

NFPP

```
Ruijie(config)# nfpp  
Ruijie(config-nfpp)# arp-guard rate-limit per-src-ip 2  
Ruijie(config-nfpp)# arp-guard rate-limit per-src-mac 3  
Ruijie(config-nfpp)# arp-guard rate-limit per-port 50
```



NFPP

10

15

ARP

MAC

```
VLAN 1      g 0/1      111
Ruijie# clear nfpp arp-guard hosts vlan 1 interface g0/1
```



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

### 38.3.10 nfpp arp-guard enable

ARP Ⅲ

**nfpp arp-guard enable**

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

|  |     |   |
|--|-----|---|
|  | ARP | Ⅲ |
|--|-----|---|

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

|  |     |     |   |
|--|-----|-----|---|
|  | ARP | ARP | Ⅲ |
|--|-----|-----|---|

|  |                                                 |
|--|-------------------------------------------------|
|  | Ruijie(config)# <b>interface G0/1</b>           |
|  | Ruijie(config-if)# <b>nfpp arp-guard enable</b> |

|  |                                    |     |
|--|------------------------------------|-----|
|  |                                    |     |
|  | <b>arp-guard enable</b>            | ARP |
|  | <b>show nfpp arp-guard summary</b> |     |

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

|  |      |  |
|--|------|--|
|  |      |  |
|  | 10.4 |  |

### 38.3.11 nfpp arp-guard isolate-period

Ⅲ

**nfpp arp-guard isolate-period {seconds | permanent}**

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

|                  |               |
|------------------|---------------|
| <i>seconds</i>   | 0 [30, 86400] |
| <b>permanent</b> |               |

⏮ ⏪ ⏩ ⏭

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp arp-guard isolate-period 180
```

| <b>arp-guard isolate-period</b>    |  |
|------------------------------------|--|
| <b>show nfpp arp-guard summary</b> |  |

| 10.4 |  |
|------|--|

### 38.3.12 nfpp arp-guard policy

W

```
nfpf arp-guard policy {per-src-ip | per-src-mac | per-port} rate-limit-pps
attack-threshold-pps
```

|                             |     |           |   |
|-----------------------------|-----|-----------|---|
|                             |     |           |   |
| <b>per-src-ip</b>           | IP  |           | Ш |
| <b>per-src-mac</b>          | MAC |           | Ш |
| <b>per-port</b>             |     |           | Ш |
| <i>rate-limit-pps</i>       |     | 1    9999 | Ш |
| <i>attack-threshold-pps</i> |     | 1    9999 | Ш |
|                             |     |           |   |

▮

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp arp-guard policy per-src-ip 2 10
Ruijie(config-if)# nfpp arp-guard policy per-src-mac 3 10
Ruijie(config-if)# nfpp arp-guard policy per-port 50 100
```

| arp-guard attack-threshold  |  |
|-----------------------------|--|
| arp-guard rate-limit        |  |
| show nfpp arp-guard summary |  |

```
clear nfpp arp-guard hosts
```

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp arp-guard scan-threshold 20
```

| arp-guard scan-threshold    |     |
|-----------------------------|-----|
| show nfpp arp-guard summary |     |
| show nfpp arp-guard scan    | ARP |
| clear nfpp arp-guard scan   | ARP |

| 10.4 |  |
|------|--|

## 38.4 DHCP

### 38.4.1 dhcp-guard attack-threshold

⏏

**dhcp-guard attack-threshold { per-src-mac | per-port} pps**

| per-src-mac | MAC ⏏     |
|-------------|-----------|
| per-port    | ⏏         |
| pps         | [1,9999]⏏ |

MAC 10 300 ⏏

NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard attack-threshold per-src-mac 15
Ruijie(config-nfpp)# dhcp-guard attack-threshold per-port 200
```



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

38.4.3 dhcp-guard isolate-period

Ш

dhcp-guard isolate-period {seconds | permanent}

|         |   |   |   |             |
|---------|---|---|---|-------------|
|         |   |   |   |             |
| seconds | 0 | Ш | 0 | [30, 86400] |

|                |              |
|----------------|--------------|
|                |              |
| <i>seconds</i> | [180, 86400] |

600

NFPP

0

0

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard monitor-period 180
```



NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard rate-limit per-src-mac 8
Ruijie(config-nfpp)# dhcp-guard rate-limit per-port 100
```

|                              |  |
|------------------------------|--|
|                              |  |
| nfpp dhcp-guard policy       |  |
| show nfpp dhcp-guard summary |  |

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

38.4.7 clear nfpp dhcp-guard hosts



```
clear nfpp dhcp-guard hosts [vlan vid] [interface interface-id] [mac-address]
```

|              |                                                            |
|--------------|------------------------------------------------------------|
|              |                                                            |
| vid          |                                                            |
| interface-id |                                                            |
| mac-address  | MAC - D2Df 0.48 ref341.6 3156(- D2Df 00.1 ref246.84 515.72 |

```
show nfpp dhcp-guard hosts
```

DHCP

⏏

```
nfpp dhcp-guard enable
```

DHCP

⏏

DHCP

DHCP

⏏

```
Ruijie(config)# interface G0/1
```

```
Ruijie(config-if)# nfpp dhcp-guard enable
```

```
dhcp-guard enable
```

DHCP

**nfpp dhcp-guard isolate-period {seconds | permanent}**

| <i>seconds</i>   | 0 [30, 86400] |
|------------------|---------------|
| <b>permanent</b> |               |

10.4

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

```
Ruijie(config-if)# nfpp dhcp-guard isolate-period 180
```

| <b>dhcp-guard isolate-period</b>    |  |
|-------------------------------------|--|
| <b>show nfpp dhcp-guard summary</b> |  |

| 10.4 |  |
|------|--|

**38.4.10 nfpp dhcp-guard policy**

10.4

**nfpp dhcp-guard policy { per-src-mac | per-port} rate-limit-pps attack-threshold-pps**

| <b>per-src-mac</b>          | MAC 10.4    |
|-----------------------------|-------------|
| <b>per-port</b>             | 10.4        |
| <i>rate-limit-pps</i>       | 1 9999 10.4 |
| <i>attack-threshold-pps</i> | 1 9999 10.4 |

10.4

⏏

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp dhcp-guard policy per-src-mac 3 10
Ruijie(config-if)# nfpp dhcp-guard policy per-port 50 100
```

| dhcp-guard attack-threshold  |  |
|------------------------------|--|
| dhcp-guard rate-limit        |  |
| show nfpp dhcp-guard summary |  |
| show nfpp dhcp-guard hosts   |  |
| clear nfpp dhcp-guard hosts  |  |

| 10.4 |  |
|------|--|

38.5 DHCPv6

38.5.1 dhcpv6-guard attack-threshold

⏏

```
dhcpv6-guard attack-threshold { per-src-mac | per-port} pps
```

| per-src-mac | MAC ⏏     |
|-------------|-----------|
| per-port    | ⏏         |
| pps         | [1,9999]⏏ |

MAC 10 300 ⏏

NFPP

```
Ruijie(config)# nfpp
```

```
Ruijie(config-nfpp)# dhcpv6-guard attack-threshold per-src-mac 15
```

```
Ruijie(config-nfpp)# dhcpv6-guard attack-threshold per-port 200
```

```
nfpp dhcpv6-guard policy
```

|  |                                       |        |
|--|---------------------------------------|--------|
|  | <b>nfpp dhcpv6-guard enable</b>       | DHCPv6 |
|  | <b>show nfpp dhcpv6-guard summary</b> |        |
|  |                                       |        |
|  |                                       |        |
|  |                                       |        |
|  | 10.4                                  |        |

### 38.5.3 dhcpv6-guard isolate-period

▮

**dhcpv6-guard isolate-period** {seconds | permanent}

|           |   |   |               |
|-----------|---|---|---------------|
|           |   |   |               |
| seconds   | 0 | ▮ | 0 [30, 86400] |
| permanent |   |   |               |

0 ▮

NFPP

▮

▮

Ruijie(config)# **nfpp**

Ruijie(config-nfpp)# **dhcpv6-guard isolate timeout 180**

|                                         |  |  |
|-----------------------------------------|--|--|
|                                         |  |  |
| <b>nfpp dhcpv6-guard isolate-period</b> |  |  |
| <b>show nfpp dhcpv6-guard summary</b>   |  |  |
|                                         |  |  |
|                                         |  |  |

|      |      |  |
|------|------|--|
| NFPP |      |  |
|      | 10.4 |  |

38.5.4 dhcpv6-guard monitor-period

|                                      |         |               |
|--------------------------------------|---------|---------------|
| Ш                                    |         |               |
| dhcpv6-guard monitor- period seconds |         |               |
|                                      |         |               |
|                                      | seconds | [180, 86400]Ш |

|                                                                                |  |  |
|--------------------------------------------------------------------------------|--|--|
| 5DhC9p61E,0PQ0M1B1991M1B1XUMFT-0B2Q1B1B10Vf201602/5B,x0/2143/2143//14gA015B35B |  |  |
|--------------------------------------------------------------------------------|--|--|

|  |      |   |
|--|------|---|
|  | NFPP |   |
|  | Ä    | 0 |

**dhcpv6-guard monitored-host-limit** *number*

|               |            |
|---------------|------------|
|               |            |
| <i>number</i> | 1          |
|               | 4294967295 |

1000

NFPP

1000

1000

I %ERROR The value that you  
configured is smaller than current monitored hosts 1000  
please clear a part of monitored hosts. L

Λ

Ш

MAC

5

150 山

NFPP

Ruijie(config)# **nfpp**Ruijie(config-nfpp)# **dhcpv6-guard rate-limit per-src-mac 8**Ruijie(config-nfpp)# **dhcpv6-guard rate-limit per-port 100**

|                                |  |
|--------------------------------|--|
|                                |  |
| nfpp dhcpv6-guard policy       |  |
| show nfpp dhcpv6-guard summary |  |

|      |  |
|------|--|
|      |  |
| 10.4 |  |

### 38.5.7 clear nfpp dhcpv6-guard hosts

山

**clear nfpp dhcpv6-guard hosts** [*vlan vid*] [**interface** *interface-id*] [*mac-address*]

|     |
|-----|
| 0.4 |
|-----|

VLAN 1      g 0/1      Ⅲ  
 Ruijie# **clear nfpp dhcpv6-guard hosts vlan 1 interface g0/1**

|                                      |  |
|--------------------------------------|--|
|                                      |  |
| <b>dhcpv6-guard attack-threshold</b> |  |
| <b>nfpp dhcpv6-guard policy</b>      |  |
| <b>show nfpp dhcpv6-guard hosts</b>  |  |

|      |  |
|------|--|
|      |  |
| 10.4 |  |

### 38.5.8 nfpp dhcpv6-guard enable

DHCPv6      Ⅲ

**nfpp dhcpv6-guard enable**

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

DHCPv6      Ⅲ

DHCPv6      DHCP      Ⅲ

Ruijie(config)# **interface G0/1**  
 Ruijie(config-if)# **nfpp dhcpv6-guard enable**

|                                       |        |
|---------------------------------------|--------|
|                                       |        |
| <b>dhcpv6-guard enable</b>            | DHCPv6 |
| <b>show nfpp dhcpv6-guard summary</b> |        |

|  |      |  |
|--|------|--|
|  |      |  |
|  | 10.4 |  |

### 38.5.9 nfpp dhcpv6-guard isolate-period

▮

**nfpp dhcpv6-guard isolate-period {seconds | permanent}**

|           |   |             |
|-----------|---|-------------|
|           |   |             |
| seconds   | 0 | [30, 86400] |
| permanent |   |             |

▮

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

