



**RG-S2600**

**RGOS 10.4(2b2)**

©2000-2011



RGOS®

RGNOS®



锐捷®

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# RGOS® 10.4(2b2)

**1.**

Courier New

5

**2.**

Arial

```
[]      []
```

```
{x|y|...}
```

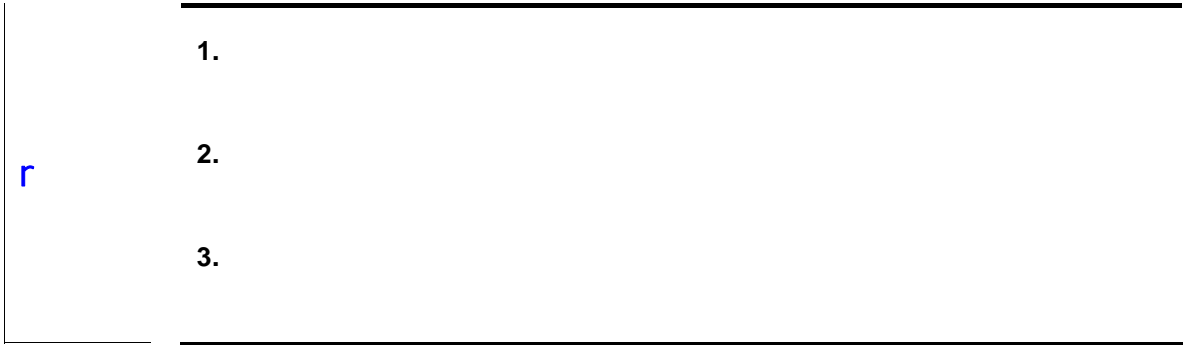
```
[x|y|...]
```

```
//
```

---

3.

r



# 1 CLI

## 1.1

### 1.1.1 alias

alias

no

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

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

<i>mode</i>	
<i>command-alias</i>	
<i>original-command</i>	

EXEC

EXEC                                    h p s u un                                    help ping show  
undebug   undebug  
no alias exec

```

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

Ruijie# s?
show start-chat start-terminal-service
"ia"
"ip address"
Ruijie(config-if)# ia ?
A.B.C.D IP address
dhcp IP Address via DHCP
Ruijie(config-if)# ip address
"ip address"

show aliases

```

```

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

```

<b>show aliases</b>	

---

---

---

---

**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>
```

--	--	--

## EXEC

```
Ruijie# show aliases exec
```

```
exec mode alias:
```

```
h             help  
p             ping  
s             show  
u             undebug  
un           undebug
```



---

# 2

## 2.1

CLI

### 2.1.1 disable

disable

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

	<i>privilege-level</i>	

|

|

|

**disable**

Ruijie# **disable** 10

	enable	

	-	-

|

	-	-

## 2.1.2 enable

enable

	-	-

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--	--

--	--

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	-	-

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	-	-

## 2.1.3 enable password

enable password

no

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

<i>Password</i>		EXEC
<i>Level</i>		
<b>0 7</b>		0 7
<i>encrypted-password</i>		

--	--

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1 26

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r EXEC

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pw10  
Ruijie(config)# **enable password** pw10

<b>enable secret</b>	

-	-

## 2.1.4 enable secret

**enable secret**

**no**

**enable secret** [**level** *level*] {*secret* | [**0** | **5**] *encrypted-secret*}

```

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

```

```

pw10
Ruijie(config)# enable secret 0 pw10

```

<b>enable password</b>	

-	-

## 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 }**

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

---

**no enable service**

enable service ssh-sesrver, SSH Server  
Ruijie(Config # **enable service ssh-sesrver**

<b>show service</b>	

-	-

## 2.1.6 execute

**execute**

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

<b>flash:</b>	
<i>filename</i>	

TFTP  
CLI

Flash

PC

**Telnet**

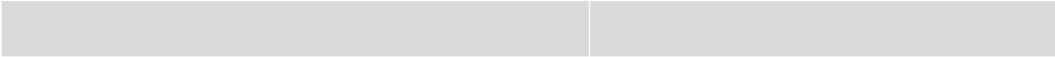
configure terminal  
line tty 1 16  
transport input all

line\_rcms\_script.text

---

```
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
```



---

Web

**no ip http authentication**

Web

local

Ruijie(config)# **ip http authentication local**

---

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---

## 2.1.9 ip telnet source-interface

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

---

|

|

|

**lock**

Locked

line

**lockable**

line

|

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

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

```
Ruijie# lock
```

```
Password: <password>
```

```
Again: <password>
```

```
Locked
```

```
Password: <password>
```

|

<b>lockable</b>	

|

|

-	-

## 2.1.11 lockable

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

**lockable**  
**no lockable**

|

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	-	-
	line	
	<b>lock</b>	EXEC
	<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>	
	<b>lock</b>	
	-	-

## 2.1.12 login

---

line

AAA  
VTY console

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

<b>password</b>	line

-	-

## 2.1.13 login authentication

AAA

AAA

**no**

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

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

<b>default</b>	
<i>list-name</i>	A A A =

```

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 •!™^†æ ð Àp( H—à4â Æ À! y à Ô!Zì ù~€W itæ loRUC01 7f0DC2.253-0/5008cr33A5A15A

---

	<b>username</b>	
	-	-

**2.1.15 privilege mode**

	CLI	
	-	-

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

line

line

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

-	-

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

```
service password-encryption
password
```

```

r      /vrf      RSR
      /ipv6      IPV6      S3760 S57 S86

```

```

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>	

```

7
r          7
          7

```

```

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

```

login local	

-	-

## 2.2

### 2.2.1 banner login

no banner login

banner login

banner login *c message c*

<i>c</i>	
<i>message</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>	

---

	-	-

**2.2.3 clock set**

---

## 2.2.4 clock update-calendar

### clock update-calendar

	-	-

|

|

|

calendar

|

Ruijie# clock update-calendar

	-	-

|

	-	-

## 2.2.5 exec-timeout

LINE

exec-timeout

no exec-timeout

LINE

**exec-timeout** *minutes* [*seconds*]

**no exec-timeout**

	<i>minutes</i>	

	<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**

```

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

```

-	-

-	-

## 2.2.11 write

running-config

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

<b>memory</b>	NVRAM <b>copy</b> running-config startup-config
<b>network</b>	TFTP <b>copy</b> running-config tftp
<b>terminal</b>	show running-config

```

1
Ruijie# write
Building configuration...
[OK]

```

---

<b>copy</b>	
<b>show running-config</b>	

[Redacted]

## 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

```

-	-

---

### 2.3.3 show reload

**show reload**

**show reload**

	-	-

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

---

|



---



## 3 LINE

### 3.1 LINE

#### 3.1.1 access-class

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

LINE

	-	-

### 3.1.2 line

LINE

**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

|

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

	-	-

|

	-	-

### 3.1.3 line vty

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

	-	-

VTY 5 0-4

VTY

1 VTY 20 VTY 0--19  
 Ruijie(config)# **line vty 19**  
 2 VTY 10 VTY 0-9  
 Ruijie(config)# **line vty 10**

	-	-

	-	-

### 3.1.4 transport input

Line **transport input** Line  
**default transport input** LINE  
**transport input** {all | ssh | telnet | none}  
**default transport input**

<b>all</b>	Line	
<b>ssh</b>	Line	SSH

LINE

<b>telnet</b>	Line	Telnet
<b>none</b>	Line	

VTY TTY NONE  
**default transport input**

Line

Line VTY VTY **show**  
**running** Line  
**input default transport input no transport**  
**transport input none**

```

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

```

<b>show running</b>	
---------------------	--

RGOS10.1

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---	---

---

# 4

## 4.1

### 4.1.1 ping

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



## DNS

### 1 ping

```
Ruijie# ping 192.168.5.1
```

```
Sending 5, 100-byte ICMP Echoes to 192.168.5.1, timeout is 2 seconds:
```

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

```
!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/10  
ms
```

### 2 ping

```
Ruijie# ping 192.168.5.197 length 1500 ntimes 100 timeout 3 data ffff  
source 192.168.4.10
```

```
Sending 100, 1000-byte ICMP Echoes to 192.168.5.197, timeout is 3  
seconds:
```

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

```
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!  
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
```

```
Success rate is 100 percent (100/100), round-trip min/avg/max = 2/2/3  
ms
```

-	-

-	-

## 4.1.2 ping ipv6

```
ping [ipv6] [ip-address [length length ] [ntimes times] [timeout seconds] [data data]  
[source source]]
```

ip-address	IPv6

<i>length</i>	
<i>times</i>	
<i>seconds</i>	
<i>data</i>	
<i>source</i>	IPv6 ::1

2                    5                    100Byte                    IP

```

Ping ipv6
  ping ipv6
  ping ipv6
    2            5            100Byte            IP
    '!'                    ':'
      'C'
      ping
ping ipv6
  
```

	-	-
	-	-

### 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
<i>number</i>	
<i>source</i>	IPv4 127.0.0.1
<i>seconds</i>	
<i>minimum maximum</i>	TTL


Traceroute

DNS

traceroute

```

1          traceroute
Ruijie# traceroute 61.154.22.36
< press Ctrl+C to break >

```

```

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

```

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

```

```

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

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

<i>ip-address</i>	IPv6
<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

<i>seconds</i>		1 60

2

DCD                                  DCD   Down   Up  
DCD  
DCD                                  DCD

	-	-
--	---	---

### 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>	

|

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### 5.1.3 clear interface

**clear interface** *interface-id*

	<i>interface-id</i>	

|

┌

┌

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

┌

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

┌

<b>shutdown</b>	

┌

┌

-	-

### 5.1.4 description

no

**description** *string*

**no description**

┌

<i>string</i>	

┌

┌

┌

**show interfaces**

┌

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

┌

<b>show interfaces</b>	

---

	-	-

### 5.1.5 duplex

no

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

**no duplex**

	<b>auto</b>	
	<b>full</b>	
	<b>half</b>	

└──

└──

└──

**show interfaces**

└──

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

--	--	--

no

**flowcontrol {auto | off | on}**

**no flowcontrol**

<b>auto</b>	
<b>off</b>	
<b>on</b>	

└───┘

└───┘

└───┘

**show interfaces**

└───┘

1/1

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

Ruijie(config-if)# **flowcontrol on**

<b>show interfaces</b>	

└───┘

-	-

### 5.1.7 interface aggregateport

no

**interface aggregateport *port-number***

<i>port-number</i>	Aggregate port

└───┘

---

|

|

```
aggregate port    aggregate port
aggregate port    show
interfaces    show interfaces aggregateport
```

|

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

|

<b>show interfaces</b>	

|

-

|

-	-

## 5.1.8 interface fastEthernet

```
interface fastEthernet mod-num/port-num
```

|

--	--

```
mod-num/port-num /
```

	<b>show interfaces</b>	

┌

-

	-	-

### 5.1.9 interface giagbitEthernet

**interface gigabitEthernet** *mod-num/port-num*

	<i>mod-num/port-num</i>	/

┌

┌

**no**

10G

**interface tenGigabitEthernet** *mod-num/port-num*

<i>mod-num/port-num</i>	/

|

|

|

**no**  
**tenGigabitEthernet**

**show interfaces**    **show interfaces**

|

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

|

<b>show interfaces</b>	

|

|

-	-

### 5.1.11 interface vlan

switch virtual interface SVI

**no**                    SVI

**interface vlan** *vlan-id*

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

|

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

|

---

---

	<b>show interfaces</b>	

---

no

shutdown

no shutdown

	-	-

|

|

|

Ap SVI

show interfaces

no shutdown

1 Ap 1

Ruijie(config)# interface aggregateport 1

Ruijie(config-if)# shutdown

2 Ap 1

Ruijie(config)# interface aggregateport 1

Ruijie(config-if)# no\_shutdownag432 D4.Tf 112 17e f 211.98 529. 10.5 369.44.32 48107 re

### snmp trap link-status

### no snmp trap link-status



	Link	SNMP	LinkTrap

	Ap	SVI	LinkTrap
	Link	SNMP	LinkTrap,

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

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

-	-

## 5.1.16 speed

### no

10	10Mbps
100	100Mbps

---

<b>1000</b>	1000Mbps
<b>10G</b>	10Gbps
<b>auto</b>	

└───┘

└───┘

└───┘

```
Ap                Ap                show interfaces
                Ap                SFP
10M    100M
```

└───┘

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

```

          VLAN ID          VLAN ID          VLAN
            VLAN              VLAN ID        VLAN
                trunkport

```

```

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

```

<b>switchport mode</b>	switch port
<b>switchport trunk</b>	trunkport native VLAN Trunk VLAN

-	-

### 5.1.18 switchport mode

```

trunk port,      802.1Q      switch port      access port
                    no

```

**switchport mode {access | trunk}**

**no switchport mode**

<b>access</b>	switch port access port
<b>trunk</b>	switch port trunk port

```

switch port      access

```

```

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

```

VLAN	VLAN	trunk port	VLAN
VLAN	<b>switchport trunk</b>		VLAN
Ruijie(config-if)# <b>switchport mode trunk</b>			
<b>switchport access</b>	accessport	statics	VLAN
<b>switchport trunk</b>	VLAN	trunkport	native
	VLAN	Trunk	
-			-

### 5.1.19 switchport trunk

trunkport native VLAN Trunk VLAN  
no trunk

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

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

<b>allowed vlan <i>vlan-list</i></b>	Trunk	VLAN	<i>vlan-list</i>
	VLAN		VLAN
	VLAN ID	VLAN ID	-
	10-20		,
	1-10,20-25,30,33		
	all	VLAN	VLAN
	add	VLAN	VLAN
	remove	VLAN	VLAN
	except	VLAN	VLAN
	VLAN		

---

**native vlan** *vlan-id*

---

## 5.2

### 5.2.1 show interfaces

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

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

```
Ruijie# show interfacesgigabitEthernet 0/1 switchport
Interface Switchport ModeAccess Native Protected VLAN lists
-----
GigabitEthernet 0/1 enabled Access 11 Disabled ALL
```

<b>duplex</b>	

<b>interface gigabitEthernet</b>	
<b>interface aggregateport</b>	
<b>interface vlan</b>	switch virtual interface SVI
<b>shutdown</b>	
<b>speed</b>	
<b>switchport priority</b>	802.1q
<b>switchport protected</b>	

-	-

# 6 Aggregate Port

## 6.1

### 6.1.1 aggregateport load-balance

AP no

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

**no aggregateport load-balance**

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

MAC

**show aggregateport load-balance**

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

<b>show aggregateport load-balance</b>	aggregateport

-

-	-

### 6.1.2 port-group

Aggregate Port

no

Aggregate Port

**port-group** *port-group-number*

**no port-group**

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

Aggregate Port

AP                      VLAN                      trunk port                      native  
VLAN                      AP