```
Ruijie(config-if)# nfpp dhcpv6-guard isolate-period 180
```

|                             |  |
|-----------------------------|--|
|                             |  |
| dhcpv6-guard isolate-period |  |

| <b>per-src-mac</b>          | MAC Ⅲ   |
|-----------------------------|---------|
| <b>per-port</b>             | Ⅲ       |
| <i>rate-limit-pps</i>       | 1 9999Ⅲ |
| <i>attack-threshold-pps</i> | 1 9999Ⅲ |

Ⅲ

Ⅲ

```

Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp dhcpv6-guard policy per-src-mac 3 10
Ruijie(config-if)# nfpp dhcpv6-guard policy per-port 50 100

```

| <b>dhcpv6-guard attack-threshold</b>  |  |
|---------------------------------------|--|
| <b>dhcpv6-guard rate-limit</b>        |  |
| <b>show nfpp dhcpv6-guard summary</b> |  |
| <b>show nfpp dhcpv6-guard hosts</b>   |  |
| <b>clear nfpp dhcpv6-guard hosts</b>  |  |

10.4

## 38.6 ICMP

### 38.6.1 icmp-guard attack-threshold

| <b>per-src-ip</b> | IP 1200 1500 |
|-------------------|--------------|
| <b>per-port</b>   | 1200         |
| <i>pps</i>        | [1,9999]     |

IP 1200 1500

NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard attack-threshold per-src-ip 600
Ruijie(config-nfpp)# icmp-guard attack-threshold per-port 1200
```

| <b>nfpp icmp-guard policy</b>       |  |
|-------------------------------------|--|
| <b>show nfpp icmp-guard summary</b> |  |
| <b>show nfpp icmp-guard hosts</b>   |  |

more

NFPP

Ruijie(config)# **nfpp**  
Ruijie(config-nfpp)# **icmp-guard enable**

| <b>nfpp icmp-guard enable</b>       | ICMP |
|-------------------------------------|------|
| <b>show nfpp icmp-guard summary</b> |      |

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

38.6.3 icmp-guard isolate-period

▮

**icmp-guard isolate-period** {seconds | permanent}

| seconds   | 0 [30, 86400] |
|-----------|---------------|
| permanent |               |

0 ▮

NFPP

▮

|                |               |
|----------------|---------------|
|                |               |
| <i>seconds</i> | [180, 86400]ш |

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard monitor-period 180
```

|                                     |  |
|-------------------------------------|--|
|                                     |  |
| <b>show nfpp icmp-guard summary</b> |  |
| <b>show nfpp icmp-guard hosts</b>   |  |
| <b>clear nfpp icmp-guard hosts</b>  |  |

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

38.6.5 icmp-guard monitored-host-limit

▮

icmp-guard monitored-host-limit *number*

|               |            |
|---------------|------------|
|               |            |
| <i>number</i> | 1          |
|               | 4294967295 |

1000 ▮

NFPP

1000  
1000 I %ERROR The value that you  
configured is smaller than current monitored hosts 1000  
please clear a part of monitored hosts. Ł  
▮  
I % NFPP\_ICMP\_GUARD-4-SESSION\_LIMIT: Attempt to  
exceed limit of 1000 monitored hosts. Ł ▮

Ruijie(config)# **nfpp**  
Ruijie(config-nfpp)# **icmp-guard monitored-host-limit 200**

|                                     |  |
|-------------------------------------|--|
|                                     |  |
| <b>show nfpp icmp-guard summary</b> |  |

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

## 38.6.6 icmp-guard rate-limit

Ш

NFPP

|  
|

|  
|

▮

VLAN 1      g 0/1      ▮

Ruijie# **clear nfpp icmp-guard hosts vlan 1 interface g 0/1**



```
show nfpp icmp-guard summary
```

10.4

### 38.6.10 nfpp icmp-guard isolate-period

▮

**nfpp icmp-guard isolate-period {seconds | permanent}**

seconds

0

▮

0 [30, 86400]

permanent

▮

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

```
Ruijie(config-if)# nfpp icmp-guard isolate-period 180
```

icmp-guard isolate-period

```
show nfpp icmp-guard summary
```

10.4

### 38.6.11 nfpp icmp-guard policy

▮

**nfpp icmp-guard policy { per-src-ip | per-port} rate-limit-pps attack-threshold-pps**

| <b>per-src-ip</b>           | IP ▮    |
|-----------------------------|---------|
| <b>per-port</b>             | ▮       |
| <i>rate-limit-pps</i>       | 1 9999▮ |
| <i>attack-threshold-pps</i> | 1 9999▮ |

▮

▮

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

Ruijie(config-if)# **nfpp icmp-guard policy per-src-ip 5 10**

Ruijie(config-if)# **nfpp icmp-guard policy per-port 100 200**

| <b>icmp-guard attack-threshold</b>  |  |
|-------------------------------------|--|
| <b>icmp-guard rate-limit</b>        |  |
| <b>show nfpp icmp-guard summary</b> |  |
| <b>show nfpp icmp-guard hosts</b>   |  |
| <b>clear nfpp icmp-guard hosts</b>  |  |

| 10.4 |  |
|------|--|

## 38.7 ND

### 38.7.1 nd-guard attack-threshold

▮

[illegible]

|    |  |   |    |      |
|----|--|---|----|------|
|    |  | / | 30 |      |
| 30 |  | / |    | 30 Ш |

|  |      |
|--|------|
|  | NFPP |
|--|------|

\_\_\_\_\_

ND

NFPP

Ruijie(config)# **nfpp**  
Ruijie(config-nfpp)# **nd-guard enable**

| <b>nfpp nd-guard enable</b>       | ND |
|-----------------------------------|----|
| <b>show nfpp nd-guard summary</b> |    |

| 10.4 |  |
|------|--|

38.7.3 nd-guard rate-limit

Ш

| <b>ns-na</b>       |           |
|--------------------|-----------|
| <b>rs</b>          |           |
| <b>ra-redirect</b> |           |
| <i>pps</i>         | [1,9999]Ш |

15 / 15 Ш

NFPP

```

Ruijie(config)# nfpp
Ruijie(config-nfpp)# nd-guard rate-limit per-port ns-na 10
Ruijie(config-nfpp)# nd-guard rate-limit per-port rs 5
Ruijie(config-nfpp)# nd-guard rate-limit per-port ra-redirect 5

```

|                                   |  |
|-----------------------------------|--|
|                                   |  |
| <b>nfpp nd-guard policy</b>       |  |
| <b>show nfpp nd-guard summary</b> |  |

|      |  |
|------|--|
|      |  |
| 10.4 |  |

### 38.7.4 nfpp nd-guard enable

ND      Ⅲ

**nfpp nd-guard enable**

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

ND      Ⅲ

ND      Ⅲ

```

Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp nd-guard enable

```

|                                   |    |
|-----------------------------------|----|
|                                   |    |
| <b>nd-guard enable</b>            | ND |
| <b>show nfpp nd-guard summary</b> |    |

|  |      |  |
|--|------|--|
|  |      |  |
|  | 10.4 |  |

### 38.7.5 nfpp nd-guard policy

⏏

**nfpp nd-guard policy per-port {ns-na | rs | ra-redirect} *rate-limit-pps attack-thresh  
old-pps***

|  |       |  |
|--|-------|--|
|  |       |  |
|  | ns-na |  |
|  | rs    |  |

|  |                            |  |
|--|----------------------------|--|
|  | nd-guard attack-threshold  |  |
|  | nd-guard rate-limit        |  |
|  | show nfpp nd-guard summary |  |
|  |                            |  |
|  |                            |  |
|  | 10.4                       |  |

38.8 NFPP

38.8.1 clear nfpp log

|                |   |   |
|----------------|---|---|
| NFPP           |   |   |
| clear nfpp log |   |   |
|                |   |   |
|                | - | - |
|                |   |   |
|                |   |   |
|                |   |   |
| S*0            |   |   |

## 38.8.2 log-buffer entries

NFPP



**log-buffer entries** *number*

|               |          |
|---------------|----------|
|               |          |
| <i>number</i> | [0,1024] |

256

NFPP

NFPP

50


Ruijie(config)# **nfpp**Ruijie(config-nfpp)# **log-buffer entries 50**

|                                                                                      |                                                                                               |
|--------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
|                                                                                      |                                                                                               |
| <b>log-buffer logs</b> <i>number_of_message interval</i><br><i>length_in_seconds</i> | NFPP<br> |
| <b>show nfpp log</b>                                                                 | NFPP                                                                                          |

|      |  |
|------|--|
|      |  |
| 10.4 |  |

## 38.8.3 log-buffer logs

NFPP



**log-buffer logs** *number\_of\_message interval length\_in\_seconds*

|                          |                                                                                                  |
|--------------------------|--------------------------------------------------------------------------------------------------|
|                          |                                                                                                  |
| <i>number_of_message</i> | 0-1024 0<br> |



```

Ruijie
  NFPP
    VLAN
      
```

```

Ruijie(config)# nfpp
Ruijie(config-nfpp)# logging vlan 1-3,5

Ruijie(config-nfpp)# logging interface G 0/1

```

|                       |      |
|-----------------------|------|
|                       |      |
| show nfpp log summary | NFPP |

|      |  |
|------|--|
|      |  |
| 10.4 |  |

38.8.5 show nfpp log

```

Ruijie
  NFPP
    show nfpp log summary
      NFPP
        show nfpp log buffer [statistics]

```

|            |      |
|------------|------|
|            |      |
| statistics | NFPP |

"\_"      ▮

▮

%NFPP\_ARP\_GUARD-4-DOS\_DETECTED: Host<IP=N/A,MAC=0000.0000.0004,port=Gi4/1,VLAN=1> was detected.(2009-07-01 13:00:00)

NFPP      ▮

Ruijie#**show nfpp log summary**

Total log buffer size : 10

Syslog rate : 1 entry per 2 seconds

Logging:

VLAN 1-3, 5

interface Gi 0/1

interface Gi 0/2

NFPP      ▮

Ruijie#**show nfpp log buffer statistics**

There are 6 logs in buffer.

NFPP      ▮

Ruijie#**show nfpp log buffer**

| Protocol  | VLAN | Interface | IP address | MAC address | Reason |
|-----------|------|-----------|------------|-------------|--------|
| Timestamp |      |           |            |             |        |

|                     |       |       |         |                |                |
|---------------------|-------|-------|---------|----------------|----------------|
| -----               | ----- | ----- | -----   | -----          | -----          |
| -----               |       |       |         |                |                |
| ARP                 | 1     | Gi0/1 | 1.1.1.1 | -              | DoS            |
| 2009-05-30 16:23:10 |       |       |         |                |                |
| ARP                 | 1     | Gi0/1 | 1.1.1.1 | -              | ISOLATED       |
| 2009-05-30 16:23:10 |       |       |         |                |                |
| ARP                 | 1     | Gi0/1 | 1.1.1.2 | -              | DoS            |
| 2009-05-30 16:23:15 |       |       |         |                |                |
| ARP                 | 1     | Gi0/1 | 1.1.1.2 | -              | ISOLATE_FAILED |
| 2009-05-30 16:23:15 |       |       |         |                |                |
| ARP                 | 1     | Gi0/1 | -       | 0000.0000.0001 | SCAN           |
| 2009-05-30 16:30:10 |       |       |         |                |                |
| ARP                 | -     | Gi0/2 | -       | -              | PORT_ATTACKED  |
| 2009-05-30 16:30:10 |       |       |         |                |                |

Protocol

- Ä ARP ARP
- Ä IP IP
- Ä ICMP ICMP
- Ä DHCP DHCP
- Ä DHCPv6 DHCPv6
- Ä NS-NA ND
- Ä RS ND
- Ä RA-REDIRECT ND

Reason 5

- Ä DoS
- Ä ISOLATED
- Ä ISOLATE\_FAILED
- Ä SCAN
- Ä PORT\_ATTACKED

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

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

ARP 三

**show nfpp arp-guard scan** [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*ip-address*]  
s] [*mac-address*]]]

| <b>statistics</b>   | ARP |
|---------------------|-----|
| <i>vid</i>          |     |
| <i>interface-id</i> |     |
| <i>ip-address</i>   | IP  |
| <i>mac-address</i>  | MAC |

Ruijie# **show nfpp arp-guard scan statistics**

ARP scan table has 4 record(s).

└─ ARP 4 ─┘

Ruijie# **show nfpp arp-guard scan**

| VLAN | interface | IP address | MAC address    | timestamp              |
|------|-----------|------------|----------------|------------------------|
| ---- | -----     | -----      | -----          | -----                  |
| 1    | Gi0/1     | N/A        | 0000.0000.0001 | 2008-01-23<br>16:23:10 |
| 2    | Gi0/2     | 1.1.1.1    | 0000.0000.0002 | 2008-01-23<br>16:24:10 |
| 3    | Gi0/3     | N/A        | 0000.0000.0003 | 2008-01-23<br>16:25:10 |
| 4    | Gi0/4     | N/A        | 0000.0000.0004 | 2008-01-23<br>16:26:10 |

Total 4 record(s)

└─ timestamp ─┘ ARP └─ 2008-01-23 16:23:10 ─┘  
2008 1 23 16 23 10 ARP 三

Ruijie# **show nfpp arp-guard scan vlan 1 interface G 0/1**  
0000.0000.0001

| VLAN              | interface | IP address | MAC address    | timestamp              |
|-------------------|-----------|------------|----------------|------------------------|
| ----              | -----     | -----      | -----          | -----                  |
| 1                 | Gi0/1     | N/A        | 0000.0000.0001 | 2008-01-23<br>16:23:10 |
| Total 1 record(s) |           |            |                |                        |

|                               |     |
|-------------------------------|-----|
|                               |     |
| arp-guard scan-threshold      |     |
| nfpp arp-guard scan-threshold |     |
| clear nfpp arp-guard scan     | ARP |

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

### 38.9.3 show nfpp arp-guard summary

▮

show nfpp arp-guard summary

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



|                     |     |
|---------------------|-----|
|                     |     |
| <b>statistics</b>   |     |
| <i>vid</i>          |     |
| <i>interface-id</i> |     |
| <i>mac-address</i>  | MAC |

```

Ruijie# show nfpp dhcp-guard hosts statistics
success    fail    total
-----    -
100         20      120
          120          100          20

```

```

Ruijie# show nfpp dhcp-guard hosts
If column 1 shows '*', it means "hardware failed to isolate host".
VLAN  interface  MAC address  remain-time(seconds)
----  -
1     gi0/2      0000.0000.0001  10
*2    gi0/1      0000.0000.0002  20
Total 2 host(s)

```

|                                    |  |
|------------------------------------|--|
|                                    |  |
| <b>clear nfpp dhcp-guard hosts</b> |  |

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

## 38.10.2 show nfpp dhcp-guard summary

▮

show nfpp dhcp-guard summary

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

|

|

|

▮

Ruijie# show nfpp dhcp-guard summary

|  |                                       |      |
|--|---------------------------------------|------|
|  | <b>dhcp-guard rate-limit</b>          |      |
|  | <b>nfpp dhcp-guard enable</b>         | DHCP |
|  | <b>nfpp dhcp-guard isolate-period</b> |      |
|  | <b>nfpp dhcp-guard policy</b>         |      |

|  |      |  |
|--|------|--|
|  |      |  |
|  | 10.4 |  |

## 38.11 DHCPv6

▮

└ remain-time(seconds) ┘

▮

Ruijie# **show nfpp dhcpv6-guard hosts**

If column 1 shows '\*', it means "hardware failed to isolate host".

| VLAN            | interface | MAC address    | remain-time(seconds) |
|-----------------|-----------|----------------|----------------------|
| 1               | gi0/2     | 0000.0000.0001 | 10                   |
| *2              | gi0/1     | 0000.0000.0002 | 20                   |
| Total 2 host(s) |           |                |                      |

|                                      |  |
|--------------------------------------|--|
|                                      |  |
| <b>clear nfpp dhcpv6-guard hosts</b> |  |

|      |  |
|------|--|
|      |  |
| 10.4 |  |

### 38.11.2 show nfpp dhcpv6-guard summary

▮

**show nfpp dhcpv6-guard summary**

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

▮

Ruijie# **show nfpp dhcpv6-guard summary**

Format of column Rate-limit and Attack-threshold is per-src-ip /per-src-mac/per-port.

| Interface | Status | Isolate-period | Rate-limit | Attack-threshold |
|-----------|--------|----------------|------------|------------------|
|-----------|--------|----------------|------------|------------------|

|        |         |     |         |          |
|--------|---------|-----|---------|----------|
| Global | Enable  | 300 | -/5/150 | -/10/300 |
| Gi 0/1 | Enable  | 180 | -/6/-   | -/8/-    |
| Gi 0/2 | Disable | 200 | -/5/30  | -/10/50  |

|                     |    |
|---------------------|----|
|                     |    |
| <b>statistics</b>   |    |
| <i>vid</i>          |    |
| <i>interface-id</i> |    |
| <i>ip-address</i>   | IP |

Ruijie#**show nfpp icmp-guard hosts statistics**

success      fail      total

-----      ---      -----

100              20              120

                1              120              100              20              1 11

Ruijie# **show nfpp icmp-guard hosts**

If column 1 shows '\*', it means "hardware failed to isolate host".

VLAN    interface IP address      remain-time(s)

----    -      -      -

1      Gi0/1      1.1.1.1      110

2      Gi0/2      1.1.2.1      61

Total 2 host(s)

|                                    |  |
|------------------------------------|--|
|                                    |  |
| <b>clear nfpp icmp-guard hosts</b> |  |

|      |  |
|------|--|
|      |  |
| 10.4 |  |

### 38.12.2 show nfpp icmp-guard summary

▮

show nfpp icmp-guard summary

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

▮

|  |                                       |  |
|--|---------------------------------------|--|
|  | <b>nfpp icmp-guard isolate-period</b> |  |
|  | <b>nfpp icmp-guard policy</b>         |  |

|  |      |  |
|--|------|--|
|  | 10.4 |  |
|--|------|--|

38.13 ND

38.13.1 show nfpp nd-guard summary

▮

show nfpp nd-guard summary

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

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

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

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

▮

Ruijie# show nfpp nd-guard summary  
Format of column Rate-limit and Attack-threshold is NS-NA/RS/R  
A-REDIRECT.

| Interface | Status  | Rate-limit | Attack-threshold |
|-----------|---------|------------|------------------|
| Global    | Enable  | 20/5/10    | 40/10/20         |
| Gi 0/1    | Enable  | 15/15/15   | 30/30/30         |
| Gi 0/2    | Disable | -/5/30     | -/10/50          |

|   |            |        |                    |
|---|------------|--------|--------------------|
| 1 | Interface  | Global | ▮                  |
| 2 | Status     |        | ▮                  |
| 3 | Rate-limit | /      | /                  |
|   | /          | /      | Attack-threshold ▮ |
|   | └ - ┘      | ▮      |                    |
|   | └ -/5/30 ┘ | G 0/2  | /                  |
|   | 5          | /      | 30▮                |

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

|                                  |                     |
|----------------------------------|---------------------|
| NFPP                             |                     |
| <b>ndfpp nd6(agu)y</b>           | G!5B ÂD_6" 4" Î 66" |
| <b>nd-guard attack-threshold</b> |                     |
| <b>nd-guard enable</b>           | ND                  |
| <b>nd-guard ra</b>               |                     |

# 39 ACL

| €                     | € | Ш                                                                                                                  |
|-----------------------|---|--------------------------------------------------------------------------------------------------------------------|
| id                    |   | Ш<br>IP ACL 1-99 1300-1999<br>IP ACL 100-199 2000-2699<br>MAC ACL 700-799<br>ACL 2700-2899                         |
| name                  |   | ACL                                                                                                                |
| sn                    |   | ACL ( )                                                                                                            |
| start-sn              |   |                                                                                                                    |
| inc-sn                |   |                                                                                                                    |
| deny                  |   |                                                                                                                    |
| permit                |   |                                                                                                                    |
| prot                  |   | IPv6 ipv6 icmp tcp<br>udp 0-255 IPv4 eigrp gre<br>ipinip igmp nos ospf icmp udp tcp ip<br>IP 0-255<br>icmp/tcp/udp |
| interface idx         |   |                                                                                                                    |
| src                   |   |                                                                                                                    |
| src-wildcard          |   | Ш 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          |   | Ш 0.255.0.32                                                                                                       |

|                        |                           |
|------------------------|---------------------------|
| precedence precedence  | 0-7                       |
| range                  |                           |
| 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 lt- eq- gt- neq- |
| operator port[port]    | range-<br>port            |

|   |            |    |   |     |    |
|---|------------|----|---|-----|----|
| B | MAC        | 6  | P |     | 35 |
| C |            | 12 | Q | IP  | 36 |
| D | VLAN tag   | 14 | R | ip  | 38 |
| E | DSAP(<br>) | 18 | S | ip  | 42 |
| F | SSAP(<br>) | 19 | T | TCP | 46 |
| G | Ctrl       | 20 | U | TCP | 48 |
| H | Org Code   |    |   |     |    |

## 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**] [**range** *lower upper*] [**time-range** *time-range-name*]

Ä

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*]

Ä

Protocol

**access-list** *id* {**deny** | **permit**} **protocol** [**VID** [*out*][*inner in*]] {*source source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any** } {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*]

Ä

Expert

**Internet Control Message Protocol (ICMP)**

**access-list** *id* {**deny** | **permit**} **icmp** [**VID** [*out*][*inner in*]] {*source source-wildcard* | **host**

**any** {*destination-mac-address* | **host** *destination-mac-address* | **any**} [**time-range** *time-range-name*]



|  |                  |                 |
|--|------------------|-----------------|
|  | <b>match-all</b> | <i>tcp flag</i> |
|  | <i>tcp-flag</i>  | tcp flag        |

ACL

**access-list**

≡ ≠ ≠ S

- Ä dod-host-prohibited
- Ä dod-net-prohibited
- Ä echo
- Ä echo-reply
- Ä fragment-time-exceeded
- Ä general-parameter-problem
- Ä host-isolated
- Ä host-precedence-unreachable
- Ä host-redirect
- Ä host-tos-redirect
- Ä host-tos-unreachable
- Ä host-unknown
- Ä host-unreachable
- Ä information-reply
- Ä information-request
- Ä mask-reply
- Ä mask-request
- Ä mobile-redirect
- Ä net-redirect
- Ä net-tos-redirect
- Ä net-tos-unreachable
- Ä net-unreachable
- Ä network-unknown
- Ä no-room-for-option
- Ä option-missing
- Ä packet-too-big
- Ä parameter-problem
- Ä port-unreachable
- Ä precedence-unreachable
- Ä protocol-unreachable
- Ä redirect
- Ä router-advertisement
- Ä router-solicitation
- Ä source-quench
- Ä source-route-failed
- Ä time-exceeded
- Ä timestamp-reply
- Ä timestamp-request

|   |              |     |  |
|---|--------------|-----|--|
| Ä | ttl-exceeded |     |  |
| Ä | unreachable  |     |  |
|   | TCP          | TCP |  |
| Ä | bgp          |     |  |
| Ä | chargen      |     |  |
| Ä | cmd          |     |  |
| Ä | daytime      |     |  |
| Ä | discard      |     |  |
| Ä | domain       |     |  |
| Ä | echo         |     |  |
| Ä | exec         |     |  |
| Ä | finger       |     |  |
| Ä | ftp          |     |  |
| Ä | ftp-data     |     |  |
| Ä | gopher       |     |  |
| Ä | hostname     |     |  |
| Ä | ident        |     |  |
| Ä | irc          |     |  |
| Ä | klogin       |     |  |
| Ä | kshell       |     |  |
| Ä | login        |     |  |
| Ä | nntp         |     |  |
| Ä | pim-auto-rp  |     |  |
| Ä | pop2         |     |  |
| Ä | pop3         |     |  |
| Ä | smtp         |     |  |
| Ä | sunrpc       |     |  |
| Ä | syslog       |     |  |
| Ä | tacacs       |     |  |
| Ä | talk         |     |  |
| Ä | telnet       |     |  |
| Ä | time         |     |  |
| Ä | uucp         |     |  |
| Ä | whois        |     |  |
| Ä | www          |     |  |
|   | UDP          | UDP |  |
| Ä | biff         |     |  |
| Ä | bootpc       |     |  |

Ä bootps  
Ä discard  
Ä dnsix  
Ä domain  
Ä echo  
Ä isakmp  
Ä mobile-ip  
Ä nameserver  
Ä netbios-dgm  
Ä netbios-ns  
Ä netbios-ss  
Ä ntp  
Ä pim-auto-rp  
Ä rip  
Ä snmp  
Ä snmptrap  
Ä sunrpc  
Ä syslog  
Ä tacacs  
Ä talk  
Ä tftp  
Ä time  
Ä who  
Ä xdmcp

Ethernet-type

Ä aarp  
Ä arp  
Ä appletalk  
Ä decnet-iv  
Ä diagnostic  
Ä etype-6000  
Ä etype-8042  
Ä lat  
Ä lavc-sca  
Ä mop-console  
Ä mop-dump  
Ä mumps  
Ä netbios

Ä vines-echo

Ä 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

S

± "

### 39.1.2 deny

(deny)

III

#### 1 IP

[sn] **deny** {source source-wildcard | **host** source | **any**}

#### 2 IP

[sn] **deny protocol** source source-wildcard destination destination-wildcard [**precedence** precedence] [**tos** tos] [**fragments**] [**range** lower upper] [**time-range** time-range-name]

IP

#### Ä Internet Control Message Protocol (ICMP)

[sn] **deny icmp** {source source-wildcard | **host** source | **any**} {destination destination-wildcard | **host** destination | **any**} [icmp-type] [[icmp-type [icmp-code]] | [icmp-message]] [**precedence** precedence] [**tos** tos] [**fragments**] [**time-range** time-range-name]

#### Ä Transmission Control Protocol (TCP)

[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**] [**range** lower upper] [**time-range** time-range-name] [**match-all** tcp-flag]

#### Ä 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**] [**range** lower upper] [**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

*destination-wildcard* | **host** *destination* | **any** {**host** *destination-mac-address*

**[[icmp-type [icmp-code]] | [icmp-message]] [dscp dscp] [flow-label flow-label] [fragments]  
[time-range time-range-name]**

Ä **Transmission Control Protocol (TCP)**

**[sn] deny tcp {source-ipv6-prefix / prefix-length | host source-ipv6-address | any}[operator  
port[port]] {destination-ipv6-prefix /prefix-length | host destination-ipv6-address | any}  
[operator port [port]] [dscp dscp] [flow-label flow-label] [fragments] [range lower upper]  
[time-range time-range-name] [match-all tcp-flag]**

Ä **User Datagram Protocol (UDP)**

**[sn] deny udp {source-ipv6-prefix/prefix-length | host source-ipv6-address | any} [operator  
port [port]] {destination-ipv6-prefix /prefix-length | host destination-ipv6-address |  
any}[operator port [port]] [dscp dscp] [flow-label flow-label] [fragments] [range lower  
upper] [time-range time-range-name]**

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

*Sn*



1