1/3                      AP 3

Ruijie(config)# **interface gigabitethernet 1/3**

Ruijie(config-if)# **port-group 3**

-	-

	-	
	-	-

**6.2**

e9(eg-9(eg))1(-5pte Port)

# 7 VLAN

## 7.1

### 7.1.1 name

VLAN **no**

**name** *vlan-name*

**no name**

	<i>vlan-name</i>	VLAN

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

VLAN		
------	--	--

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

```
Ruijie(config)# vlan 10
Ruijie(config-vlan)# name vlan10
```

<b>show vlan</b>		VLAN

--	--	--

-		-

### 7.1.2 switchport access

**no** access port VLAN VLAN

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

**no switchport access vlan**

<b>access</b>	switch port	access port
<b>trunk</b>	switch port	trunk port
<b>hybrid</b>	switch port	hybrid port

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

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

VLAN                      all                      Native VLAN                      VLAN 1

**Native VLAN**

Trunk                      native VLAN                      native VLAN

  UNTAG                      VLAN                      VLAN ID

IEEE 802.1Q    PVID                      native VLAN    VLAN ID                      Trunk

native VLAN                      UNTAG

**VLAN**

Trunk                      VLAN 1 4094

  Trunk                      VLAN                      VLAN                      Trunk

**show interfaces switchport**

```

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
    
```

--	--	--

VLAN

-	-
---	---

## 7.2

### 7.2.1 show vlan

VLAN

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

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

|

|

|

**end**

**Ctrl+C**

**exit**

|

Ruijie# **show vlan id 1**

VLAN Name

Status

Ports

```
-----
```

1 VLAN0001	STATIC	Fa0/1, Fa0/2
------------	--------	--------------

|

name	VLAN
switchport access	Vlan

|

|

-	-
---	---

## 8 Private VLAN

### 8.1

#### 8.1.1 private-vlan association

secondary VLAN primary VLAN

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

**no private-vlan association**

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

**no private-vlan mapping**

<i>svlist</i>	secondary VLAN list
<b>no</b>	

|

Primary VLAN

|

```
Ruijie(config)# interface vlan 22
Ruijie(config-if)# private-vlan mapping add 24-26
```

<b>show vlan private-vlan</b>	-

RGOS10.1

-	-

### 8.1.3 private-vlan type

VLAN VLAN

**private-vlan** {*community* | *isolated* | *primary*}

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

<i>community</i>	community VLAN
<i>isolated</i>	isolated VLAN
<i>primary</i>	primary VLAN
<i>no</i>	VLAN

|

---

VLAN

|

---

VLAN

|

---

|

---

Ruijie(config)# **vlan 22**

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



show vlan private-vlan	-
RGOS10.1	
-	-

### 8.1.5 switchport private-vlan host-association

private VLAN primary VLAN secondary VLAN

**switchport private-vlan host-association** *p\_vid s\_vid*

**no switchport private-vlan host-association**

<i>p_vid</i>	primary VID
<i>s_vid</i>	secondary VID
<b>no</b>	VLAN

```


```

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

```
OS 1 1.006 T...
```



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

<b>primary</b>	primary VLAN
<b>community</b>	community VLAN
<b>isolated</b>	isolated VLAN

private VLAN

Ruijie# **show vlan private-vlan**

-	-

RGOS10.1

-	-

## 8.3 Hybrid

### 8.3.1 switchport hybrid allowed vlan

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

**no switchport hybrid allowed vlan**

hybrid

<b>no</b>	hybrid

L

L

L


L



L

L

L

L


L

	-	-

### 8.3.3 switchport mode hybrid

**switchport mode hybrid**

**no switchport mode**

hybrid

<b>no</b>		hybrid

┌

┌

┌

┌

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

--	--

## 9 802.1Q Tunneling

### 9.1

#### 9.1.1 frame-tag tpid tpid

tpid

**frame-tag tpid** <tpid>

**no frame-tag tpid**

	<b>no</b>	

┌

┌

┌

```
Ruijie(config)# interface g0/3
Ruijie(config-if)# frame-tag tpid 9100
Ruijie(config-if)# end
Ruijie# show frame-tag tpid
Port      tpid
-----  -
Gi0/3     0x9100
```

	<b>show frame-tag tpid</b>	-

┌ RGOS10.1

	-	-

## 9.1.2 inner-priority-trust enable

```

/
tag tag

```

```

inner-priority-trust enable

```

```

no inner-priority-trust enable

```

			<b>EA</b>
<b>no</b>		tag	tag

```

└───┘

```

```

└───┘

```

```

└───┘

```

```

Ruijie(config)#

```



<b>show vlan private-vlan</b>	-

RGOS10.1

-	-

## 9.2

### 9.2.1 show frame-tag tpid

private VLAN

**show frame-tag tpid [interface <interface>]**

<i>interface</i>	

tpid

```
Ruijie# show frame-tag tpid
Ruijie# show frame-tag tpid interface gi0/1
Port      tpid
-----  -
Gi0/1    0x9100
```

-	-

RGOS10.1

	-	-

## 9.2.2 show inner-priority-trust

### show inner-priority-trust

	-	-

|

|

|

```
Ruijie# show inner-priority-trust
Port    inner-priority-trust
----    -
Gi0/1   enable
```

|

```
92.9403 Tm[0 0 6 11eD-.9803 Tm( )Tj/9.70 1 Tf 6 11eD-.9803 Td( )Tj 0 18.84 595.34 0.24 0.48 r 0 18..
```

# 10 Share VLAN

## 10.1

### 10.1.1 share

share vlan



Status	duplicated share vlan	Status	original	Status
--------	-----------------------	--------	----------	--------

	-		-	

|

|

|

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

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

	-		-	

|

	-		-	

# 11 MAC

## 11.1

### 11.1.1 address-bind

1 1 . 1 .

/

**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

	-	-

### 11.1.3 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  
MAC                    IP                    MAC

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

<b>show address-bind</b>	

-	
-	-

### 11.1.4 address-bind ipv6-mode

ip            IP

**address-bind ipv6-mode compatible**

**address-bind ipv6-mode loose**

**address-bind ipv6-mode strict**

┌

┌

┌

┌

-	-

:

	IPv4
	IPv4+MAC
	IPv4+MAC
	IPv4+MAC

	IPv6		
	ipv6		
	IPv6		
	MAC	MAC	IPv6

```

IP      192.168.5.2      00d0.f822.33aa
IPv6
Ruijie# configure t
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# address-bind 00d0.f822.33aa ip 192.168.5.2
Ruijie(config)# address-bind ipv6-mode compatible
    
```

-	-

-	-

### 11.1.5 address-bind uplink

```

ip      mac      .
address-bind uplink intf-id
no address-bind uplink intf-id
    
```

<i>intf-id</i>	



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

<b>show mac-address-table dynamic</b>	

-	-

### 11.1.7 clear mac-address-table filtering

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

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

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

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

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

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

--	--	--

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



**show mac-address-table filtering**

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

<b>clear mac-address-table filtering</b>	
<b>show mac-address-table filtering</b>	

-	-

### 11.1.11 mac-address-table notification

MAC **no**

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

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

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

1 50

MAC Trap

**snmp-server enable traps mac-notification**

MAC Trap

Ruijie(config)# **mac-address-table notification**

Ruijie(config)# **mac-address-table notification interval 40**

Ruijie(config)# **mac-address-table notification history-size 100**





MAC

	-	
	-	

### 11.1.14 mac-address-learning

	/	
	<b>mac-address-learning</b>	
		MAC
	1	
	Ruijie(config-if)# no mac-address-learning	

## 11.2

### 11.2.1 show address-bind

	<b>show address-bind</b>	

|

|

```
Ruijie# show address-bind
IP Address      Binding MAC Addr
-----
3.3.3.3        00d0.f811.1112
3.3.3.4        00d0.f811.1117
```

|

<b>address-bind</b>	

|

|

-	-

### 11.2.2 show address-bind uplink

#### show address-bind uplink

|


|

|

|

|

```
Ruijie# show address-bind uplink
Ports      State
-----
Fa0/1      Disabled
Fa0/2      Disabled
```

MAC

.....

<b>address-bind uplink</b>	

-	-

### 11.2.3 show mac-address-table address

MAC

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

<b>address</b> <i>mac-addr</i>	MAC
<b>interface</b> <i>interface-id</i>	
<b>vlan</b> <i>vlan-id</i>	VLAN

Ruijie#

<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>	

--	--

--	--

### 11.2.5 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

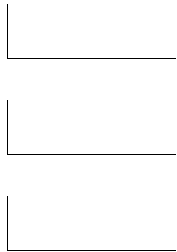
--	--

-	-

## 11.2.6 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>	( 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>	
--	--



-	-
---	---

## 11.2.7 show mac-address-table filtering

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

--	--

*mac-addr*



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

MAC
-----

```

Ruijie# show mac-address-table notification interface
Interface          MAC Added Trap  MAC Removed Trap
-----
GigabitEthernet1/14  Disabled        Disabled
Ruijie# show mac-address-table notification
MAC Notification Feature : Disabled
Interval between Notification Traps : 1 secs
Maximum Number of entries configured in History Table :1
Current History Table Length : 0
Ruijie# show mac-address-table notification history
History Index : 0
MAC Changed Message :
Operation:ADD Vlan : 1 MAC Addr: 00f8.d012.3456 GigabitEthernet 3/1
    
```

<b>mac-address-table notification</b>	MAC
<b>snmp trap mac-notification</b>	MAC

-	-
---	---

### 11.2.10 show mac-address-table static

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

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

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

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

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

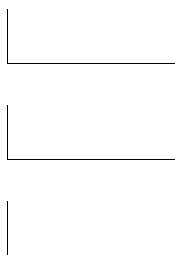
-	-

### 11.2.11 show mac-address-table vlan

VLAN

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

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



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

<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>	

|

1

# 12 DHCP Snooping

## 12.1 DHCP snooping

### 12.1.1 ip dhcp snooping

```
DHCP Snooping                                no
      DHCP Snooping
```

**[no] ip dhcp snooping**

-	-

└───

└───

DHCP Snooping	show ip dhcp snooping	DHCP
snooping		
<b>r</b>	DHCP Snooping Private VLAN	

└───

```

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

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

```

--	--

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

### 12.1.2 ip dhcp snooping bootp-bind

```
DHCP Snooping      Bootp
no                 DHCP snooping      Bootp
```

[no] ip dhcp snooping bootp-bind

-	-

```

                DHCP Snooping      Bootp
Snooping      Bootp                Bootp      DHCP
Snooping      Bootp                DHCP
```

```

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



-----

<b>show ip dhcp snooping</b>	DHCP snooping

-	-

### 12.1.4 ip dhcp snooping database write-to-flash

DHCP Snooping

FLASH

#### ip dhcp snooping database write-to-flash

-	-

└──

└──

-	-
---	---

### 12.1.5 ip dhcp snooping information option

DHCP                      option82  
no

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

-	-

┌

┌

┌

DHCP                      option82      DHCP                      option82

┌

```

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
DHCP snooping Support Bootp bind status: ENABLE
Interface                      Trusted      Rate limit (pps)
-----
```

┌

<b>show ip dhcp snooping</b>	DHCP snooping

┌

┌

--	--





DHCP

no

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

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

┌

┌

┌

DHCP Snooping    VLAN  
 CPP[CPU Protect Protocol]    CPP    DHCP  
 CPP    DHCP Snooping

CPP

**show ip dhcp snooping**

1    100pps

```
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip dhcp snooping limit rate 100
Ruijie(config-if)# end
Ruijie# show ip dhcp snooping
Switch DHCP snooping status    ENABLE
Verifi-19( )6(i).56n of hwaddr field
```



**[no] ip dhcp snooping trust**

-	-

UNTRUST

	DHCP	DHCP	TRUST	TRUST
	DHCP	UNTRUST	DHCP	

**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
    
```

### 12.3.1 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)
-----------	---------	------------------

-----

└───┘

<b>ip dhcp snooping</b>	DHCP snooping
<b>ip dhcp snooping verify mac-address</b>	DHCP snooping mac
<b>ip dhcp snooping write-delay</b>	flash
<b>ip dhcp snooping information option</b>	DHCP option82
<b>ip dhcp snooping bootp-bind</b>	DHCP Snooping Bootp
<b>ip dhcp snooping trust</b>	DHCP snooping trust

└───┘

└───┘

-	-

### 12.3.2 show ip dhcp snooping binding

DHCP Snooping

**show ip dhcp snooping binding**

-	-

┌

┌

┌

DHCP Snooping

Ruijie# **show ip dhcp snooping binding**

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
    
```

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

┌

-	-

### 12.4 DHCP snooping

## 12.4.1 clear ip dhcp snooping binding

DHCP Snooping

**clear ip dhcp snooping binding**

-	-

|

|

|

DHCP snooping

DHCP snooping

Ruijie# **clear ip dhcp snooping binding**

Ruijie# **show ip dhcp snooping binding**

Total number of bindings: 0

MacAddress IpAddress Lease(sec) Type VLAN Interface

-----

|

<b>show ip dhcp snooping binding</b>	DHCP snooping

|

-	-

## 12.4.2 debug ip dhcp snooping

DHCP Snooping

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

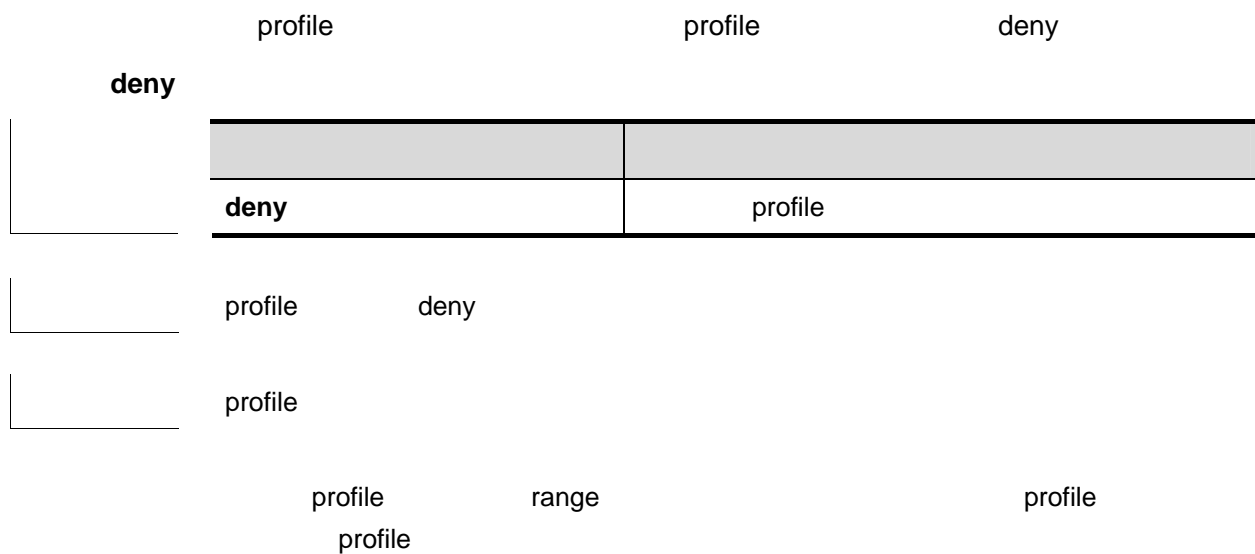
--	--



# 13 IGMP Snooping

## 13.1

### 13.1.1 deny



profile profile permit profile

**permit**

<b>permit</b>	profile

profile deny

profile

profile range profile  
profile

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

<b>ip igmp profile</b>	profile
<b>range</b>	

-	-

### 13.1.3 range

profile profile range  
no

**range** *low-ip-address* [*high-ip-address*]

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

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

	<i>high-ip-address</i>	
	profile	
	profile	profile deny
	224.2.2.2~224.2.2.244	profile
	Ruijie(config)# <b>ip igmp profile 1</b>	
	Ruijie(config-profile)# <b>range 224.2.2.2 224.2.2.244</b>	
	<b>ip igmp profile</b>	profile
	<b>deny</b>	profile deny
	<b>permit</b>	profile permit
	-	-

### 13.1.4 ip igmp profile

	IGMP profile	profile
	profile	profile-number igmp profile
	<b>ip igmp profile profile-number</b>	
	<b>no ip igmp profile profile-number</b>	
	<i>profile-number</i>	profile 1-65535