```

Ruijie(config)# ipv6 access-list extended v6-acl
Ruijie(config-ipv6-nacl)# 11 deny ipv6 host 192.168.4.12 any
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
11 deny ipv6 host 192.168.4.12 any
Ruijie(config-ipv6-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ipv6 traffic-filter v6-acl in

```

| show access-lists   |          |
|---------------------|----------|
| ipv6 traffic-filter | 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              |          |

| V10.0 | V10.0 arp<br>V10.2(3) |
|-------|-----------------------|

### 39.1.3 expert access-group

EXPERT ACL

1

no

1

**expert access-group** {*id* | *name*} {*in* | *out*}

**no expert access-group** {*id* | *name*} {*in* | *out*}

| <i>id</i>   | Expert 2700-2899 |
|-------------|------------------|
| <i>name</i> | Expert           |





**show expert access-lists**



1

  
 **ip access-group**

山

fastEthernet0/0

120

Ruijie(config)# **interface fastEthernet**

```

1          ACL
Ruijie(config)# ip access-list standard std-acl
Ruijie(config-std-nacl)# show ip access-lists
ip access-list standard std-acl
Ruijie(config-std-nacl)#

2          ACL
Ruijie(config)# ip access-list extended 123
Ruijie(config-ext-nacl)# show ip access-lists
ip access-list extended 123

```

| show ip access-lists | IP |
|----------------------|----|

| V10.0 | V10.0 |
|-------|-------|

### 39.1.7 ip access-list resequence

ip ACL IPv6 ACL 山

no

**ip access-list resequence {*id* | *name*} start-sn inc-sn**

**no ip access-list resequence {*id* | *name*}**

| <i>id</i>       | ACL |
|-----------------|-----|
| <i>name</i>     | ACL |
| <i>start-sn</i> |     |
| <i>inc-sn</i>   |     |

```

start-sn 10
inc-sn 10

```

show access-lists

III

ACL

Ruijie# **show access-lists**

ip access-list standard 1

10 permit host 192.168.4.12

20 deny any any

Ruijie# **config**

Ruijie(config)# **ip access-list resequence 1 21 43**

Ruijie(config)# **exit**

Ruijie# **show access-lists**

ip access-list standard 1

21 permit host 192.168.4.12

64 deny any any

|                   |  |
|-------------------|--|
|                   |  |
| show access-lists |  |

|       |       |
|-------|-------|
|       |       |
| V10.0 | V10.0 |

### 39.1.8 ipv6 traffic-filter

IPV6 ACL

III

no

III

**ipv6 traffic-filter** *name* {in | out}

**no ipv6 traffic-filter** *name* {in | out}

|      |      |
|------|------|
|      |      |
| name | IPV6 |
| in   |      |
| out  |      |

IPV6 ACL

ACL  
traffic-filter

▮ show ipv6

```

access-list v6-acl      Gigabit    1
Ruijie(config)# interface GigaEthernet 0/1
Ruijie(config-if)# ipv6 traffic-filter v6-acl in

```

show access-group

ACL ▮

V10.0

V10.0

### 39.1.9 ipv6 access-list

IPV6 ACL

▮

no

ACL

ipv6 access-list *name*

no ipv6 access-list *name*

*name*

ACL

show access-lists

▮

```

IPV6    ACL
Ruijie(config)# ipv6 access-list v6-acl
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
Ruijie(config-ipv6-nacl)#

```

|  |                        |       |
|--|------------------------|-------|
|  |                        |       |
|  |                        |       |
|  | show ipv6 access-lists | IPV6  |
|  |                        |       |
|  |                        |       |
|  |                        |       |
|  | V10.0                  | V10.0 |
|  |                        |       |

39.1.10 MAC access-group

MAC ACL

no

mac access-group {id | name}{in ||/TT54/TT1 1 Tf-0.0007 Tc 0.0029 6w -34.6698-2.08171837mac a57C





|  |       |       |
|--|-------|-------|
|  |       |       |
|  | V10.0 | V10.0 |

### 39.1.13 permit

(permit)

III

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**] [**range** lower upper] [**time-range** time-range-name]

IP

Ä **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]

Ä **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**] [**range** lower upper] [**time-range** time-range-name] [**match-all** tcp-flag]

Ä **User Datagram Protocol (UDP)**

[sn] **permit udp** {source source-wildcard | **host** source | **any**} [operator port [port]] {destination destination-wildcard | **host** destination | **any**} [operator port [port]]

a host

o

ild

## Ethernet-type cos

[sn] **permit** {*ethernet-type*} **cos** [*out*] [*inner in*] [**VID** [*out*][*inner in*]] {*source source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any**} {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**time-range** *time-range-name*]

## Protocol

[sn] **permit protocol** [**VID** [*out*][*inner in*]] {*source source-wildcard* | **host** *Source* | **any**} {**host** *source-mac-address* | **any**} {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*]

## Expert

## Ä Internet Control Message Protocol (ICMP)

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

## Ä Transmission Control Protocol (TCP)

[sn] **permit tcp** [**VID** [*out*][*inner in*]] {*source source-wildcard* | **host** *Source* | **any**} {**host** *source-mac-address* | **any**} [*operator* **port** [*port*]] {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [*operator* **port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag*]

## Ä 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**] [**range** *lower upper*]

## IPV6

## Ä Internet Control Message Protocol (ICMP)

```
[sn] permit icmp {source-ipv6-prefix / prefix-length | any source-ipv6-address | host}
{destination-ipv6-prefix / prefix-length | host destination-ipv6-address | any} [icmp-type]
[[icmp-type [icmp-code]] | [icmp-message]] [dscp dscp] [flow-label flow-label][fragments]
[time-range time-range-name]
```

## Ä Transmission Control Protocol (TCP)

```
[sn] permit tcp {source-ipv6-prefix / prefix-length | host source-ipv6-address | any}
[operator port [port]] {destination-ipv6-prefix / prefix-length | host destination-ipv6-address
| any} [operator port [port]] [dscp dscp] [flow-label flow-label] [fragments] [range lower
upper] [time-range time-range-name] [match-all tcp-flag]
```

## Ä User Datagram Protocol (UDP)

```
[sn] permit udp {source-ipv6-prefix / prefix-length | host source-ipv6-address | any}
[operator port [port]] {destination-ipv6-prefix / prefix-length | host destination-ipv6-address
| any} [operator port [port]] [dscp dscp] [flow-label flow-label] [fragments] [range lower
upper] [time-range time-range-name]
```

|      |   |
|------|---|
|      |   |
| deny | - |

ACL

ACL

ACL

```

1                               Expert Extended ACL      ACL      IP
192.168.4.12      MAC      001300498272      TCP      11
Ruijie(config)# expert access-list extended exp-acl
Ruijie(config-exp-nacl)# permit tcp host 192.168.4.12 host
0013.0049.8272 any any
Ruijie(config-exp-nacl)# deny any any any any
Ruijie(config-exp-nacl)# show access-lists
expert access-list extended exp-acl
10 permit tcp host 192.168.4.12 host 0013.0049.8272 any any
20 deny any any any any
Ruijie(config-exp-nacl)#
2      IP      ACL                               IP      192.168.4.12      TCP
```

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

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ipv6 traffic-filter v6-acl in
```

| show access-lists   |          |
|---------------------|----------|
| 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 |
| deny                | ACL      |

| V10.0 | V10.0 arp<br>V10.2(3) Ш |
|-------|-------------------------|

39.2

39.2.1 show access-group

ACL

```
show access-group [interface <interface>]
```

| <interface> |  |
|-------------|--|

ACL

ACL

Ruijie# **show access-group**

```
Ruijie# show access-lists n_acl
ip access-list standard n_acl
Ruijie# show access-lists 102
ip access-list extended 102
Ruijie# show access-lists
ip access-list standard n_acl
ip access-list extended 101
mac access-list extended mac_acl
expert access-list extended exp_acl
ipv6 access-list extended v6_acl
```

| ip access-list     | IP ACL Ⅲ   |
|--------------------|------------|
| mac access-list    | MAC ACL    |
| expert access-list | Expert ACL |
| ipv6 access-list   | IPv6 ACL   |

| V10.0 | V10.0 |
|-------|-------|

39.2.3 show expert access-group

Expert Ⅲ

```
show expert access-group [interface <interface>]
```

| <interface> |  |
|-------------|--|

Expert ACL Expert ACLⅢ



ACL

---

V10.0

V10.0

MAC ACL

MAC ACL

```
Ruijie# show mac access-group interface gigabitethernet 0/3
mac access-group mm in
Applied On interface GigabitEthernet 0/3.
```

| mac access-list | MAC ACL |
|-----------------|---------|

| V10.0 | V10.0 |
|-------|-------|

## 39.3

### 39.3.1 security access-group

**security access-group** {*id*|*name*}

**no security access-group**

| <i>id</i>   | ACL id |
|-------------|--------|
| <i>name</i> | ACL    |

```
Ruijie(config-if)#security access-group 1
```



**security uplink enable**

**no security uplink enable**

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

Ruijie(config-if)#**security uplink enable**

|  |               |  |
|--|---------------|--|
|  |               |  |
|  | show secu-acl |  |

|  |       |       |
|--|-------|-------|
|  |       |       |
|  | V10.2 | V10.2 |

**39.3.4 show security**

**show secu-acl**

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

Ruijie(config-if)#**show secu-acl**



| CoS | DSCP |
|-----|------|
| 0   | 0    |
| 1   | 8    |
| 2   | 16   |
| 3   | 24   |
| 4   | 32   |
| 5   | 40   |
| 6   | 48   |

## 40.2

### 40.2.1 class maps

ACL

**ip access-list** {**extended** | **standard**} { *acl-id* | *acl-name* }

**mac access-list extended** {*acl-id* | *acl-name*}

**expert access-list extended** {*acl-id* | *acl-name*}

**ipv6 access-list extended** *acl-name*

```
4      class-map,      cm
Ruijie(config)# class-map cm
5      ACL
Ruijie(config-cmap)# match access-group me
6      class-map
Ruijie(config-cmap)# exit
```

---



|     |   |   |
|-----|---|---|
| QoS |   |   |
|     |   |   |
|     | - | - |

40.2.4 mls qos cos

|                |             |
|----------------|-------------|
| CoS            |             |
| mls qos cos    | default-cos |
| no mls qos cos |             |
|                |             |

|      |  |
|------|--|
| dscp |  |
| no   |  |

Ruijie(config)# **mls qos map cos-dscp 8 10 16 18 24 26 32 34**

Ruijie(config)# **mls1q16 m8Etp2c0s**

os scheduler

os scheduler [sp | wrr | drr]

os scheduler

| sp  |  |
|-----|--|
| wrr |  |
| drr |  |
| no  |  |

|                      |     |        |
|----------------------|-----|--------|
| <b>dscp</b>          | Qos | DSCP   |
| <i>ip-precedence</i> | Qos | IP-PRE |
| <b>no</b>            |     |        |

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mls qos trust cos
```

|                                                   |   |
|---------------------------------------------------|---|
|                                                   |   |
| <b>show mls qos interface</b> <i>interface-id</i> | - |

S2900                      **cos dscp**

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

## 40.2.10 policy maps

policy map              policymap

**[no] policy-map** *policy-map-name*

policy map              class-map              ,

**[no] class** *class-map-name*

IP              ipdscp              IP

**set ip dscp** *new-dscp*

**no set ip dscp**

**police** *rate-bps burst-byte* [**exceed-action** {**drop** | **dscp** *dscp-value*}]

**no police**

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

|                                                |            |
|------------------------------------------------|------------|
| <i>policy-map-name</i>                         | polycymap  |
| <b>no policy-map</b><br><i>policy-map-name</i> | policy map |
| <i>class-map-name</i>                          | class map  |
| <b>no class</b> <i>class-map-name</i>          |            |
| <i>new-dscp</i>                                | DSCP       |
| <i>rate-bps</i>                                | kbps       |
| <i>burst-byte</i>                              | kbyte      |
| <i>drop</i>                                    |            |
| <i>dscp-value</i>                              | DSCP       |

```

1      policy map,    po
Ruijie(config)# policy-map po
2      class-map cm
Ruijie(config-pmap)# class cm
3      dscp    10
Ruijie(config-pmap-c)# set ip dscp 10
4      1M,      4096k,      dscp 16
Ruijie(config-pmap-c)# police 1000000 4096 exceed-action dscp 16

```

|                        |   |
|------------------------|---|
|                        |   |
| <b>show policy-map</b> | - |

S2900

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

## 40.2.11 priority-queue

[no] priority-queue

| <b>priority-queue</b>    | SP (S2900 ) |
|--------------------------|-------------|
| <b>no priority-queue</b> | WRR         |

WRR

Ruijie(config)# **no priority-queue**

| <b>show mls qos queueing</b> | - |
|------------------------------|---|

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

## 40.2.12 priority-queue cos-map

CoS

**priority-queue cos-map** *qid* *cos0* [*cos1* [*cos2* [*cos3* [*cos4* [*cos5* [*cos6* [*cos7*]]]]]]]

**no priority-queue cos-map**

| <i>qid</i>  | id                  |
|-------------|---------------------|
| <i>cos7</i> | <i>cos0</i> ... CoS |
| <i>no</i>   |                     |

Ruijie(config)# **priority-queue cos-map 1 0 1**

|                              |   |
|------------------------------|---|
|                              |   |
| <b>show mls qos queueing</b> | - |

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

## 40.3

### 40.3.1 show class-map

class map

**show class-map** [*class-name*]

|  |                   |  |
|--|-------------------|--|
|  |                   |  |
|  | <i>class-name</i> |  |

|                   |           |
|-------------------|-----------|
| <i>class-name</i> | class map |
|-------------------|-----------|

|             |
|-------------|
| policy name |
|-------------|

```
Ruijie# show policy-map
```

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

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

### 40.3.3 show mls qos interface

QoS

```
show mls qos interface interface-id [policers]
```

|                     |        |
|---------------------|--------|
|                     |        |
| <i>interface-id</i> |        |
| policers            | police |

QOS