```

IGMP Profiles
profile
SVGL
IGMP Filtering
profile

```

```

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

```

<b>range</b>	profile	
<b>permit</b>	profile	permit
<b>deny</b>	profile	deny

```


```

-	-

### 13.1.5 ip igmp snooping ivgl

```

igmp snooping ivgl ip igmp snooping ivgl
no igmp snooping

```

**ip igmp snooping ivgl**

**no ip igmp snooping**

-	-

```

disable

```

```


```

```

VLAN VLAN VLAN VLAN
VLAN

```

```

r      pim snooping      igmp snooping  IVGL  IVGL-SVGL
      no ip igmp snooping  igmp snooping
      pim snooping      pim snooping
    
```

```

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

<b>ip igmp snooping svgl</b>		igmp snooping	svgl
<b>ip igmp snooping ivgl-svgl</b>		igmp snooping	

```

    
```

-		-	

### 13.1.6 ip igmp snooping vlan

```

      vlan      igmp snooping      ivgl      ip igmp
snooping vlan      no      igmp snooping
ip igmp snooping vlan vid
no ip igmp snooping vlan vid
    
```

vid		vlan id	

```

disable
    
```

```

    
```

```

      vlan      IGMP Snooping
      vlan      pim snooping      igmp snooping
r      no ip igmp snooping vlan      vlan      igmp snooping
      pim snooping      VLAN      pim snooping
    
```



	-	-

### 13.1.8 ip igmp snooping svgl profile

profile SVGL

```
77 ID806 Td( )T/C Td(8.796 1 Tf-E3>JT/TT<350E2CD516/T1 1 Tf0 Tr 4.01/C)5fb1G4jv 14018 Tc 5.2390  
@ 17... U6  
}
```

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

	<i>time</i>	, <1-3600>

300s

Hello

IGMP

PIM

100s

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



```
IP IGMP
```

```
igmp snooping fast-leave  
Ruijie(config)# ip igmp snooping fast-leave enable
```

```
0 [REDACTED]
```



	<b>ip igmp snooping source-check default-server</b>	IP IP

	-
--	---

### 13.1.14 ip igmp snooping mrouter learn pim-dvmrp

IGMP Query/Dvmrp/PIM Hello  
**ip igmp snooping mrouter learn**                      no

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

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

--	--

┌

┌

┌

no

vlan

vlan

vlan

igmp snooping

┌

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

<b>ip igmp snooping vlan mrouter learn pim-dvmrp</b>	vlan

┌

--	--

### 13.1.15 ip igmp snooping vlan mrouter interface

```

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

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

┌

┌

┌ IP

```

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

<b>ip igmp snooping source-check port</b>	

┌

-	-

### 13.1.16 ip igmp snooping vlan mrouter learn pim-dvmrp

IGMP Query/Dvmrp/PIM Hello

*vid*

**vlan id**

<i>vid</i>	vlan id
<i>ip-addr</i>	
<i>interface-id</i>	id

┌

┌

┌

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

<b>ip igmp snooping vlan mrouter interface</b>	

┌

	?
--	---

IGMP Profile

IGMP Report

IGMP Profile

profile

filter

0/1

profile 1

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

Ruijie(config-if)# **ip igmp snooping filter 1**

<b>ip igmp profile</b>	profile

--	--

	<b>ip igmp snooping filter</b>	
	-	-

## 13.2

### 13.2.1 show ip igmp snooping

igmp snooping

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

	igmp snooping
<b>gda-table</b>	
<b>interfaces</b>	igmp snooping filtering
<b>mrouter</b>	
<b>statistics [vlan <i>vlan-id</i>]</b>	snooping



**undebug igmp-snp event**

**undebug igmp-snp packet**

**undebug igmp-snp msf**

**undebug igmp-snp warning**

	IGMP Snooping
<b>event</b>	IGMP Snooping
<b>packet</b>	IGMP Snooping
<b>msf</b>	IGMP Snooping
<b>warning</b>	IGMP Snooping

EXEC

# 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**

<i>H.H.H</i>	mac	bpdu
<b>no</b>	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

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

<i>interface-id</i>	

|

|

|

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

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

|

-	-

### 14.1.3 spanning-tree

MSTP MSTP MSTP  
 no spanning-tree no  
 spanning tree

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

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

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

spanning-tree

|  
|

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

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

|  
|  
|

```

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

|  
|  
|

<b>show spanning-tree</b>	STP
<b>spanning-tree mst cost</b>	STP PathCost
<b>spanning-tree tx-hold-count STP</b>	TxHoldCount

|  
|

|  
|  
|

-	-

**14.1.4 spanning-tree autoedge**

Autoedge disabled Autoedge

**spanning-tree autoedge [disabled]**

|  
|

<b>disabled</b>	Autoedge

|  
|

|  
|

|  
|

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



---

	-	-

---

## 14.1.6 spanning-tree bpduguard

BPDU Guard    enabled    disabled  
BPDU Guard

spanning-tree bpduguard [enabled | disabled]

<b>enabled</b>	BPDU Guard
<b>disabled</b>	BPDU Guard

---

---

---

---

---

---

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

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

---

---

-	-

---

## 14.1.7 spanning-tree compatible enable

MSTI

spanning-tree compatible enable

no spanning-tree compatible enable

MSTP

---

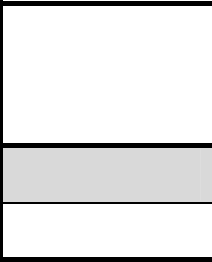
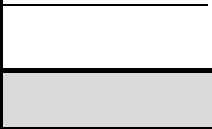
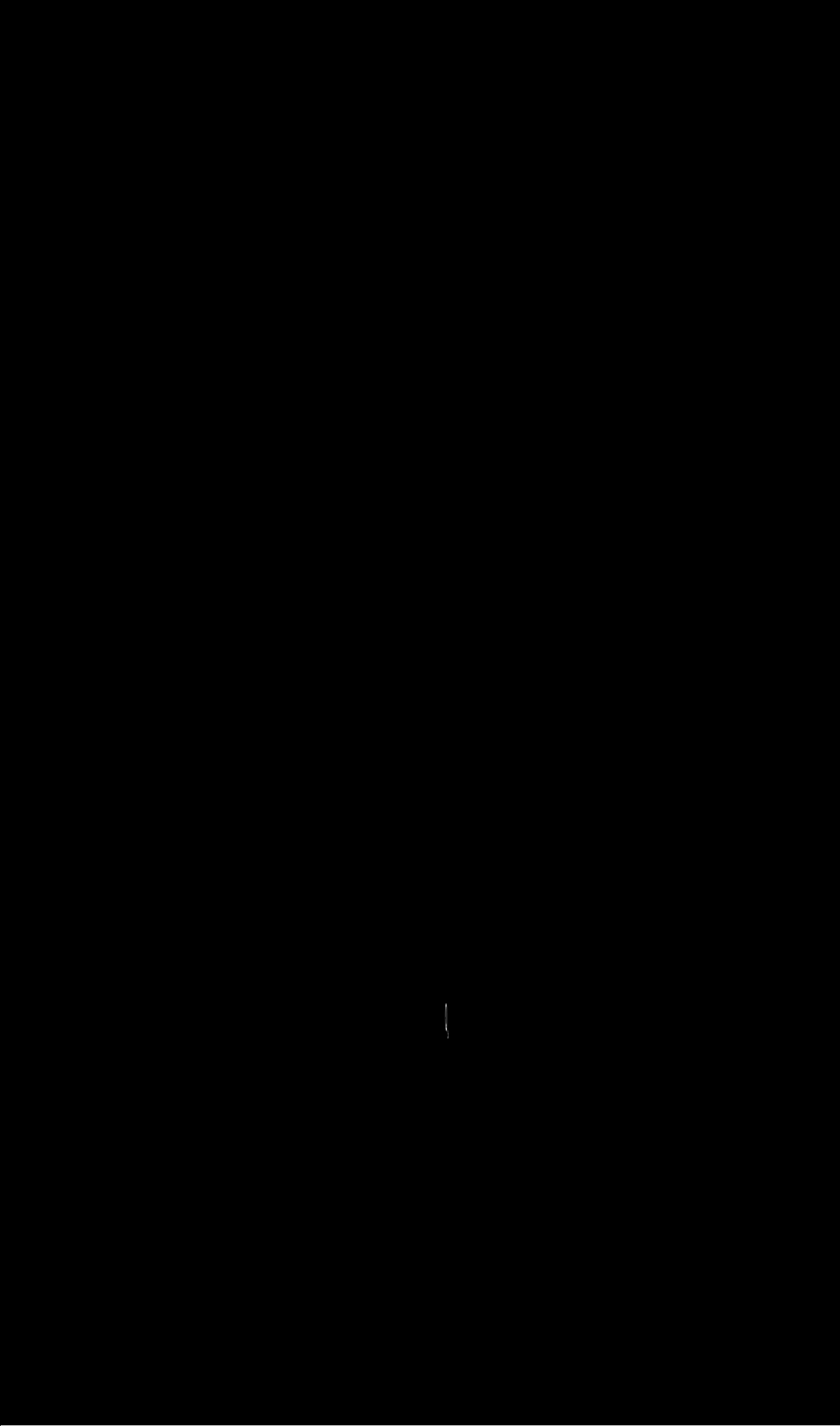
	-	-
--	---	---

|

|

|

Ruijie(config-if)#



root guard

no

root guard

root guard

**spanning-tree guard root**

**no spanning-tree guard root**







### 14.1.14 spanning-tree mode

STP no

**spanning-tree mode [stp | rstp | mstp]**

**no spanning-tree mode**

<b>stp</b>	Spanning tree protocol(IEEE 802.1d)
<b>rstp</b>	Rapid spanning tree protocol(IEEE 802.1w)
<b>mstp</b>	Multiple spanning tree protocol(IEEE 802.1s)

MSTP

.

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

<b>show spanning-tree</b>	

-	-

### 14.1.15 spanning-tree mst configure

MST MSTP Region no  
name revision vlan map

**spanning-tree mst configuration**

**no spanning-tree mst configuration**

-	-



```
VLAN 3 Instance 1 MST
Ruijie(config-mst)# no instance 1 vlan 3
Instance 1
Ruijie(config-mst)# no instance 1
MST show
```



MSTP

MSTP

Region

```

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
```

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
<b>spanning-tree mst cost</b>	
<b>spanning-tree mst port-priority</b>	Instance

-	-

### 14.1.19 spanning-tree pathcost method

no

**spanning-tree pathcost method [long | short]**

**no spanning-tree pathcost method**

<b>long</b>	802.1t	path-cost
<b>short</b>	802.1d	path-cost

802.1T

Path-cost

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

--	--

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

### 14.1.20 spanning-tree portfast

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



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

<b>show spanning-tree interface</b>	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
	<b>spanning-tree reset</b>	
	-	-
	Ruijie(config)# <b>spanning-tree reset</b>	
	<b>show spanning-tree</b>	STP
	<b>show spanning-tree interface</b>	STP
	-	-

## 14.1.25 spanning-tree tc-guard

	tc-guard	no	tc-guard	tc-guard
	tc			
	<b>spanning-tree tc-guard</b>			
	<b>no spanning-tree tc-guard</b>			
	-		-	
	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

|

} 52 B

}

	-	-

### 14.1.27 spanning-tree tc-protection tc-guard

tc-guard no tc-guard tc-guard  
tc

**spanning-tree tc-protection tc-guard**

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

	-	-

--

tc-guard

--

--

--

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

	-	-

--

	-	-

### 14.1.28 spanning-tree tx-hold-count

STP TxHoldCount BPDU no

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

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

<i>tx-hold-count</i>	TxHoldCount	1	10

3

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

--	--

**show spanning-tree**

<b>tx-hold-count</b>	TxHoldCount
<b>pathcost method</b>	

└───

└───

└───

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

<b>spanningtree pathcost method</b>	
<b>spanning-tree forward-time</b>	BridgeForwardDelay
<b>spanning-tree hello-time</b>	BridgeHelloTime
<b>spanning-tree max-age</b>	BridgeMaxAge

<b>link-type</b>	linktype
------------------	----------

┌

┌

┌

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

<b>spanning-tree bpdudfilter</b>	BPDU filter
<b>spanning-tree portfast</b>	portfast
<b>spanning-tree bpduguard</b>	BPDU guard
<b>spanning-tree link-type</b>	“ ”

┌

-	-
---	---

### 14.2.3 show spanning-tree mst

MST Instance

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

<b>configuration</b>	mst
<i>instance-id</i>	<i>Instance</i>
<i>interface-id</i>	

┌ Instance

┌

```
Ruijie# show spanning-tree mst configuration
```

<b>spanning-tree mst configuration</b>	MST region
<b>spanning-tree mst cost</b>	instance
<b>spanning-tree mst max-hops</b>	instance
<b>spanning-tree mst priority</b>	instance
<b>spanning-tree mst port-priority</b>	instance

-	-

# 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** } | [**both** | **rx** | **tx**]} [**acl name**]

**no monitor session** *session\_number* [**source interface** *interface-id* [**both** | **rx** | **tx**] | **destination interface** *interface-id* { **encapsulation** | **switch** }] | [**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> SVI
<b>destination interface</b> <i>interface-id</i>	<i>interface-id</i> SVI
<b>mac source</b> <i>mac-addr</i>	MAC
<b>mac destination</b> <i>mac-addr</i>	MAC
<b>both</b> <b>acl name</b>	<b>acl name/id</b>
<b>rx</b>	
<b>tx</b>	
<b>all</b>	
<b>switch</b>	

SPAN

|

|

|