```
Ruijie# show mls qos interface fastEthernet 0/1
```

er

show mls qos queueing

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

Ruijie# show mls qos queueing

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

S2900 cos-to-queue map, wrr weight

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

40.3.6 show mls qos rate-limit

show mls qos rate-limit [interface *interface-id*]

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

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

40.3.7 show mls qos scheduler

show mls qos scheduler

|  |                                |    |
|--|--------------------------------|----|
|  |                                | EÄ |
|  | -                              | -  |
|  |                                |    |
|  |                                |    |
|  |                                |    |
|  |                                |    |
|  | Ruijie# show mls qos scheduler |    |
|  | t(™d™ ",ï/•G6 f "              |    |

# 41 Voice VLAN

## 41.1

### 41.1.1 voice vlan

Voice VLAN VLAN Voice VLAN ID no  
Voice VLAN ID  
voice vlan vlan-id  
no voice vlan

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

Voice VLAN Voice VLAN ID  
1 Voice VLAN



|  |                 |            |
|--|-----------------|------------|
|  | show voice vlan | Voice VLAN |
|  |                 |            |
|  |                 |            |
|  |                 |            |
|  | 10.4            |            |

41.1.2 voice vlan aging

Voice VLAN                      no (wSfXT8(lAqH 8x/0rEE<lp)5GjE5a c8,t8F1c

41.1.3 voice vlan cos

|  |                                  |            |          |
|--|----------------------------------|------------|----------|
|  | Voice VLAN                       | CoS        | no       |
|  |                                  |            |          |
|  | voice vlan cos cos-value         |            |          |
|  | no voice vlan cos                |            |          |
|  |                                  |            |          |
|  | cos-value                        | Voice VLAN | CoS      |
|  |                                  |            |          |
|  | cos-value                        | 6          |          |
|  |                                  |            |          |
|  |                                  | Voice VLAN | CoS DSCP |
|  |                                  |            |          |
|  | 1                                | Voice VLAN | CoS 5    |
|  | Ruijie(config)# voice vlan cos 5 |            |          |
|  |                                  |            |          |
|  | show voice vlan                  | Voice VLAN |          |
|  |                                  |            |          |
|  |                                  |            |          |
|  |                                  |            |          |
|  | 10.4                             |            |          |

41.1.4 voice vlan dscp

|  |                            |      |    |
|--|----------------------------|------|----|
|  | Voice VLAN                 | DSCP | no |
|  |                            |      |    |
|  | voice vlan dscp dscp-value |      |    |
|  | no voice vlan dscp         |      |    |
|  |                            |      |    |

|  |                                    |            |      |      |
|--|------------------------------------|------------|------|------|
|  | dscp-value                         | Voice VLAN | DSCP | W    |
|  | dscp-value                         | 46         | W    |      |
|  |                                    |            |      |      |
|  |                                    | Voice VLAN | CoS  | DSCP |
|  |                                    | W          |      |      |
|  | 1                                  | Voice VLAN | DSCP | 40   |
|  | Ruijie(config)# voice vlan dscp 40 |            |      |      |
|  |                                    |            |      |      |
|  | show voice vlan                    | Voice VLAN |      | W    |
|  |                                    |            |      |      |
|  | S29                                |            | W    |      |
|  |                                    |            |      |      |
|  | 10.4                               |            |      |      |

41.1.5 voice vlan enable

|  |                      |            |             |              |
|--|----------------------|------------|-------------|--------------|
|  |                      | Voice VLAN | W           | no           |
|  | Voice VLAN           | W          |             |              |
|  | voice vlan enable    |            |             |              |
|  | no voice vlan enable |            |             |              |
|  |                      |            |             |              |
|  |                      | Voice VLAN | W           |              |
|  |                      |            |             |              |
|  |                      | Voice VLAN | Voice VLAN  | W            |
|  | Access Port          | Trunk Port | Hybrid Port | Private VLAN |



```
1      OUI      0012.3400.0000  Voice VLAN      Company A
Ruijie(config)# voice vlan mac-address 0012.3400.0000 mask
ffff.ff00.0000 description Company A
```

|                     |                |
|---------------------|----------------|
|                     |                |
| show voice vlan oui | OUI 4 OUI<br>Ш |

|      |  |
|------|--|
|      |  |
| 10.4 |  |

41.1.7 voice vlan mode auto

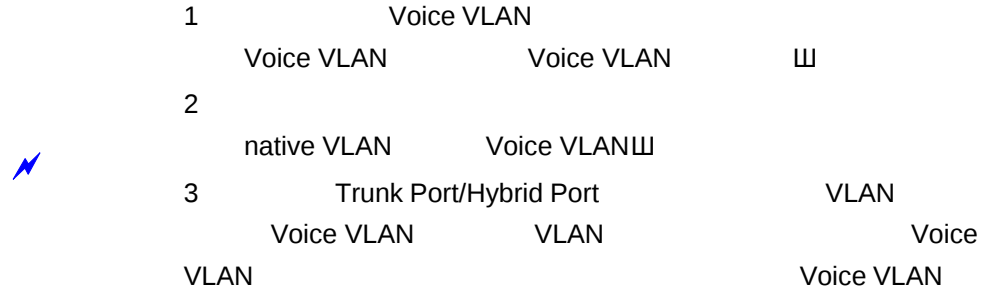
Voice VLAN Ш no  
Voice VLAN Ш  
voice vlan mode auto  
no voice vlan mode auto

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

|              |
|--------------|
| Voice VLAN Ш |
|--------------|

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

Voice VLAN Ш Voice VLAN  
Voice VLAN Ш IP 4  
Voice VLAN Ш



VLAN10=SAN100A  
VLAN

|                                |          |                         |   |
|--------------------------------|----------|-------------------------|---|
| Voice VLAN                     |          | Ш                       |   |
| Voice VLAN                     |          | Ш                       |   |
|                                |          | Voice VLAN ,X ] < õ ã Ä |   |
| ' Ô ] < õ ã âA' Û î Í y [,X\$d | MAC      | MAC                     |   |
| Voice VLAN OUI                 | untagged | Voice VLAN              | Ш |
|                                |          | Voice VLAN tag          |   |
| MAC                            |          | Voice VLAN tag          |   |
| VLAN                           |          | Voice                   | / |

1 Ö ' Ô Voice VLAN Ш  
Ruijie(config)# voice vlan security enable

|      |     |
|------|-----|
| ¥ K€ | £EÄ |
|------|-----|

,XySA'7QHyQD(RO]<1Td<278>6<09TT0 1 Tf-0.88AC4>5.988 Tc 1.252 0 T3 458.9 0.24 1.5 ref137140

Voice VLAN

Voice VLAN

1

```

1 Voice VLAN
Ruijie(config)# show voice vlan
Voice VLAN status: ENABLE //Voice VLAN
Voice VLAN ID: 2 //Voice VLAN ID
Voice VLAN security mode: Security //
Voice VLAN aging time: 5 minutes //
Voice VLAN cos: 6 // CoS
Voice VLAN dscp: 46 // DSCP
Current voice vlan enabled port mode: // Voice VLAN
PORT MODE
-----
Fa0/1 Auto
  
```

| <b>voice vlan</b> <i>vlan-id</i>         | Voice VLAN<br>VLAN | Voice VLAN 1 |
|------------------------------------------|--------------------|--------------|
| <b>voice vlan aging</b> <i>minutes</i>   | Voice VLAN         | 1            |
| <b>voice vlan cos</b> <i>cos-value</i>   | Voice VLAN         | CoS 1        |
| <b>voice vlan dscp</b> <i>dscp-value</i> | Voice VLAN         | DSCP 1       |
| <b>voice vlan enable</b>                 | Voice VLAN         | 1            |
| <b>voice vlan mode auto</b>              | Voice VLAN         | 1            |
| <b>voice vlan security enable</b>        | Voice VLAN         | 1            |

10.4



---

# 42

## 42.1

### 42.1.1 rgos-security compatible

|                             |                                           |      |               |
|-----------------------------|-------------------------------------------|------|---------------|
|                             |                                           | RGOS | rgos-security |
| compatible                  |                                           | RGOS | no            |
| rgos-security compatible    |                                           |      |               |
| no rgos-security compatible |                                           |      |               |
|                             |                                           |      |               |
|                             |                                           | RGOS |               |
|                             |                                           |      |               |
|                             |                                           |      |               |
|                             |                                           |      |               |
|                             | 1                                         | RGOS |               |
|                             | Ruijie(config)#no gos-security compatible |      |               |
|                             |                                           |      |               |
|                             |                                           |      |               |

# 43 RLDP

## 43.1

### 43.1.1 rldp detect-interval

|  |                                        |      |
|--|----------------------------------------|------|
|  | RLDP                                   | ⏏    |
|  | rldp detect-interval interval          |      |
|  | no rldp detect-interval                |      |
|  |                                        |      |
|  | interval                               | 2-15 |
|  | 3                                      | ⏏    |
|  |                                        | ⏏    |
|  | stp                                    | ×    |
|  | ⏏                                      | stp  |
|  | 5s                                     | :    |
|  | Ruijie(config)# rldp detect-interval 5 |      |
|  |                                        |      |
|  | rldp detect-max                        |      |
|  |                                        |      |
|  |                                        |      |
|  | -                                      | -    |

### 43.1.2 rldp detect-max

|  |      |
|--|------|
|  | RLDP |
|  | ⏏    |

**rldp detect-max** *num*

**no rldp detect-max**

|  |                                          |        |
|--|------------------------------------------|--------|
|  |                                          |        |
|  | <i>num</i>                               | , 2-10 |
|  | 2                                        |        |
|  | ⌘                                        |        |
|  |                                          | ⌘      |
|  | 5                                        |        |
|  | Ruijie(config)# <b>rldp detect-max 5</b> |        |
|  |                                          |        |
|  | <b>rldp detect-interval</b>              |        |
|  |                                          |        |
|  |                                          |        |
|  | -                                        | -      |

43.1.3 rldp enable

RLDP ⌘

**rldp enable**

**no rldp enable**

|  |   |  |
|--|---|--|
|  |   |  |
|  |   |  |
|  | ⌘ |  |
|  | ⌘ |  |

RLDP

RLDP

⌘

Ruijie(config)# **rldp enable****rldp port**

RLDP

-

-

### 43.1.4 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**

⌘

⌘

RLDP

RLDP

⌘

fas 0/1

rldp

```

    1
Ruijie(config)# interface fas 0/1
Ruijie(config-if)# rldp port loop-detect block

```

|             |      |
|-------------|------|
|             |      |
| rldp enable | rldp |

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

43.1.5 rldp reset

rldp shutdown    disable                      rldp    1

rldp reset

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

```

    1

```

```

Ruijie# rldp reset

```

|             |      |
|-------------|------|
|             |      |
| rldp enable | Rldp |

43.2

43.2.1 show rldp

|                                            |                                      |
|--------------------------------------------|--------------------------------------|
| rldp                                       | 山                                    |
| show rldp [interface <i>interface-id</i> ] |                                      |
|                                            | %T1 1 p Tc 10.02 0 0 10.02 585286Tf0 |

EXEC

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

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

**44**                      **TPP**

## 44.1

### 44.1.1 topology guard

|                | no   | topology guard | no   |
|----------------|------|----------------|------|
| no             | 0.00 | 0.00           | 0.00 |
| topology guard | 0.00 | 0.00           | 0.00 |

**[no] topology guard**

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

no

W

[no] tp-guard port enable

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

|  |        |   |     |
|--|--------|---|-----|
|  |        |   | CPU |
|  | ( AP ) | W |     |

Ruijie(config-if)# tp-guard port enable  
Ruijie(config-if)# no tp-guard port enable

|  |                |  |
|--|----------------|--|
|  |                |  |
|  | topology guard |  |

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

|

|

|

|

|

|

tpp

Ш

Ruijie# show tpp

|                |  |
|----------------|--|
|                |  |
| topology guard |  |

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



45.1.2 copy

⏏

copy source-url destination-url

| source-url      | URL⏏⏏ |
|-----------------|-------|
| destination-url | URL⏏⏏ |

copy

⏏

URL

| flash:  | flash⏏⏏<br>URLflash⏏<br>flash⏏ |
|---------|--------------------------------|
| tftp:   | TFTP                           |
| xmodem: | xmodem                         |
| slave:  | flash                          |
| usb0:   | usb                            |
| usb1:   | usb                            |
| sd0:    | sd                             |

⚡

&

URL

1 tftp

---