```
show monitor SPAN 1
Ruijie# show monitor session 1
sess-num: 1
src-intf:
GigabitEthernet 3/1 frame-type Both
dest-intf:
GigabitEthernet 3/8
```

|

<b>monitor session</b>	SPAN

|

|

-	-

# 16

```

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

<b>show monitor</b>	

reflector-port

-	-

### 16.1.2 remote-span

RSPAN VLAN

**[no] remote-span**

-	-

VLAN

end            Ctrl+C  
exit

```

Ruijie(config)# vlan 5
Ruijie(config)# remote-span
    
```

--	--

	<b>show vlan</b>	Vlan
	S2600	
	-	-

# 17 IP

## 17.1

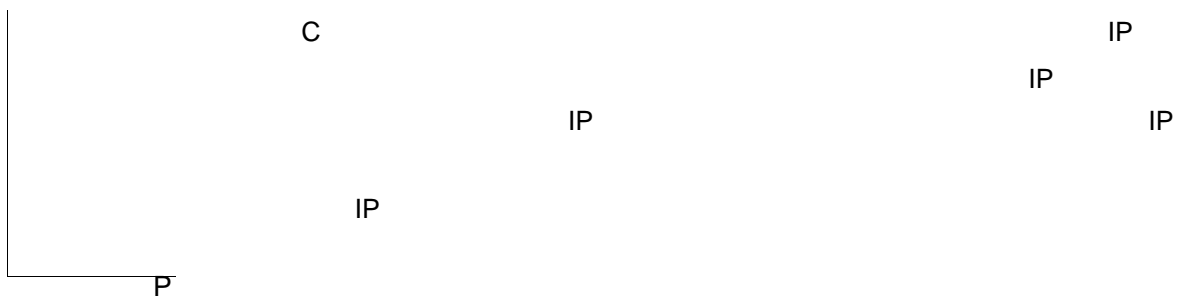
### 17.1.1 ip address

IP

no

IP

---



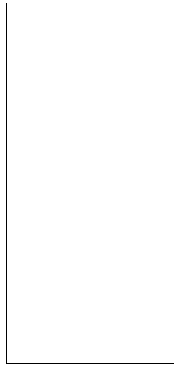
---

```
IP      10.10.10.1      255.255.255.0
ip address 10.10.10.1 255.255.255.0
```

---

<b>show interface</b>	

---



SLIP HDLC PPP LAPB Frame-relay

X.25

ping  
SNMP

IP



FastEthernet 0/1

IP

ip unnumbered fastEthernet 0/1



[Redacted]	
<b>show interface</b>	



[Redacted]	
-	-

## 17.2

### 17.2.1 arp

ARP IP MAC no  
MAC ip-address (MA-addr)-4(ss a)6typce



IP

---

└── ARP

RGOS

ARP

32

IP

48

MAC

ARP

ARP

**clear**

0

```
1 SVI 1 ARP
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
```

```
>6<352534B0_6<341Q15AD311D074A_6<11574B>3 f 4E6C1B7A05>190519<05_0<11D7A 0
```

1

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

### 17.2.4 arp retry times

```

no arp                    5 ARP IP ARP
arp retry times number
no arp retry times

```



8192 ARP no  
**arp unresolve number**  
**no arp unresolve**

<i>number</i>	> ARP 8192	< 1-8192

ARP 8192

ARP

arp unresolved 500 500

	-	-

	-	-

### 17.2.7 ip proxy-arp

ARP ARP ip proxy-arp no  
**ip proxy-arp**  
**no ip proxy-arp**

	-	-

┌

10.2(3) ( 10.2(3))  
ARP

ARP

┌

┌

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

┌

FastEthernet 0/1 ARP  
interface fastEthernet 0/1  
no switchport  
ip proxy-arp



IP

---

mask

ARP

*mask*

<b>vrf vrf_name</b>	VRF	VRF	ARP
<b>trusted</b>	ARP	ARP	VRF
<b>ip</b>	IP <b>trusted</b>	IP	ARP ARP
<b>mask</b>	IP ARP	ARP ; ARP	trusted
<b>static</b>	arp		
<b>mac-address</b>	mac	ARP	
<b>complete</b>	arp		
<b>incomplete</b>	arp		
<b>oob</b>	(interface of mgmt) ARP		

```

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

```

ARP

Protocol	Internet
Address	IP

Age (min)	ARP
Hardware	IP
Type	ARPA
Interface	IP

2            **show arp 192.168.195.68**

Ruijie# **show arp 192.168.195.68**

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

3            **show arp 192.168.195.0 255.255.255.0**

Ruijie# **show arp 192.168.195.0 255.255.255.0**

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

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

Ruijie# **show arp 001a.a0b5.378d**

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

-	-

-	-

### 17.3.3

-	-
---	---

┌

┌

┌

```

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

-	-
---	---

┌

-	-
---	---

### 17.3.4 show arp detail

ARP

**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

A R P à s , C ™ @ "

ARP

ARP

**show arp detail**

Ruijie# **show arp detail**

IP Address	MAC Address	Type	Age(min)	Interface	Port
20.1.1.1	000f.e200.0001	Static	-- --	--	
20.1.1.1	000f.e200.0001	Static	-- 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
Age	ARP
Interface	IP
Port	ARP

	-	-

L

--	--	--

## 17.3.6 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 “_”
Hardware	IP
Type	ARPA
Interface	IP

-	-

└───

-	-

### 17.3.7 show ip interface

IP

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

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

└───

└───

```

RGOS                RGOS                RGOS
                    UP                    UP
                    UP                    UP
    
```

```

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

|

|

-	-

### 17.3.8 show ip redirects

**show ip redirects**

|

-	-

|

|

|

|

**show ip redirects**

Ruijie# **show ip redirects**

Default Gateway: 192.168.195.1

|

--	--

**ip default-gateway**

**ip default-gateway** no

**ip default-gateway**

**no ip default-gateway**

	-	-

|

|

|

**show ip redirects**

|

192.168.1.1

ip default-gateway 192.168.1.1

|

	<b>show ip redirects</b>	

|

|

	-	-

# 18 DHCP Relay

## 18.1

### 18.1.1 ip dhcp relay check server-id

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

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

	-	-

```
|
```

```
|
```

```
                DHCP Relay    DHCP          option server-id
                DHCP          DHCP          DHCP          DHCP
```

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

```
c1p1CTf2 Tr 10.02 0 0 10.02 78.36 434.8403 Tmf0 gB/C2_0 1 Tf53.7 22C
```

DHCP Relay option dot1x no

**[no] ip dhcp relay information option dot1x**

-	-

└───

└───

└───

DHCP 802.1x

└───  
 Ruijie# **configure terminal**  
 Ruijie(config)# **ip dhcp relay information option dot1x**

<b>service dhcp</b>	DHCP
<b>ip dhcp relay information option dot1x</b> <b>access-group <i>acl-name</i></b>	option dot1x acl

└───

-	-

**18.1.3 ip dhcp relay information option dot1x access-group**

DHCP Relay option dot1x ACL no  
 DHCP Relay option dot1x ACL

**[no] ip dhcp relay information option dot1x access-group *acl-name***

-	-

└───

ACL

ACL	ACL	ACE
-----	-----	-----

```
dhcp option dot1x acl
```

```
Ruijie# configure terminal
Ruijie(config)# ip access-list extended
DenyAccessEachOtherOfUnauthrize
Ruijie(config-ext-nacl)# permit ip any host 192.168.3.1
//
Ruijie(config-ext-nacl)# permit ip any host 192.168.4.1
Ruijie(config-ext-nacl)# permit ip any host 192.168.5.1
Ruijie(config-ext-nacl)# permit ip host 192.168.3.1 any
// IP
Ruijie(config-ext-nacl)# permit ip host 192.168.4.1 any
Ruijie(config-ext-nacl)# permit ip host 192.168.5.1 any
Ruijie(config-ext-nacl)# deny ip 192.168.3.0 0.0.0.255 192.168.3.0
0.0.0.255
//
Ruijie(config-ext-nacl)# deny ip 192.168.3.0 0.0.0.255
192.168.4.0 0.0.0.255
Ruijie(config-ext-nacl)# deny ip 192.168.3.0 0.0.0.255
192.168.5.0 0.0.0.255
Ruijie(config-ext-nacl)# deny ip 192.168.4.0 0.0.0.255
192.168.4.0 0.0.0.255
Ruijie(config-ext-nacl)# deny ip 192.168.4.0 0.0.0.255
192.168.5.0 0.0.0.255
Ruijie(config-ext-nacl)# deny ip 192.168.5.0 0.0.0.255
192.168.5.0 0.0.0.255
Ruijie(config-ext-nacl)# deny ip 192.168.5.0 0.0.0.255
192.168.3.0 0.0.0.255
Ruijie(config-ext-nacl)# deny ip 192.168.5.0 0.0.0.255
192.168.4.0 0.0.0.255
Ruijie(config-ext-nacl)# exit
Ruijie(config)# ip dhcp relay information option dot1x access-group
DenyAccessEachOtherOfUnauthrize
```

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

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

### 18.1.4 ip dhcp relay information option82

DHCP Relay option82 no

[no] ip dhcp relay information option82

	-	-

option dot1x

DHCP opion82  
 Ruijie# **configure terminal**  
 Ruijie(config)# **Ip dhcp relay information option82**

	<b>Service dhcp</b>	DHCP
	<b>ip dhcp relay information option dot1x</b>	DHCP option dot1x

DHCP Relay  
no

DHCP Relay Aware VRF

DHCP

1 DHCP relay

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

<b>service dhcp</b>	DHCP

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



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L

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# 19 DNS

## 19.1

### 19.1.1 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

```


```

--	--	--

**ip name-server** {ip-address | ipv6-address}

**no ip name-server** [ip-address | ipv6-address]

<i>ip-address</i>	IP
<i>ipv6-address</i>	IPV6

DNS Server IP/IPv6  
Server

DNS Server  
Server DNS

6

DNS Server

ip-address

ipv6-address

DNS

```
Ruijie(config)# ip name-server 10.20.20.1 10.20.20.2 10.20.20.3 10.20.20.4 10.20.20.5 10.20.20.6 10.20.20.7 10.20.20.8 10.20.20.9 10.20.20.10
```

	<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
	-	-

### 19.1.4 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>	



## 19.2.2 show hosts

DNS

**show hosts** [*hostname*]



## 20 SNTP

### 20.1

#### 20.1.1 sntp enable

SNTP

no

—Disable

[no] sntp enable





|

|

**show sntp**          SNTP

|

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

|

<b>show sntp</b>	SNTP

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

RGOS10.0

	-	-

# 21 NTP

## 21.1 NTP

### 21.1.1 no ntp

ntp		ntp
no ntp		
	<hr/>	<hr/>
	-	-
	<hr/>	<hr/>
	NTP	
	NTP	NTP NTP
	no ntp	NTP
	<hr/>	<hr/>
	ntp server	NTP
	<hr/>	<hr/>
	<hr/>	<hr/>
	-	-
	<hr/>	<hr/>

### 21.1.2 ntp access-group

NTP no

**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*

<b>peer</b>	NTP			
<b>serve</b>	NTP			
<b>serve-only</b>	NTP			
<b>query-only</b>	NTP			
<i>access-list-number</i>	IP	1	99	1300 1999
<i>access-list-name</i>	IP			

NTP

NTP  
 NTP  
 NTP

peer serve serve-only query-only

r

--	--	--

NTP

NTP

**ntp authentication-key** *key-id* **md5** *key-string* [

NTP

---

	-	-
--	---	---

.

r

12

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

-	-



|

|

20

prefer

NTP

IP

NTP

|

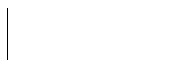
NTP server

IPv4 Ruijie(config)# **ntp server** 192.168.210.222

IPv6 Ruijie(config)# **ntp server** 10::2

|

<b>no ntp</b>	NTP



NTP

Ntp synchronize



<b>ntp server</b>	NTP



-	-

### 21.1.9 ntp trusted-key

ID

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

**no ntp trusted-key** *key-id*



<i>key-id</i>	ID



NTP EAs 630s 0 Pa 0 31.ET66.83\_0 13.8 0.24 20.331.ETf66.84 273.8 63.12 0.24 refBT/TT0 1 Tf10

<b>ntp authenticate</b>	
<b>ntp authentication-key</b>	NTP
<b>ntp server</b>	NTP

┌

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### 21.1.10 ntp update-calendar

NTP

no

**ntp update-calendar**

**no ntp update-calendar**

-	-

┌

┌

NTP	
NTP	NTP

┌  
Ruijie(config)# **ntp update-calendar**

-	-

┌

NTP

---

	-	-

## 21.2

### 21.2.1 debug ntp

NTP

**debug ntp**

**no debug ntp**

	-	-

--

--

--

NTP

--

NTP

debug ntp

	-	-

--

	-	-

### 21.2.2 show ntp status

NTP

**show ntp status**



# 22 FTP Server

## 22.1

### 22.1.1 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**

|

	-	-

|

|

--	--	--

	-	-
--	---	---

---

## 22.1.2 ftp-server enable

FTP



FTP

no

FTP

**ftp-server topdir** *directory*

**no ftp-server topdir**



*time*



FTP

64

FTP



r

FTP



IP Port

IP Port

FTP

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

-	-

-	-

## 23 UDP-Helper

### 23.1

#### 23.1.1 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**]

Entö%U#A#8B#E"R.Y.Hd mÄ.tG6(n05,4070Tas40019JEm#Öje-23njfARi6R"Zs69)1A0

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

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

|

RGOS10.1

|

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### 23.1.3 udp-helper enable

**udp-helper enable**

UDP

**no udp-helper enable**

UDP

UDP

**udp-helper enable**

**no udp-helper enable**

|

-	-

|

UDP

SNMP

**no snmp-server chassis-id**

<i>text</i>	

60FF60

SNMP  
**show snmp**

SNMP 123456:  
 Ruijie(config)# **snmp-server chassis-id 123456**

<b>show snmp</b>	SNMP

-	-

**24.1.3 snmp-server community**

SNMP

**snmp-server community**

no SNMP

**snmp-server community** *string* [**view** *view-name*] [[**ro** | **rw**] [**host** *ipaddr*] ] [ **number** *ipv6*  
*ipv6-aclname*][*aclnum* | *aclname*]

**no snmp-server community** *string*

<i>string</i>	NMS SNMP
<i>view-name</i>	
<b>ro</b>	NMS MIB
<b>rw</b>	NMS MIB

<i>aclnumber</i>	1-99 MIB ipv4 NMS
<i>aclname</i>	MIB ipv4 NMS
<i>ipv6_aclname</i>	ipv6 MIB ipv6 NM<@

<i>text</i>	

┌

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┌

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

<b>show snmp-server</b>	SNMP
<b>no snmp-server</b>	SNMP

┌

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### 24.1.5 snmp-server enable traps

SNMP NMS Trap  
**snmp-server enable traps** no SNMP NMS  
 Trap

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

**no snmp-server enable traps**

<b>snmp</b>	SNMP

┌

┌



	<i>ipv6_aclname</i>	ipv6 MIB    ipv6 NMS
--	---------------------	-------------------------

---

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

SNMP

**snmp-server enable traps** NMS

SNMP

vrf [ vrf ]

SNMP SNMP

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

<b>snmp-server enable traps</b>	
---------------------------------	--

-	-
---	---

### 24.1.8 snmp-server location

SNMP **snmp-server location** no

SNMP

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

|

|

|

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

|

<b>snmp-sever contact</b>	SNMP

|

|

-	-

### 24.1.9 snmp-server packetsiz

SNMP  
no

**snmp-sever packetsize**

**snmp-server packetsize** *byte-count*

**no snmp-server packetsize**

|

<i>byte-count</i>	484 17876

|

1500

|

|

|

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

|

--	--

	<b>snmp-server queue-length</b>	SNMP
--	---------------------------------	------

--

--	--	--

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**

-	-

-	-

### 24.1.12 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**

┌

<b>snmp-server enable traps</b>	
<b>snmp-server enable host</b>	NMS

┌

┌

-	-

### 24.1.13 snmp-server trap-timeout

**snmp-server trap-timeout**

no

**snmp-server trap-timeout** *seconds*

**no snmp-server trap-timeout**

┌

seconds	1 – 1000

┌

30

┌

┌

┌

60

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

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



	<b>(E</b>	<b>A</b>
	-	-

### 24.1.14 snmp-server user

SNMP

snmp-servesnmp-servme grou 06(pna)-6(me ).84 719.36 0.24





|

default

MIB

|

|

|

MIB-2 oid 1.3.6.1

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

|

<b>show snmp view</b>	SNMP

|

|

-	-

### 24.1.16 snmp trap link-status

## 24.2

### 24.2.1 show snmp

SNMP

show snmp

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

|

-	-

|

|

|

**show snmp**

SNMP

```

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

```

SNMP

```

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

```

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

-	-

# 25 RMON

## 25.1

### 25.1.1 rmon alarm

MIB no

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

**no rmon alarm** *number*

-	-

┌

┌

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

MIB ifInNUcastPkts.6  
 Ruijie(config)# **rmon alarm** 10 1.3.6.1.2.1.2.2.1.12.6 30 **delta**  
**rising-threshold** 20 1 **falling-threshold** 10 1 **owner** zhangsan

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

┌

-	-

## 25.1.2 rmon collection history

no

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

**no rmon collection history** *index*

-	-

└──

└──

RGOS	owner buckets
interval	

└──

1

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

Ruijie(config-if)# **rmon collection history 1 zhansan buckets 10 interval 10**

<b>rmon collection stats</b> <i>index</i> [ <b>owner</b> <i>owner-name</i> ]	

└──

-	-

## 25.1.3 rmon collection stats

no

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

**no rmon collection stats** *index*

	-	-

└───

└───

└───



trap

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

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

---

--	--

**rmon event** *number* [**log**] [

```

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

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


-	-

|  
 |  
 |  
 |

```

Ruijie# show rmon statistics
Statistics : 1
Data source : Gil/1
DropEvents : 0
Octets : 1884085
Pkts : 3096
BroadcastPkts : 161
MulticastPkts : 97
CRCAlignErrors : 0
UndersizePkts : 0
OversizePkts : 1200
Fragments : 0
Jabbers : 0
Collisions : 0
Pkts64Octets : 128
Pkts65to127Octets : 336
Pkts128to255Octets : 229
Pkts256to511Octets : 3
Pkts512to1023Octets : 0
Pkts1024to1518Octets : 1200
Owner : zhangsan
  
```

|  
 |  
 |

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

	-	-

# 26 IPv6

## 26.1

### 26.1.1 ping ipv6

IPV6

ping ipv6 [ipv6-address]

ipv6-addres	s

└───┘

└───┘

└───┘

└───┘

Ruijie# ping ipv6 fec0::1

ping

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

└───┘

-	-



-	-

### 26.1.2 ipv6 address

IPV6 ,

IPV6

UP IPV6 4

|



**default**

2	IPv6	<b>ipv6 enable</b>
	IPv6	
<b>r</b>	IPv6	IPv6
	<b>no ipv6 enable</b>	IPV6

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

<b>show ipv6 interface</b>	
----------------------------	--

-	-
---	---

### 26.1.5 ipv6 general-prefix

IPv6

**ipv6 general-prefix**

**ipv6 general-prefix** *prefix-name ipv6-prefix/prefix-length*

**no ipv6 general-prefix** *prefix-name ipv6-prefix/prefix-length*

<i>prefix-name</i>	
<i>ipv6-prefix</i>	RFC4291
<i>prefix-length</i>	

IPv6

my-prefix

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


**ipv6 address** prefix-name

sub-bits/prefix-length

	-	-
	-	-

### 26.1.7 ipv6 nd dad attempts

```

                IPV6                                (NS)
                no
    ipv6 nd dad attempts value
    no ipv6 nd dad attempts
    
```

value	(NS)	0
	0-600	ipv6 :

```

1

```

```

                IPV6
                "tentative"( )
                EUI-64
                (                IPV6                )
                down/up
                down                up
    
```

```

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

<b>show ipv6 interface</b>	

IPv6

no

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

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

<i>ipv6-address</i>	IPV6		RFC4291
<i>interface-id</i>	SVI		Routed Port,L3 AP
<i>hardware-address</i>	MAC	'X'	XXXX.XXXX.XXXX 48

ARP

IPV6

NDP

Reachble

IPV6

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>	



**no ipv6**  
IPv6

**ns-linklocal-src**  
RFC3484

**ipv6 ns-linklocal-src**

**no ipv6 ns-linklocal-src**

-	-

|

|

|

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

-	-

|

-	-

### 26.1.11 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*]}

<del>IPv6</del>	
<i>ipv6-prefix</i>	IPV6 RFC4291

<i>ipv6-address</i>	RFC4291
<i>interface-id</i>	

┌

┌

\_\_\_\_\_

r

\_\_\_\_\_

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

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

┌

-	-
---	---

### 26.1.12 ipv6 source-route

	IPv6	no
IPv6		
<b>ipv6 source-route</b>		
<b>no ipv6 source-route</b>		

	-	-

└───

IPv6

└───

└───  
0  
IPv6

IPv6

0

└───

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

	-	-

└───

	-	-

## 26.2

### 26.2.1 clear ipv6 neighbors

**clear ipv6 neighbors**

	-	-

└───

└───

└───



```

┌
└

```

RGOS10.4	RGOS10.4

### 26.2.3 show ipv6 interface

IPV6

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

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

```

┌
└

```

```

┌
└

```

```

┌
└

```

IPV6

ND

```

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

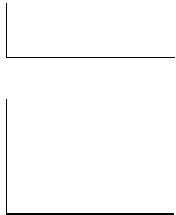
[TENTATIVE]	INET6	[ ]
ANYCAST		
TENTATIVE		(DAD)
DUPLICATED		
DEPRECATED		
NODAD		
AUTOIFID		EUI-64
PRE		
GEN		

```
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-Info~~

1

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



-	-

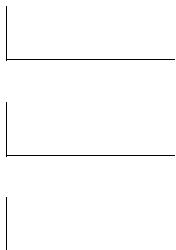
### 26.2.4 show ipv6 neighbors

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 Linklayer Addr Interface
2001::1       00d0.f800.0001  vlan 1
                State: Reach/H Age: - asked: 0
fe80::200:ff:fe00:1  00d0.f800.0001  vlan 1
                State: Reach/H Age: - asked: 0
```



IPv6 Address	IPV6

Linklayer Addr	Mac incomplete
Interface	
State	<p>state/H(R)</p> <p>STATE</p> <p>INCOMP( Incomplete)— (NS) (NA)</p> <p>REACH(Reachable) —</p> <p>STALE —</p> <p>NUD ( Neighbor Unreachability Detection )</p> <p>DELAY— STALE STALE DELAY</p> <p>DELAY_FIRST_PROBE_TIME seconds(5 )</p> <p>DELAY PROBE (NS) NUD</p> <p>PROBE— NUD RetransTimer milliseconds (NS)</p> <p>MAX_UNICAST_SOLICIT(3 )</p> <p>?— /R— /H—</p>
Age	'expired' NUD
Asked	

IPv6 Address	IPv6
Linklayer Addr	Mac
Interface	
State	STATE ACTIVE— INACTIVE—  IPV6  mac

<b>ipv6 neighbor</b>	

-	-

### 26.2.5 show ipv6 route

IPV6

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

<b>static</b>	
<b>local</b>	
<b>connected</b>	

```

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

```

<b>ipv6 route</b>	

-	-

## 26.2.6 show ipv6 router

IPv6

show ipv6 router

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

--	--



# 27 MLD Snooping

## 27.1

### 27.1.1 ipv6 mld profile

MLD profile profile profile-number mld  
profile

	<b>10.4</b>	

### 27.1.3 deny

	profile	profile	deny
	<b>deny</b>		
	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
	<b>10.4</b>		

### 27.1.4 permit

	profile	profile	permit
	<b>permit</b>		



┌

┌ VLAN

┌ 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

10.4	

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

ipv6 mld snooping dyn-mr-aging-time *time*  
no ipv6 mld snooping dyn-mr-aging-time

ipv6 mld snooping dyn-mr-aging-time *time*  
no ipv6 mld snooping dyn-mr-aging-time

┌  
┌ *time*

<i>time</i>	1-3600

┌ 300s

┌

┌ Hello

┌

MLD 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**

<i>vid</i>	vlan	id	1-4094

VLAN

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

<i>vid</i>	vlan id	1-4094
<i>ipv6-multiaddr</i>		
<i>interface-id</i>		

└───┘

└───┘

└───┘

```

                                FF88::1
Ruijie(config)# ipv6 mld snooping vlan 1 static FF88::1 interface
fastEthernet 0/1
    
```

<b>ipv6 mld snooping vlan mrouter interface</b>	

└───┘

<b>10.4</b>	

### 27.1.12 ipv6 mld snooping fast-leave enable

```

                                mld snooping fast-leave          ipv6 mld snooping
fast-leave enable                no                mld snooping fast-leave
ipv6 mld snooping fast-leave enable
no ipv6 mld snooping fast-leave enable
    
```


└───┘

└───┘

IPv6 MLD

IPv6 MLD

mld snooping fast-leave

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


10.4	

### 27.1.13 ipv6 mld snooping suppression enable

mld snooping suppression **ipv6 mld snooping**  
**suppression enable** no mld snooping suppression  
**ipv6 mld snooping suppression enable**  
**no ipv6 mld snooping suppression enable**


IPv6 MLD

MLD  
MLD

suppression  
MLD v2 report

MLD v1 report

mld snooping suppression

```
Ruijie(config)# ipv6 mld snooping suppression
```


10.4	

### 27.1.14 ipv6 mld snooping filter

```
profile          no          profile
```

```
ipv6 mld snooping filter profile-number
```

```
no ipv6 mld snooping filter profile-number
```

<i>profile-num</i>	profile

MLD Profile

MLD Report  
MLD Profile  
profile

filter

0/1 profile 1

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

```
Ruijie(config-if)# ipv6 mld snooping filter 1
```

<b>ipv6 mld profile</b>	profile

	<b>10.4</b>	

**clear ipv6 mld snooping gda-table**


|

|

|

|

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


|

10.4	

### 27.1.17 debug mld-snp

mld , debug mld-snp

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


|

|

|

|

mld

mld

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


10.4	

## 27.2

### 27.2.1 show ipv6 mld snooping

mld snooping

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>	
<b>statistics [vlan <i>vlan-id</i>]</b>	snooping

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 time	Last leave time	Last 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 **show ipv6 mld snooping interface** mld snooping Filtering

Ruijie# **show ipv6 mld snooping interface GigabitEthernet 0/7**

Interface	Filter Profile number	max-groups
GigabitEthernet 0/7	1	4294967294


--	--

10.4

## 27.2.2 show ipv6 mld profile

MLD profile

**show ipv6 mld profile** [*profile-number*]

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

mld profile

```

1      show ipv6 mld profile      MLD profile
Ruijie# show ipv6 mld profile 1
MLD Profile 1
permit
range FF77::1 FF77::100
range FF88::123
    
```

10.4

---

# 28

## 28.1

### 28.1.1 storm-control

no

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

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

<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

2-100M

1M

187.1 0. 20.1 ref296.7 92 Tw 11MBT 602.0 100.0

---

GigabitEthernet 1/1

4M

Ruijie# **configure terminal**

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

Ruijie(config-if)# **storm-control multicast 4096**

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

19.62 rW\* n0.8.796g0 1 Tf0 Tc 2 Tr( )Tj0.02 0 0 10.02 78.36 702.98803 Tm767213542>Tj/TT0 1 Tf11T

---

L

L

-	-

### 28.1.3 switchport port-security

no

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

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



---

	<b>show port-security</b>	
--	---------------------------	--

---

--

<b>switchport port-security</b>	
<b>switchport port-security binding interface</b>	
<b>Switchport port-security mac-address</b>	
<b>switchport port-security aging</b>	
<b>show port-security</b>	

└───

-	-

### 28.1.6 switchport port-security binding interface

IP+    MAC            IP

no

**[no] switchport port-security binding interface** *interface-id* *mac-address* **vlan** *vlan\_id* *ipv4-address* | *ipv6-address*

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

<i>interface-id</i>	ID
<i>mac-address</i>	MAC
<i>Vlan_id</i>	MAC    VID
<i>Ipv4-address</i>	Ipv4    Ip
<i>Ipv6-address</i>	Ipv6    Ip

└───

└───

└───

```

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
```

```

Interface Broadcast Control Multicast Control Unicast Control
-----
Gi1/1 Disabled Disabled Disabled

```

<b>storm-control</b>	

-	-

## 28.2.2 show port-security

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

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