```
Ruijie#copy tftp://192.168.201.54/rgos.bin flash:/  
2          tftp  
Ruijie#copy flash:/rgos.bin tftp://192.168.201.54/rgos.bin  
3          xmodem  
Ruijie# copy xmodem: flash:/config.text  
4          U  
Ruijie#copy flash:/config.text usb0:/config.text  
5  
Ruijie#copy flash:/config.text slave:/config.text  
6          flash      sd  
Ruijie#copy flash:/rgos.bin sd0:/rgos.bin  
7          U          sd 5
```

\_\_\_\_\_

An empty coordinate grid with a horizontal x-axis and a vertical y-axis. The grid consists of a 10x10 array of squares, with the axes forming the left and bottom boundaries. There are no labels or numbers on the axes.





---

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

## 45.1.5 mkdir

**mkdir** *directory*

---

### 45.1.6 rename

**rename** *url1 url2*

|             |  |      |
|-------------|--|------|
|             |  |      |
| <i>url1</i> |  | URLШ |
| <i>url2</i> |  | URL  |







\_\_\_\_\_

A blank coordinate plane with x and y axes. The x-axis is horizontal and the y-axis is vertical, intersecting at the origin. There are no tick marks or labels on the axes.



46

46.1 CPU

46.1.1 cpu-log

CPU

, cpu-log

cpu-log log-limit low\_num high\_num

|           |     |
|-----------|-----|
|           |     |
| log-limit |     |
| low_num   | CPU |
| high_num  | CPU |

100% 90%

CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU CPU

[illegible]

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

### 46.1.2 show cpu

|  | CPU | show cpu | show cpu |
|--|-----|----------|----------|
|  |     |          |          |
|  | -   | -        |          |

|  |     |   |     |  |   |   |   |   |   |
|--|-----|---|-----|--|---|---|---|---|---|
|  |     |   |     |  |   |   |   |   |   |
|  |     |   |     |  |   |   |   |   |   |
|  |     | Ш |     |  |   |   |   |   |   |
|  |     |   | CPU |  | 5 | 4 | 1 | 4 | 5 |
|  |     |   | CPU |  | 5 | 4 | 1 | 4 | 5 |
|  | CPU |   | Ш   |  |   |   |   |   |   |

---

|    |    |    |    |                        |
|----|----|----|----|------------------------|
| 5  | 0% | 0% | 0% | waitqueue_process      |
| 6  | 0% | 0% | 0% | tasklet_task           |
| 7  | 0% | 0% | 0% | kevents                |
| 8  | 0% | 0% | 0% | snmpd                  |
| 9  | 0% | 0% | 0% | snmp_trapd             |
| 10 | 0% | 0% | 0% | mtdblock               |
| 11 | 0% | 0% | 0% | gc_task                |
| 12 | 0% | 0% | 0% | Context                |
| 13 | 0% | 0% | 0% | kswapd                 |
| 14 | 0% | 0% | 0% | bdflush                |
| 15 | 0% | 0% | 0% | kupdate                |
| 16 | 0% | 3% | 1% | ll_mt                  |
| 17 | 0% | 0% | 0% | ll main process        |
| 18 | 0% | 0% | 0% | bridge_relay           |
| 19 | 0% | 0% | 0% | d1x_task               |
| 20 | 0% | 0% | 0% | secu_policy_task       |
| 21 | 0% | 0% | 0% | dhcpa_task             |
| 22 | 0% | 0% | 0% | dhcpsnp_task           |
| 23 | 0% | 0% | 0% | igmp_snp               |
| 24 | 0% | 0% | 0% | mstp_event             |
| 25 | 0% | 0% | 0% | GVRP_EVENT             |
| 26 | 0% | 0% | 0% | rldp_task              |
| 27 | 0% | 2% | 1% | rerp_task              |
| 28 | 0% | 0% | 0% | reup_event_handler     |
| 29 | 0% | 0% | 0% | tpp_task               |
| 30 | 0% | 0% | 0% | ip6timer               |
| 31 | 0% | 0% | 0% | rtadvd                 |
| 32 | 0% | 0% | 0% | tnet6                  |
| 33 | 2% | 0% | 0% | tnet                   |
| 34 | 0% | 0% | 0% | Tarptime               |
| 35 | 0% | 0% | 0% | gra_arp                |
| 36 | 0% | 0% | 0% | Ttcptimer              |
| 37 | 8% | 1% | 0% | ef_res                 |
| 38 | 0% | 0% | 0% | ef_rcv_msg             |
| 39 | 0% | 0% | 0% | ef_inconsistent_daemon |
| 40 | 0% | 0% | 0% | ip6_tunnel_rcv_pkt     |
| 41 | 0% | 0% | 0% | res6t                  |
| 42 | 0% | 0% | 0% | tunrt6                 |
| 43 | 0% | 0% | 0% | ef6_rcv_msg            |

---

---

|    |    |    |    |                         |
|----|----|----|----|-------------------------|
| 44 | 0% | 0% | 0% | ef6_inconsistent_daemon |
| 45 | 0% | 0% | 0% | imid                    |
| 46 | 0% | 0% | 0% | nsmd                    |
| 47 | 0% | 0% | 0% | ripd                    |
| 48 | 0% | 0% | 0% | ripngd                  |
| 49 | 0% | 0% | 0% | ospfd                   |
| 50 | 0% | 0% | 0% | ospf6d                  |
| 51 | 0% | 0% | 0% | bgpd                    |
| 52 | 0% | 0% | 0% | pimd                    |
| 53 | 0% | 0% | 0% | pim6d                   |
| 54 | 0% | 0% | 0% | pdmd                    |
| 55 | 0% | 0% | 0% | dvmrpd                  |
| 56 | 0% | 0% | 0% | vtty_connect            |
| 57 | 0% | 0% | 0% | aaa_task                |
| 58 | 0% | 0% | 0% | Tlogtrap                |
| 59 | 0% | 0% | 0% | dhcp6c                  |
| 60 | 0% | 0% | 0% | sntp_recv_task          |
| 61 | 0% | 0% | 0% | ntp_task                |
| 62 | 0% | 0% | 0% | sla_daemon              |
| 63 | 0% | 3% | 1% | track_daemon            |
| 64 | 0% | 0% | 0% | pbr_guard               |
| 65 | 0% | 0% | 0% | vrrpd                   |
| 66 | 0% | 0% | 0% | psnps                   |
| 67 | 0% | 0% | 0% | igsnps                  |
| 68 | 0% | 0% | 0% | coa_recv                |
| 69 | 0% | 0% | 0% | co_oper                 |
| 70 | 0% | 0% | 0% | co_mac                  |
| 71 | 0% | 0% | 0% | radius_task             |
| 72 | 0% | 0% | 0% | tac+_acct_task          |
| 73 | 0% | 0% | 0% | tac+_task               |
| 74 | 0% | 0% | 0% | dhcpsd_task             |
| 75 | 0% | 0% | 0% | dhcps_task              |
| 76 | 0% | 0% | 0% | dhcpping_task           |
| 77 | 0% | 0% | 0% | dhcps_task              |
| 78 | 0% | 0% | 0% | uart_debug_file_task    |
| 79 | 0% | 0% | 0% | ssp_init_task           |
| 80 | 0% | 0% | 0% | rl_listen               |
| 81 | 0% | 0% | 0% | ikl_msg_operate_thread  |
| 82 | 0% | 0% | 0% | bcmDPC                  |

---

|     |     |     |     |                        |
|-----|-----|-----|-----|------------------------|
| 83  | 0%  | 0%  | 0%  | bcmL2X.0               |
| 84  | 3%  | 3%  | 3%  | bcmL2X.0               |
| 85  | 0%  | 0%  | 0%  | bcmCNTR.0              |
| 86  | 0%  | 0%  | 0%  | bcmTX                  |
| 87  | 0%  | 0%  | 0%  | bcmXGS3AsyncTX         |
| 88  | 0%  | 2%  | 1%  | bcmLINK.0              |
| 89  | 0%  | 0%  | 0%  | bcmRX                  |
| 90  | 0%  | 0%  | 0%  | mngpkt_rcv_thread      |
| 91  | 0%  | 0%  | 0%  | mngpkt_recycle_thread  |
| 92  | 0%  | 0%  | 0%  | stack_task             |
| 93  | 0%  | 0%  | 0%  | stack_disc_task        |
| 94  | 0%  | 0%  | 0%  | redun_sync_task        |
| 95  | 0%  | 0%  | 0%  | conf_dispatch_task     |
| 96  | 0%  | 0%  | 0%  | devprob_task           |
| 97  | 0%  | 0%  | 0%  | rdp_snd_thread         |
| 98  | 0%  | 0%  | 0%  | rdp_rcv_thread         |
| 99  | 0%  | 0%  | 0%  | rdp_slot_change_thread |
| 100 | 4%  | 2%  | 1%  | datapkt_rcv_thread     |
| 101 | 0%  | 0%  | 0%  | keepalive_link_notify  |
| 102 | 0%  | 0%  | 0%  | rerp_msg_rcv_thread    |
| 103 | 0%  | 0%  | 0%  | ip_scan_guard_task     |
| 104 | 0%  | 0%  | 0%  | ssp_ipmc_hit_task      |
| 105 | 0%  | 0%  | 0%  | ssp_ipmc_trap_task     |
| 106 | 0%  | 0%  | 0%  | hw_err_snd_task        |
| 107 | 0%  | 0%  | 0%  | rerp_packet_send_task  |
| 108 | 0%  | 0%  | 0%  | idle_vlan_proc_thread  |
| 109 | 0%  | 0%  | 0%  | cmic_pause_detect      |
| 110 | 1%  | 1%  | 1%  | stat_get_and_send      |
| 111 | 0%  | 1%  | 0%  | rl_con                 |
| 112 | 75% | 80% | 90% | idle                   |

CPU                      3                      5      4      1      4      5  
                                  LISR 4 HISR                      CPU

| No   |       |
|------|-------|
| 5Sec | 5 CPU |
| 1Min | 1 CPU |
| 5Min | 5 CPU |

---

2

,X

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47

47.1

47.1.1 threshold set

CPU

CPU

no

CPU

syslog

CPU

MIB

3

CPU

4

threshold set {cpu | memory } [M1 | M2 | slot *n* | member *n*] warning\_value critical\_value

no threshold set {cpu | memory }

|                         |                |
|-------------------------|----------------|
|                         |                |
| cpu   memory            | cpu            |
|                         | CPU memory     |
| M1   M2   slot <i>n</i> | <i>n</i>       |
| member <i>n</i>         | <i>n</i>       |
| warning_value           | cpu memory     |
|                         | 1 ~ 100        |
| critical_value          | cpu            |
|                         | memory 1 ~ 100 |
| no                      |                |

---

|   |    |   |
|---|----|---|
| 1 | M1 | W |
|---|----|---|