```

Ruijie# show port-security
Secure Port MaxSecureAddr(count) CurrentAddr(count) Security
Action
-----
Gi1/1 128 1 Restrict
Gi1/2 128 0 Restrict
Gi1/3 8 1 Protect

```

---

	<b>switchport port-security</b>	
	<b>switchport port-security aging</b>	
	<b>switchport port-security mac-address</b>	

---

	-	-

# 29 802.1X

## 29.1 dot1x

### 29.1.1 dot1x auto-req

802.1X

**dot1x auto-req**

**no**

**[no] dot1x auto-req**



-	-

### 29.1.3 dot1x auto-req req-interval

no

**dot1x auto-req req-interval** *interval*

**no dot1x auto-req req-interval**

<i>interval</i>	s

30

**show dot1x auto-req**

```

802.1x          60s
Ruijie# configure terminal
Ruijie(config)# dot1x auto-req req-interval 60
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>	

-	-

## 29.1.4 dot1x auto-req user-detect

no

**dot1x auto-req user-detect**

**no dot1x auto-req user-detect**



## 29.2.1 dot1x timeout quiet-period

no

dot1x timeout quiet-period *seconds*

no dot1x timeout quiet-period

<i>seconds</i>	0 65535 s

|

10

|

	<b>show dot1x</b>	802.1x
	-	-

## 29.2.2 dot1x timeout re-authperiod

**no**

**dot1x timeout re-authperiod** *seconds*

**no dot1x timeout re-authperiod**

	<i>seconds</i>	0	65535	s

3600

**show dot1x**            802.1x

1000s

```
Ruijie# configure terminal
Ruijie(config)# dot1x timeout re-authperiod 1000
Ruijie(config)# end
Ruijie# show dot1x
802.1X Status:      Enabled
Authentication Mode: EAP-MD5
Authed User Number: 0
Re-authen Enabled:  Disabled
Re-authen Period:   1000 sec
Quiet Timer Period: 1000 sec
Tx Timer Period:    3 sec
```

```

Supplicant Timeout: 3 sec
Server Timeout: 5 sec
Re-authen Max: 3 times
Maximum 2Request: 3 times
Filter Non-RG Supp: Disabled
Client Oline Probe: Disabled
Eapol Tag Enable: Disabled
Authorization Mode: Group Server

```

<b>show dot1x</b>	802.1x

-	-

### 29.2.3 dot1x timeout server-timeout

**no**

**dot1x timeout server-timeout** *seconds*

**no dot1x timeout server-timeout**

<i>seconds</i>	0 65535

```

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

-	-

## 29.2.4 dot1x timeout supp-timeout

no

**dot1x timeout supp-timeout** *seconds*

**no dot1x timeout supp-timeout**

<i>seconds</i>	0 65535

3



	<b>show dot1x</b>	802.1x

┌

	-	-

## 29.3 dot1x

### 29.3.1 dot1x re-authentication

no

[no] dot1x re-authentication

	-	-

┌

┌

┌

**show dot1x**            802.1x

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

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

<b>show dot1x</b>	802.1x

-	-

```

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

-	-

## 29.4 dot1x

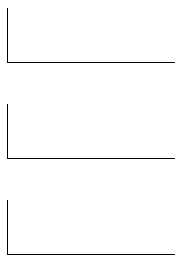
### 29.4.1 dot1x probe-timer

**dot1x probe-timer**{interval | alive}*interval*

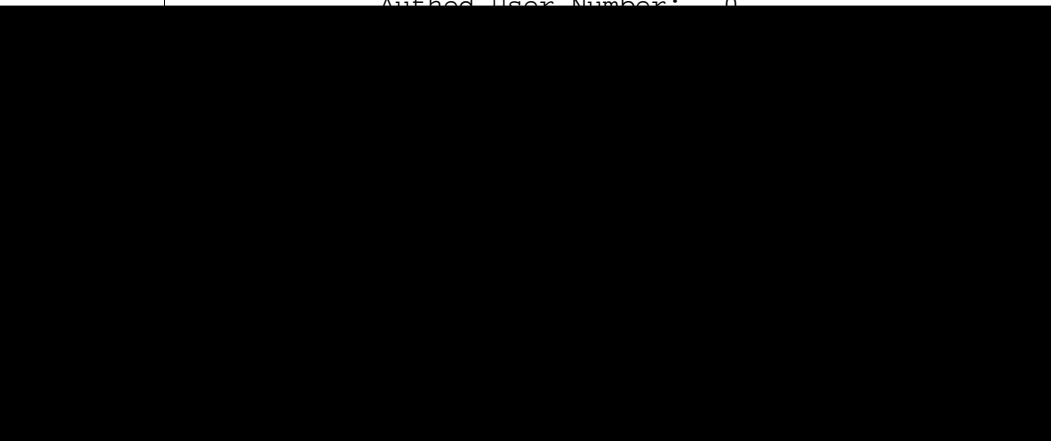
**no dot1x probe-timer**

<b>no</b>	

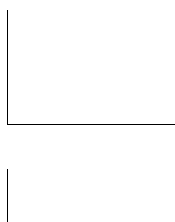
<i>interval</i>	hello
<b>alive</b>	
<b>interval</b>	



```
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
```



```
Client Oline Probe:  Enabled
Eapol Tag Enable:    Disabled
Authorization Mode:   Group Server
```



<b>show dot1x</b>	dot1x



--	--

-

-

## 29.5.1 dot1x authentication

AAA

AAA

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

<b>default</b>	
<i>list-name</i>	

AAA

AAA

AAA

dot1x

group radius

```

Ruijie# configure terminal
Ruijie(config)# aaa new-model
Ruijie(config)# aaa authentication dot1x default group radius
Ruijie(config)# interface fastEthernet0/1
Ruijie(config-if)# dot1x authentication default
Ruijie(config-if)# end

```

<b>aaa new-model</b>	AAA
<b>aaa authentication dot1x</b>	

802.1X

no

**dot1x auth-address-table address** *mac-addr* **interface** *interface***no dot1x auth-address-table address** *mac-addr* **interface** *interface*

<i>mac-addr</i>	
<i>Interface</i>	

802.1X

**show dot1x auth-address****table**Ruijie# **configure terminal**Ruijie(config)# **dot1x auth-address-table address**

---

<i>num</i>	VLAN , 1-3

3

**show dot1x**

VLAN

Ruijie# **configure terminal**

Ruijie(config)# **dot1x auth-fail max-attempt** E9Bù

**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

```

<b>show dot1x interface</b>	802.1x

<b>10.3(5)</b>	

**29.5.5 dot1x auth-mode**

802.1x

**dot1x auth-mode {eap-md5 | chap | pap}****no dot1x auth-mode**

<b>eap-md5</b>	802.1x	EAP-MD5
<b>chap</b>	802.1x	CHAP
<b>pap</b>	802.1x	PAP

EAP-MD5

**show dot1x**      802.1x

802.1x

```

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

```

<b>show dot1x</b>	802.1x

-	-

### 29.5.6 dot1x default

802.1x

#### dot1x default

-	-

**show dot1x**      802.1x

```

802.1x
Ruijie# configure terminal
Ruijie(config)# dot1x default
Ruijie(config)# end
Ruijie# end

```

<b>show dot1x</b>	802.1x

	-	-

### 29.5.7 dot1x dynamic-vlan enable

vlan no

dot1x dynamic-vlan enable

no dot1x dynamic-vlan enable

	-	-

--

--

--

show dot1x dynamic-vlan 802.1x


```
802.1x vlan  
Ruijie# configure terminal  
Ruijie(config)# dot1x dynamic-vlan enable  
Ruijie(config)# end  
Ruijie#
```

	show dot1x	802.1x

--

	-	-

### 29.5.8 dot1x guest-vlan

guest vlan no



-	-
---	---

┌

┌

┌ **show dot1x** 802.1x

```

      802.1X tag
Ruijie# configure terminal
Ruijie(config)# dot1x eapol-tag
Ruijie(config)# end
Ruijie#
    
```

<b>show dot1x</b>	802.1x

┌

-	-

### 29.5.10 dot1x mac-auth-bypass

MAC

**dot1x mac-auth-bypass**

**no dot1x mac-auth-bypass**


┌ MAC

┌

## 802.1x MAC

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

<b>show dot1x port-control interface</b>	802.1x

<b>10.3(5)</b>	

**29.5.11 ph-b timeout-activity)**

	<b>show dot1x port-control interface</b>	802.1x
	<b>10.3(5)</b>	

## 29.5.12 dot1x mac-auth-bypass violation

802.1x MAC

**dot1x mac-auth-bypass violation**

**no dot1x mac-auth-bypass violation**


**show run**            802.1x

802.1x MAC

Ruijie# **configure terminal**

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

Ruijie(config-if)# **dot1x mac-auth-bypass violation**

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

Ruijie#write

	<b>show dot1x port-control interface</b>	802.1x

10.3(5)	

### 29.5.13 dot1x max-req

```

DOT1X
DOT1X
no
dot1x max-req count
no dot1x max-req
    
```

<i>count</i>	

```

3
    
```

```

    
```

```

show dot1x 802.1x
    
```

```

802.1x 7
Ruijie# configure terminal
Ruijie(config)# dot1x max-req 7
Ruijie(config)# end
Ruijie#
    
```

show dot1x	802.1x

```

    
```

-	-

### 29.5.14 dot1x private-supPLICANT-only

no

**dot1x private-supPLICANT-only****no dot1x private-supPLICANT-only**

	-	-

---



---



---

**show dot1x private-supPLICANT-only**          802.1x

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

	<b>show dot1x private-supPLICANT-only</b>	

---

	-	-

### 29.5.15 dot1x port-control auto

no

**dot1x port-control auto****no dot1x port-control**

	-	-

---

```

802.1x

```

```

show dot1x      802.1x

```

```

802.1x
Ruijie# configure terminal
Ruijie(config)# interface g0/1
Ruijie(config-if)# dot1x port-control auto
Ruijie(config-if)# end
Ruijie#

```

show dot1x	802.1x

-	-

## 29.5.16 dot1x port-control-mode

802.1x

MAC

```
dot1x port-control-mode {mac-based | {port-based [single-host]} }
```

```
no dot1x port-control-mode
```

<b>single-host</b>	802.1x
--------------------	--------

mac-based

```

show dot1x port-control           802.1x
s26                                802.1X
                                802.1X
single-host                        802.1x
port-based show running-config   show dot1x port-control
port-based single-host          dot1x port-control-mode
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#

```

<b>show dot1x port-control</b>	802.1x
<b>Show running-config</b>	

## 29.5.17 dot1x stationarity enable

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#
    
```

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-	-

## 29.5.18 dot1x redirect url

	802.1x		
	URL	URL	http://
http://ruijie.net/web	http://	https://	

url url no  
url

**dot1x redirect url** [*url-string*]

**[no ] dot1x redirect url**

<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>	web ip ip
<b>dot1x redirect time-out</b>	
<b>dot1x redirect num for special source-ip</b>	
<b>show dot1x</b>	dot1x

┌

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### 29.5.19 dot1x redirect for special tcp-destination port

port 16 TCP ip ip web 80 8080  
no dot1x redirect for special tcp-destination port\_mum

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

	<i>port num</i>	TCP

```

3
1
5
Ruijie(config)# dot1x redirect time-out 5

```

<b>dot1x redirect url</b>	web ip ip
<b>dot1x redirect for special tcp-destination port</b>	
<b>dot1x redirect num for special source-ip</b>	
<b>show dot1x</b>	dot1x

```

-
-

```

-	-

### 29.5.21 dot1x redirect num for special source-ip

1 1-10 no

**dot1x redirect num for special source-ip *num***

**no dot1x redirect num for special source-ip**

```

num
1

```

<i>num</i>	

└───

└───

```

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

└───

└───

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## 29.6 dot1x

### 29.6.1 show dot1x

802.1x

**show dot1x**

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└───

└───

└───

└───

```
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#
```



	-	-
--	---	---

## 29.6.2 show dot1x auth-address-table

802.1X

**show dot1x auth-address-table***[addressmac-addr][interface interface]*

	<b>dot1x timeout supp-timeout</b>	
	<b>dot1x timeout tx-period</b>	

---

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<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>	

\_\_\_\_\_



<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>	

```
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>	

-	-

### 29.6.6 show dot1x port-control

```
show dot1x port-control [interface interface]
```

<i>interface</i>	

```

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

```

<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>	

-	-
---	---

### 29.6.7 show dot1x probe-timer

```
show dot1x probe-timer
```



## 29.6.8 show dot1x re-authentication

### show dot1x re-authentication

-	-

└──

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└──

```
Ruijie# show dot1x re-authentication
reauth-enabled: disabled
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>	

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## 29.6.9 show dot1x reauth-max

### show dot1x reauth-max

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└───

└───

└───

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

### 29.6.10 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>	



```

Mac address is 0013.2049.8272
Vlan id is 217
Access from port Gi0/13
User ip address is 192.168.217.64
Max user number on this port is 6000
COS on this port is 5
Up-bandwidth is 1024 kbps
Down-bandwidth is 1024 kbps
Authorization vlan is dep7
Authorization session time is 1000000 seconds
Authorization ip address is 192.168.217.64
Start accounting
Permit proxy user
Permit dial user
IP privilege is 2

```

<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>	

-	-

## 29.6.12 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**

-	-

┌

┌

┌

┌

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

# **30      Web**

## **30.1 Web**

### **30.1.1 http redirect**

HTTP

**no**

**http redirect direct-site** *ip-address* [*ip-mask*] [**arp**]

**no http redirect direct-site** *ip-address* [*ip-mask*]

<i>ip-address</i>	IP
<i>ip-mask</i>	IP
<b>arp</b>	ARP CHECK ARP <b>arp</b>

|

|

Web	Web
50	

1 IP 172.16.0.1  
 Ruijie(config)# **http redirect direct-site** 172.16.0.1

<b>show http redirect</b>	HTTP

|

<b>10.2(5)</b>	

### 30.1.3 http redirect homepage

**no**

**http redirect homepage** *url-string*

**no http redirect homepage**

<i>url-string</i>	"http://" "https://" 255

Web

```

1 http://www.web-auth.net/login
Ruijie(config)#
http redirect homepage http://www.web-auth.net/login
  
```

<b>show http redirect</b>	HTTP
<b>http redirect</b>	IP

<b>10.2(5)</b>	

### 30.1.4 http redirect port

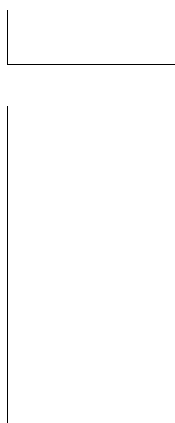
port no HTTP WEB http redirect HTTP WEB

http redirect port *port-num*

no http redirect port *port-num*

<i>port-num</i>	HTTP WEB

80 HTTP



```
HTTP
HTTP
80 HTTP
HTTP
80
1 8080 HTTP WEB
Ruijie(config)# http redirect port 8080
1 80
```

```

HTTP 300 HTTP 255
HTTP
HTTP HTTP TCP
HTTP HTTP
HTTP 1 HTTP
1 HTTP 4
Ruijie(config)# http redirect session-limit 4

```

<b>show http redirect</b>	HTTP

<b>10.2(5)</b>	

### 30.1.6 http redirect timeout

```

no
3
http redirect timeout seconds
no http redirect timeout

```

<i>seconds</i>	<i>seconds</i> 1-10

```

3
HTTP

```

GET/HEAD

HTTP

<b>show web-auth allow-vlan</b>	VLAN	Web	VLAN
<b>10.4(2b2)</b>			

### 30.1.8 web-auth direct-host

IP

no

**web-auth direct-host** *ip-address* [*ip-mask*] [**port** *interface-name*] [**arp**]

**no web-auth direct-host** *ip-address*

<i>ip-address</i>	IP
<i>ip-mask</i>	IP
<b>port</b> <i>interface-name</i>	IP

|

Web

---

	10.2(5)	

### 30.1.10 web-auth port-control

Web

10.2(5)	
10.4(2b2)	ip-only-mode

### 30.1.11 web-auth portal key

HTTP WEB WEB no  
**web-auth portal key** *key-string*  
**no web-auth portal key**

<i>key-string</i>	255

└───

└───

└───

└───

Web  
 1 *web-auth*  
 Ruijie(config)# **web-auth portal key** *web-auth*

<b>http redirect</b>	IP
<b>http redirect homepage</b>	
<b>web-auth port-control</b>	Web

└───

└───

10.2(5)	

### 30.1.12 web-auth update-interval

no

60

**web-auth update-interval** *seconds*

**no web-auth update-interval**

<i>seconds</i>	30-3600

60


1 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

Direct hosts:

Address	Mask	Port	ARP Binding
192.168.1.1	255.255.255.255	Fa0/1	On

server	IP
port	HTTP
homepage	

Web

|  
|

|  
|

|  
|

|  
|  
|  
|  
|

```
1          VLAN  Web    VLAN
Ruijie# show web-auth allow-vlan
Allow-vlan list : 1-3,5
```

-	-



Web

Ruijie# **show web-auth user**

Current user num : 4

Address	Online	Time Limit	Time Used	Status
192.168.0.11	On	0d 01:00:00	0d 00:15:10	Active
192.168.0.13	On	0	0d 00:00:59	Active
192.168.0.25	Off	0	0	Create
192.168.0.46	Off	0d 01:00:00	0d 01:00:00	Destroy

Ruijie# **show web-auth user 192.168.0.11**

Address : 192.168.0.11  
 Mac : 00d0.f800.2233  
 Port : Fa0/2  
 Online : On  
 Time Limit : 0d 01:00:00  
 Time Used : 0d 00:15:10  
 Time Start : 2009-02-22 20:05:10  
 Status : Active

Address	IP
Mac	MAC
	0
Time Start	
Status	Active Create Destroy

	<b>10.2(5)</b>	
--	----------------	--

# 31 AAA

## 31.1

### 31.1.1 aaa authentication dot1x

AAA



AAA Enable

RADIUS

RADIUS

```
Ruijie(config)# aaa authentication enable default group radius local
```

<b>aaa new-model</b>	AAA
<b>enable</b>	
<b>username</b>	

-	-

### 31.1.3 aaa authentication login

AAA

Login

**aaa authentication login**

Login no

**aaa authentication login** {default | *list-name*} *method1* [*method2...*]

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

<b>default</b>	Login
<i>list-name</i>	Login
<i>method</i>	local none group 4
<b>local</b>	
<b>none</b>	
<b>group</b>	TACACS+ RADIUS

┌

┌

```

AAA                                     AAA  Login
aaa authentication login              Login
Login                                   Login
    
```

┌

```

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

┌

<b>aaa new-model</b>	AAA
<b>username</b>	
<b>login authentication</b>	Login

┌

┌

-	-

### 31.1.4 aaa authentication ppp

```

AAA  PPP                                aaa authentication ppp  PPP
    
```

<b>local</b>	
<b>none</b>	
<b>group</b>	TACACS+ RADIUS

┌  
└

```

AAA PPP
aaa authentication ppp AAA PPP PPP
    
```

```

rds_ppp AAA PPP
RADIUS RADIUS
Ruijie(config)# aaa authentication ppp rds_ppp group radius local
    
```

<b>aaa new-model</b>	AAA
<b>ppp authentication</b>	PPP
<b>username</b>	

┌  
└

-	-
---	---

### 31.1.5 login authentication

```

authentication Login no login
    
```

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

**no login authentication**

--	--


---

<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
```



**no aaa authorization commands** *level* {**default** | *list-name*}

<i>level</i>	0~15
<b>default</b>	Q

## 31.2.2 aaa authorization config-commands

AAA

aaa authorization config-commands

no

AAA

aaa authorization config-commands

no aaa authorization config-commands

-	-

---



---



---

no

---

```
Ruijie(config)# aaa authorization config-commands
```

aaa new-model	AAA
aaa authorization commands	AAA

---

-	-

## 31.2.3 aaa authorization console

AAA

authorization console

no

AAA

aaa

aaa authorization console

no aaa authorization console

-	-

└──

└──

└── RGOS

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

<b>aaa new-model</b>	AAA
<b>aaa authorization commands</b>	AAA
<b>authorization commands</b>	

└──

-	-

### 31.2.4 aaa authorization exec

AAA          NAS    CLI                    Exec  
**aaa authorization exec**            no          AAA Exec

**aaa authorization exec** {default | *list-name*} *method1* [*method2...*]

**no aaa authorization exec** {default | *list-name*}

<b>default</b>	Exec
<i>list-name</i>	Exec

AAA

<b>default</b>	Network
<i>method</i>	

**authorization****commands** no**authorization commands** *level* {**default** | *list-name*}**no authorization commands** *level*

<i>level</i>	0~15
<b>default</b>	
<i>list-name</i>	

AAA

cmd

15

TACACS+

none

VTY 0-4

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

<b>aaa new-model</b>	AAA
<b>aaa authorization commands</b>	AAA

Exec

**authorization exec**

no

Exec

**authorization exec {default | list-name}**

**no authorization exec**

<b>default</b>	Exec
<i>list-name</i>	Exec

AAA Exec

Exec  
 Exec Exec Exec

exec-1 Exec RADIUS  
 none VTY 0 – 4  
 Ruijie(config)# **aaa authorization exec exec-1 group radius none**  
 Ruijie(config)# **line vty 0 4**  
 Ruijie(config-line)# **authorization exec exec-1**

<b>aaa new-model</b>	AAA
<b>aaa authorization commands</b>	AAA Exec

-	-

### 31.3

## 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
<b>default</b>	
<i>list-name</i>	
<i>method</i>	<b>none group</b> 4

---

-	-

### 31.3.2 aaa accounting exec

**accounting exec**                    no                    NAS                    Exec                    **aaa**

**aaa accounting exec** {**default** | *list-name*} **start-stop** *method1* [*method2...*]

**no aaa accounting exec** {**default** | *list-name*}

<b>default</b>	Exec
<i>list-name</i>	Exec
<i>method</i>	<b>none group</b> 4
<b>none</b>	

<b>aaa new-model</b>	AAA
<b>aaa authentication</b>	AAA
<b>accounting commands</b>	Exec

-	-

### 31.3.3 aaa accounting network

**aaa accounting network** no

**aaa accounting network** {default | *list-name*} **start-stop** *method1* [*method2...*]

**no aaa accounting network** {default | *list-name*}

default	Network

```
Ruijie(config)# aaa accounting network default start-stop group
radius
```

aaa new-model	AAA
aaa authorization network	AAA
aaa authentication	AAA
username	

-	-

### 31.3.4 aaa accounting update

aaa accounting update

no

aaa accounting update

no aaa accounting update

-	-

AAA

AAA

```
Ruijie(config)# aaa new-model
```

```
Ruijie(config)#
```

--	--

	<b>aaa new-model</b>	AAA
	<b>aaa accounting network</b>	



---

	-	-

### 31.3.6 accounting commands

#### accounting commands

no

**accounting commands** *level* {**default** | *list-name*}

**no accounting commands** *level*

<i>level</i>	0~15
<b>default</b>	

-	-

### 31.3.7 accounting exec

Exec

no

Exec

**accounting exec****accounting exec** {default | *list-name*}**no accounting exec**

<b>default</b>	Exec
<i>list-name</i>	Exec

|

|

|

Exec  
Exec

Exec

Exec

|

```

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

```

|

<b>aaa new-model</b>	AAA
<b>aaa accounting commands</b>	AAA Exec

|

|

--	--

	-	-
--	---	---

## 31.4 AAA

### 31.4.1 aaa domain

no

**aaa domain** {**default** | *domain-name*}

**no aaa domain** {**default** | *domain-name*}

	<b>default</b>	
	<i>domain-name</i>	

--	--

--	--

--	--

AAA            default  
                  *domain-name*

32

--	--

```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)#
```

	<b>aaa new-model</b>	AAA
	<b>aaa domain enable</b>	AAA

### 31.4.2 aaa domain enable

AAA  
 AAA no

**aaa domain enable**

**no aaa domain enable**

-	-

┌  
└

AAA

┌  
└

AAA

┌  
└

AAA  
 Ruijie(config)# **aaa domain enable**

<b>aaa new-model</b>	AAA
<b>show aaa domain</b>	

┌  
└

-	-

### 31.4.3 access-limit



default

Network

Network

Ruijie(config)# **aaa domain ruijie.com**

Ruijie(config-aaa-domain)# **accounting network default**

<b>aaa new-model</b>	AAA
<b>aaa domain enable</b>	AAA
<b>show aaa domain</b>	

-	-

### 31.4.5 authentication dot1x

IEEE802.1x

no

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

**no authentication dot1x**

<b>default</b>	
<i>list-name</i>	

default

IEEE802.1x

IEEE802.1x

Ruijie(config)# **aaa domain ruijie.com**

Ruijie(config-aaa-domain)# **authentication dot1x default**

<b>aaa new-model</b>	AAA
<b>aaa domain enable</b>	AAA
<b>show aaa domain</b>	

-	-

### 31.4.6 authorization network

Network no

**authorization network {default | list-name}**

**no authorization network**

<b>default</b>	
<i>list-name</i>	

default

Ruijie(config)# **aaa domain ruijie.com**

```
Ruijie(config-aaa-domain)# authorization network default
```

<b>aaa new-model</b>	AAA
<b>aaa domain enable</b>	AAA
<b>show aaa domain</b>	

-	-

### 31.4.7 state

no

**state {block | active}**

**no state**

<b>block</b>	
<b>active</b>	

```
Ruijie(config)# aaa domain ruijie.com
```

```
Ruijie(config-aaa-domain)# state block
```

--	--

<b>aaa new-model</b>	AAA
<b>aaa domain enable</b>	AAA
<b>show aaa domain</b>	

AAA

---

**aaa new-model**

AAA

-	-

## 31.5 AAA

### 31.5.1 aaa group server

AAA no

**aaa group server {radius | tacacs+} name**

**no aaa group server {radius | tacacs+} name**

<i>name</i>	tacacs+	RADIUS	radius TACACS+

AAA RADIUS TACACS+

```
Ruijie(config)# aaa group server radius ss
```

```
Ruijie(config-gs-radius)# end
```

```
Ruijie# show aaa group
```

```
Group Name: ss
```

```
Group Type: radius
```

```
Referred: 1
```

```
Server List:
```

<b>show aaa group</b>	aaa

	-	-

### 31.5.2 ip vrf forwarding

AAA vrf no

**ip vrf forwarding** *vrf\_name*

**no ip vrf forwarding**

	<i>vrf_name</i>	vrf

└──

└──

└──

vrf

```
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

└──

AAA no

**server** *ip-addr* [**authen-port** *port1*] [**acct-port** *port2*]

**no server**

AAA

---

	-	-
--	---	---

### 31.5.4 show aaa group

AAA

**show aaa group**



### 31.6.1 aaa local authentication attempts

login

**aaa local authentication attempts** *max-attempts*

	<i>max-attempts</i>	1~2147483647

3

Login

D

|

| login

|

Ruijie# **configure terminal**  
 Ruijie(config)# **aaa local authentication lockout-time 5**

|

<b>Show running-config</b>	
<b>Show aaa lockout</b>	login

|

|

-	-

### 31.6.3 aaa new-model

RGOS AAA **aaa new-model** AAA  
 no AAA

**aaa new-model**

**no aaa new-model**

|

-	-

| AAA

|

|

AAA AAA **aaa new-model**  
 AAA AAA AAA

|

AAA  
 Ruijie(config)# **aaa new-model**

	<b>aaa authentication</b>	
	<b>aaa authorization</b>	
	<b>aaa accounting</b>	

└───┘

	-	-

### 31.6.4 clear aaa local user lockout

**clear aaa local user lockout {all | user-name <word>}**

	<word>	ID

└───┘

└───┘

### 31.6.5 debug aaa

AAA

no

**debug aaa event**

**no debug aaa event**

	-	-

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┌ EXEC

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┌

	-	-

┌

	-	-

### 31.6.6 show aaa method-list

AAA

**show aaa method-list**

	-	-

┌

~

AAA

AAA

```

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

```

<b>aaa authentication</b>	
<b>aaa authorization</b>	
<b>aaa accounting</b>	

-	-

### 31.6.7 show aaa user lockout

**show aaa user lockout {all | user-name <word>}**

<word>	ID

|

|

Ruijie# **show aaa user lockout all**

|

<b>show running-config</b>	
<b>show aaa lockout</b>	login

|

|

-	-



### 32.1.2 radius attribute

**radius ttribute**{<id> | **down-rate-limit** | **dscp** | **mac-limit** | **up-rate-limit**} **vendor-type**  
<type>

**no radius attribute** {<id>|**down-rate-limit** | **dscp** | **mac-limit** | **up-rate-limit**} **vendor-type**

<i>id</i>	id <1-255>
<i>type</i>	type

id		type
1	max down-rate	1
2	qos	2
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	16
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 privile	42
----	---------------	----

	<b>radius set qos cos</b>	radius	qos	cos
	-	-		

### 32.1.3 radius-server attribute 31

RADIUS Calling-Station-ID



### 32.1.5 radius-server host

RADIUS

**radius-server**

**no**

RADIUS

<i>ipv4-address</i>	IPv4		
<i>ipv6-address</i>	IPv6		
<i>auth-port</i>	UDP		
<i>port-number</i>	UDP	0	
<i>acct-port</i>	UDP		
<i>port-number</i>	UDP	0	