```
Ruijie(config)# threshold set memory M1 70 90
```

|   |     |   |
|---|-----|---|
| 2 | CPU | W |
|---|-----|---|

```
Ruijie(config)# threshold set cpu member 2 70 90
```



---

1

M1

CPU

⏏

Ruijie# show threshold cpu M1

2

⏏

Ruijie# show threshold memory

|               |  |
|---------------|--|
|               |  |
| threshold set |  |

|           |  |
|-----------|--|
|           |  |
| 10.3(4b3) |  |

---

# 48

## 48.1

### 48.1.1 clear logging

▮

clear logging

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

▮

▮

▮

Ruijie# clear logging

|  |                  |  |
|--|------------------|--|
|  |                  |  |
|  | logging on       |  |
|  | show logging     |  |
|  | logging buffered |  |
|  |                  |  |

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

### 48.1.2 more flash

FLASH

|                 |  |
|-----------------|--|
|                 |  |
| <i>Filename</i> |  |

Two empty coordinate planes are provided for graphing. Each plane consists of a horizontal x-axis and a vertical y-axis intersecting at the origin. The axes are labeled with 'x' and 'y' at their ends. The planes are intended for the student to graph the functions  $f(x) = 2x + 1$  and  $g(x) = x^2 - 3$  as instructed in the text.

W

---

48-2

|              |     |
|--------------|-----|
| <i>level</i> | 0 7 |
|              |     |

4k Bytes

7

show logging

clear logging

FLASH

Syslog Server

8

| Emergencies   | 0 |  |
|---------------|---|--|
| Alerts        | 1 |  |
| Critical      | 2 |  |
| Errors        | 3 |  |
| warnings      | 4 |  |
| Notifications | 5 |  |
| informational | 6 |  |
| Debugging     | 7 |  |

0

6610000

Ruijie(config)# logging buffered 10000 6

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

#### 48.1.4 logging console

☐ no

W

**logging console *level***

**no logging console**

[illegible]

## Debugging (7)

W

**show logging**

W

6

```
Ruijie(config)# logging console informational
```

|              |  |
|--------------|--|
|              |  |
| logging on   |  |
| show logging |  |

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

### 48.1.5 logging count

no ☐

logging count

no logging count

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

☐ ☐ no logging count

Ruijie(config)# logging count

|                    |  |
|--------------------|--|
| show logging count |  |
| show logging       |  |

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

|                     | no | yes |
|---------------------|----|-----|
| logging facility    | no | yes |
| no logging facility | no | yes |

| <i>facility-type</i> | Syslog <span style="float: right;">III</span> |
|----------------------|-----------------------------------------------|

Local7(23)

## 2 Syslog

| 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                             |
| 10             | security/authorization messages          |
| 11             | FTP daemon                               |
| 12             | NTP subsystem                            |
| 13             | log audit                                |
| 14             | log alert                                |
| 15             | clock daemon                             |
| 16             | local use 0 (local0)                     |
| 17             | local use 1 (local1)                     |
| 18             | local use 2 (local2)                     |
| 19             | local use 3 (local3)                     |
| 20             | local use 4 (local4)                     |
| 21             | local use 5 (local5)                     |
| 22             | local use 6 (local6)                     |
| 23             | local use 7 (local7)                     |



```
Ruijie(config)# logging facility kern
```

\_\_\_\_\_

### 48.1.7 logging file flash

FLASH                                  W                          FLASH

no      W

**logging file flash:filename** [*max-file-size*] [*level*]

**no logging file**

---

\_\_\_\_\_

\_\_\_\_\_

FLASH 山

txt W

[illegible]

### 48.1.8 logging monitor

```

Router# configure terminal
Router(config)# logging monitor level
Router(config)# no logging monitor
Router(config)# interface VTY
Router(config-if)# logging monitor level
Router(config-if)# no logging monitor
Router(config-if)# exit
Router(config)# interface telnet
Router(config-if)# logging monitor level
Router(config-if)# no logging monitor
Router(config-if)# exit
Router(config)# exit
  
```

The diagram illustrates the configuration of logging on a Cisco router. The router has two interfaces: VTY and telnet. The VTY interface is configured with 'logging monitor level' and 'no logging monitor'. The telnet interface is configured with 'logging monitor level' and 'no logging monitor'. The diagram shows the configuration commands being entered on the router.

---

VTY

6

Ruijie(config)# **logging monitor informational**



|                            |                |
|----------------------------|----------------|
| <b>logging</b>             | Syslog Server  |
| <b>logging file flash:</b> | FLASH          |
| <b>logging console</b>     |                |
| <b>logging monitor</b>     | VTY ( telnet ) |
| <b>logging trap</b>        | Syslog Server  |

[illegible]

### 48.1.10 logging rate-limit

☐ yes ☒ no ☐

no      W

**logging rate-limit** {*number* | *all number* | *console* {*number* | *all number*}} [*except severity*]

**no logging rate-limit**

| <i>number</i>   | 1—10000             |
|-----------------|---------------------|
| <i>all</i>      | 0—7                 |
| <i>console</i>  |                     |
| <i>except</i>   | error(3)      error |
| <i>severity</i> | 0—7                 |

W

W

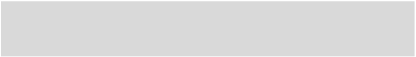
W

---

debug      10              warning

Ruijie(config)#**logging rate-limit all 10 except warnings**

| show logging count |  |
|--------------------|--|
| show logging       |  |



---

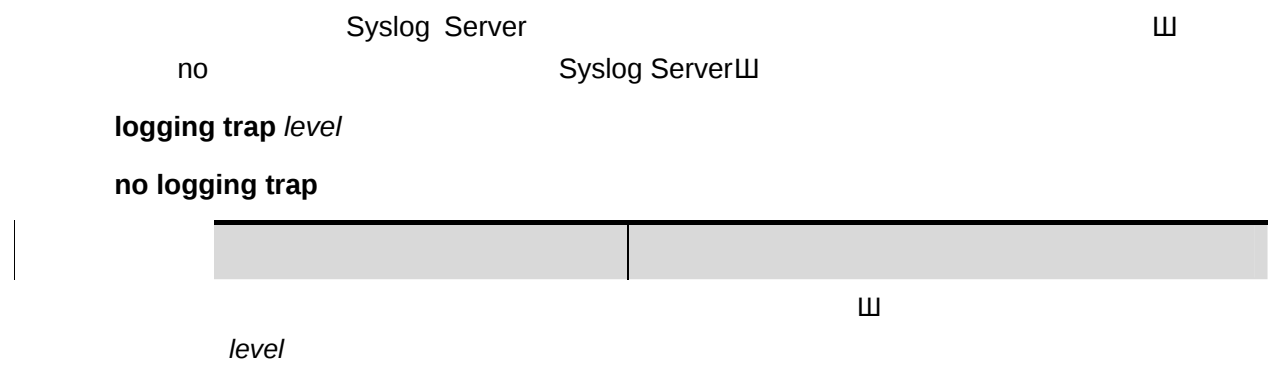
2                      IPV6            AAAA:BBBB::FFFF  
Ruijie(config)# **logging server ipv6**





---

48.1.15 logging trap



III

no

111

**service sequence-numbers**

**no service sequence-numbers**

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

III

1

W

```
Ruijie(config)# service sequence-numbers
```

|                    |  |
|--------------------|--|
|                    |  |
| logging on         |  |
| service timestamps |  |

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

#### 48.1.17 service sysname

11

no

III

**service sysname**

**no service sysname**

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

---

L

Ш

L

Ш

---

|                 |                            |
|-----------------|----------------------------|
| <i>datetime</i> | Jul 27 16:53:07            |
| <i>msec</i>     | : :<br>Jul 27 16:53:07.299 |
| <i>year</i>     | 2007 Jul 27 16:53:07       |

[illegible]

|          |   |
|----------|---|
| Uptime   | ⏱ |
| Datetime | 🕒 |

|                 | Log                                                                           | Debug | Datetime |
|-----------------|-------------------------------------------------------------------------------|-------|----------|
| Ruijie(config)# | <b>service timestamps debug datetime msec</b>                                 |       |          |
| Ruijie(config)# | <b>service timestamps log datetime msec</b>                                   |       |          |
| Ruijie(config)# | <b>end</b>                                                                    |       |          |
| Ruijie(config)# | <b>Oct 8 23:04:58.301 %SYS-5-CONFIG-I: Configured from console by console</b> |       |          |

|                          |  |
|--------------------------|--|
|                          |  |
| logging on               |  |
| service sequence-numbers |  |

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

### 48.1.19 terminal monitor

no VTY VTY

terminal no monitor

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

|  |     |   |
|--|-----|---|
|  | VTY | Ш |
|--|-----|---|

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

|  |     |   |  |   |     |
|--|-----|---|--|---|-----|
|  | VTY | Ш |  | Ш | VTY |
|  | Ш   |   |  | Ш |     |

|  |                          |   |
|--|--------------------------|---|
|  | VTY                      | Ш |
|  | Ruijie# terminal monitor |   |

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

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

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

48.2

48.2.1 show logging

|  |   |   |
|--|---|---|
|  | Ш | 4 |
|--|---|---|

show logging

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

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

---

**show logging**

Ruijie# **show logging**

Syslog logging: enabled

Console logging: level debugging, 4 messages logged

Sng, 4 me: disng: enabled

|                       |               |
|-----------------------|---------------|
| Sequence log messages |               |
| Trap logging          | Syslog Server |
| Log Buffer            |               |

|               |  |
|---------------|--|
|               |  |
| logging on    |  |
| clear logging |  |

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

### 48.2.2 show logging count

W

**show logging count**

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

\_\_\_\_\_

\_\_\_\_\_

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 |  |

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

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

## **49 POE**

### **49.1**

#### **49.1.1 Poe disconnect-mode mode/no poe disconnect-mode**

/

W

Ruijie(config-if)# **poe enable**  
Ruijie(config-if)# **no poe enable**

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

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

49.1.3 Poe-power lower lower/no poe-power lower

|              |                 |
|--------------|-----------------|
|              |                 |
| <i>lower</i> | [45000-47000] W |

W

POE 46000

Ruijie# **configure**  
Ruijie(config)# **poe-power lower**

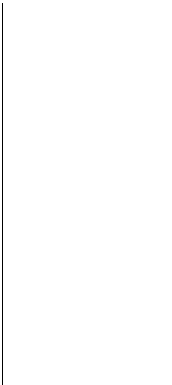


POE





POE                      W



Ruijie# **show poe powersupply**  
PSE Total Power : 379971 mW  
PSE Total Power Consumption : 0 mW  
PSE Available Power : 379971 mW  
PSE Peak Value : 0 mW  
PSE Min Allow Voltage : 45000 mV  
PSE Max Allow Voltage : 57000 mV  
PSE Disconnect Sense Mode : ac



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



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