RADIUS

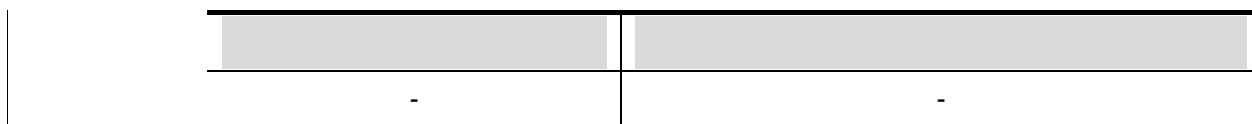
RADIUS AAA

RADIUS

**radius-server**

R

RADIUS



### 32.1.6 radius-server key

	RADIUS
radius-server key	no
radius-server key	

RADIUS

---

RADIUS

RADIUS

---

	<i>seconds</i>	1-1000
--	----------------	--------

---

5

┌

Ruijie(config)# radius set qos cos

┌

radius vendor-specific extend	Radius id

┌

┌

-	-

### 32.1.10 radius vendor-specific extend

id

**radius vendor-specific extend**

**no radius vendor-specific extend**

┌

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┌

id

┌

┌

id

Ruijie(config)#

	-	-

## 32.2 RADIUS

### 32.2.1 debug radius

RADIUS

no

RADIUS

**debug radius [event | detail]**

**no debug radius [event | detail]**

	-	-

--

EXEC
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	-	-

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	-	

RADIUS

-	-
---	---

|

|

|

radius

|

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

|

<b>radius-server host</b>	RADIUS
<b>radius-server retransmit</b>	RADIUS
<b>radius-server key</b>	RADIUS r0023 Tw 1.198 -0.012 Td2(radius-s

radius

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

<b>radius-server host</b>	RADIUS
<b>radius-server retransmit</b>	RADIUS
<b>radius-server key</b>	RADIUS
<b>radius-server timeout</b>	RADIUS

-	-

### 32.2.4 show radius vendor-specific

RADIUS

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

```

<b>radius-server host</b>	RADIUS
<b>radius-server retransmit</b>	RADIUS
<b>radius-server key</b>	RADIUS
<b>radius-server timeout</b>	RADIUS

e(1.BTT0 5f803 66.84 2588

RADIUS

---

	-	-
--	---	---

---

---

# 33 TACACS+

## 33.1 TACACS+

### 33.1.1 aaa group server tacacs+

TACACS+

TACACS+

```
aaa group server tacacs+ group-name
```

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

	<i>group-name</i>	TACACS+

```
TACACS+
```

```
TACACS+
```

```

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

<b>server</b>	TACACS+	server
<b>ip vrf forwarding</b>	TACACS+	VRF

-	-	-

### 33.1.2 ip tacacs source-interface

TACACS+

**ip tacacs source-interface** *interface*

**no ip tacacs source-interface**



	<i>vrf-name</i>	vrf

```
TACACS+
host
```

aaa group server tacacs+ TACACS+ tacacs-server

TACACS+

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



|

---

|

---

TACACS+    AAA    TACACS+  
**tacacs-server**    TACACS+

|

---

TACACS+  
Ruijie(config)# **tacacs-server host** 192.168.12.1  
Ruijie(config)# **tacacs-server host** 2001::1

|

---

<b>aaa authentication</b>	AAA
<b>tacacs-server key</b>	TACACS+
<b>tacacs-server timeout</b>	TACACS+

---

|

---

|

---

\_\_\_\_\_

---

```

key                               host      key

```

```

TACACS+
Ruijie(config)#tacacs-server key aaa

```

<b>tacacs-server host</b>	TACACS+
<b>tacacs-server timeout</b>	TACACS+

-	-

### 33.1.7 tacacs-server timeout

TACACS+

**tacacs-server timeout** *seconds*

**no tacacs-server timeout**

--	--

*seconds*

<b>tacacs-server host</b>	TACACS+
<b>tacacs-server key</b>	TACACS+

	-	

## 33.2 TACACS+

### 33.2.1 debug tacacs+

TACACS+                      no                      TACACS+

**debug tacacs+**

**no debug tacacs+**

--	--

### 33.2.2 show tacacs

TACACS+

**show tacacs**

	-	-

|

|

|

TACACS+

```
Ruijie# show tacacs
Tacacs+ Server : 172.19.192.80/49
Socket Opens: 0
Socket Closes: 0
Total Packets Sent: 0
Total Packets Recv: 0
Reference Count: 0
```

<b>tacacs-server host</b>		TACACS+

|

	-	-

## 34 SSH

### 34.1 SSH

#### 34.1.1 crypto key generate

**crypto key generate {rsa | dsa}**

<b>rsa</b>	RSA
<b>dsa</b>	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
r crypto key zeroize

```

```

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

```

<b>show ip ssh</b>	SSH Server
<b>crypto key zeroize {rsa   dsa}</b>	DSA  RSA  SSH Server

RGOS10.1



<i>retry times</i>	

3 no ip ssh

**authentication-retries**

SSH Server SSH Server

**show ip ssh** SSH Server

2

Ruijie# **configure terminal**

Ruijie(config)# **ip ssh ssh authentication-retries 2**

<b>show ip ssh</b>	SSH Server

RGOS10.1

-	-

### 34.1.4 ip ssh time-out

SSH Server no

**ip ssh time-out** *time*

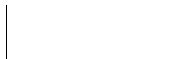
**no ip ssh time-out**

<i>time</i>	

120s no ip ssh time-out

SSH

---



SSH Server  
120s

2

Ruijie# **configure terminal**

Ruijie(config)# **ip ssh version 2**

<b>show ip ssh</b>	SSH Server

RGOS10.1

	Clear line vty <i>line_number</i>	VTY
	RGOS10.1	
	-	-

### 34.2.2 show crypto key mypubkey

SSH Server

**show crypto key mypubkey {rsa/dsa}**

	<b>rsa</b>	RSA
	<b>dsa</b>	DSA

SSH Server

Ruijie# **show crypto key mypubkey rsa**

	<b>crypto key generate {rsa   dsa}</b>	DSA RSA
	RGOS10.1	
	-	-

### 34.2.3 show ip ssh

SSH Server

**show ip ssh**

	-	-

└───┘

└───┘

SSH Server	SSH Server
SSH	
r	SSH

└───┘

Ruijie# **show ip ssh**

<b>ip ssh version {1   2}</b>	SSH Server
<b>ip ssh time-out time</b>	SSH Server
<b>ip ssh authentication-retries retry times</b>	SSH Server

└───┘

RGOS10.1

-	-

**34.2.4 show ssh**

SSH

**show ssh**

-	-

└───┘

|

|

SSH

VTY

SSH

|

Ruijie# **show ssh**

|

-	-

|

RGOS10.1

|

--	--

# 35 CPU

## 35.1

### 35.1.1 `cpu-protect type packet-type pps pps_value`

CPU

`cpu-protect type { arp | bpdu | dhcp | ipv6mc | igmp | rip | ospf | vrrp | pim | ttl1 |  
unknown-ipmc | dvmrp | ... } pps pps_value`

CPU

**cpu-protect type** { arp | bpdu | dhcp | ipv6mc | igmp | rip | ospf | vrrp | pim | ttl1 | unknown-ipmc | dvmrp | ...} **pri** *pri\_num*

<i>pri_num</i>	ID	0 7

0

BPDU 7  
 Ruijie(config)# **cpu-protect type bpdu pri 7**  
 Set packet type bpdu pri 7.

<b>cpu-protect type packet-type pps</b> <i>pps_value</i>	

-	-

## 35.2

### 35.2.1 show cpu-protect type

**show cpu-protect type** { arp | bpdu | dhcp | ipv6mc | igmp | rip | ospf | vrrp | pim | ttl1 | unknown-ipmc | dvmrp | ...} *dvmrp*



|

|

|

**show cpu-protect type bpdu**                      BPDU

Ruijie(config)# **show cpu-protect type arp**

Slot	Type	Eps	Total	Drop
------	------	-----	-------	------

-----

MainBoard	bpdu	100	30	0
-----------	------	-----	----	---

Slot-2	bpdu	100	30	0
--------	------	-----	----	---

|

<b>show cpu-protect type <i>packet-type</i></b>	CPU

|

-

|

-	-

|

CPP	"..."	CPP

# 36 DoS

## 36.1

### 36.1.1 ip deny invalid-l4port

no

ip deny invalid-l4port

no ip deny invalid-l4port

	-	-

└───

└───

└───

└───  
1  
Ruijie(config)# ip deny invalid-l4port  
2  
Ruijie(config)# no ip deny invalid-l4port

	show ip deny invalid-l4port	

└───  
-

	-	-

### 36.1.2 ip deny invalid-tcp

	TCP	no	TCP
<b>ip deny invalid-tcp</b>			
<b>no ip deny invalid-tcp</b>			
	-		-

┌  
└  
┌  
└  
┌  
└

TCP

┌  
└  
┌  
└

```
1 TCP
Ruijie(config)# ip deny invalid-tcp
2 TCP
Ruijie(config)# no ip deny invalid-tcp
```

┌  
└

<b>show ip deny invalid-tcp</b>	TCP	P532A>6<0B9TJ
---------------------------------	-----	---------------

```


```

```


```

```

      1          Land
Ruijie(config)# ip deny land
      2          Land
Ruijie(config)# no ip deny land

```

<b>show ip deny land</b>	Land

```

-
```

-	-

## 36.2

### 36.2.1 show ip deny invalid-l4port

**show ip deny invalid-l4port**

-	-

```


```

```


```

```


```

```

Ruijie# show ip deny invalid-l4port
DoS Protection Mode          State
-----

```

protect against invalid l4port attack Off

	-	-

### **36.2.3 show ip deny land**

Land

**show ip deny land**

# 37 GSN

## 37.1

### 37.1.1 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

|

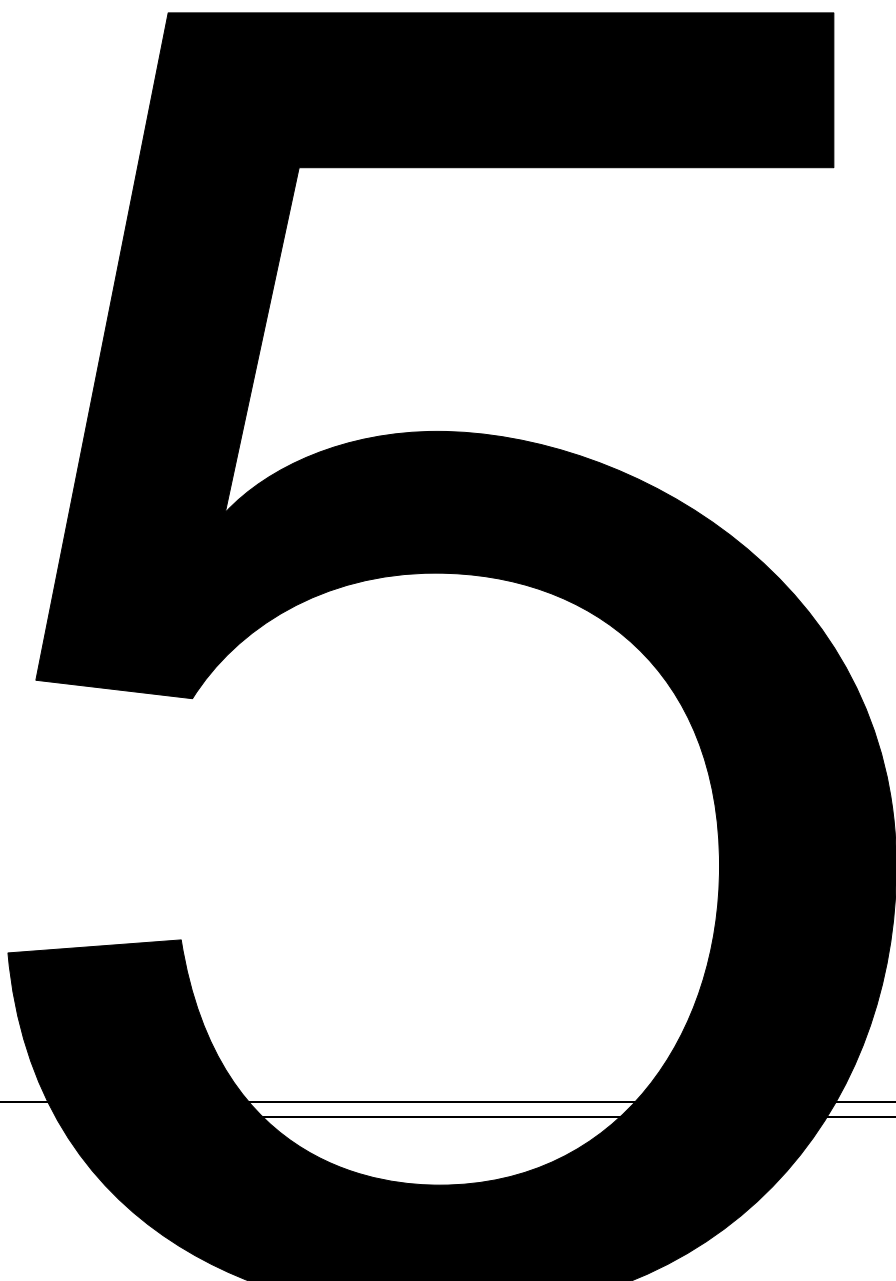
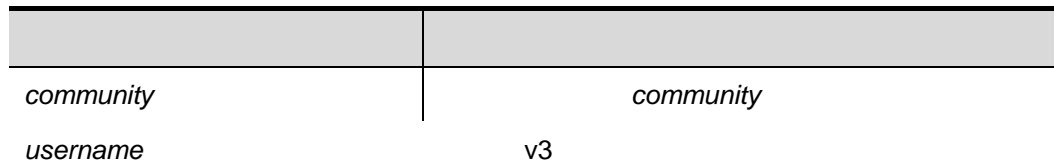
	-	-

### 37.1.2 security community

smp

**security** { [ v1 | v2 ] **community** *community* | v3 **user** *username* }

**no security** { [ v1 | v2 ] **community** *community* | v3 **user** *username* }





	-	-
	RGOS10.1	
	-	-

### 37.1.5 smp-server host

smp-server ip

**smp-server host** *ip-address*

**no smp-server host**

	<i>ip-address</i>	smp server ip

smp server

**show smp-server**

Ruijie(config)#**smp-server host** 192.168.4.243

	<b>show smp-server</b>	smp server

RGOS10.1

	-	-

## 37.2

### 37.2.1 show security evnet interval

	-	-

┌

┌

┌

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

	<b>security event interval</b>	<i>interval</i>

┌  
RGOS10.1

	-	-

### 37.2.2 show smp-server

smp server IP

	-	-

┌

┌

┌  
smp server IP

┌  
Ruijie# **show smp-server**

SMP-Server IP 192.168.20.30

<b>smp-server host</b>	smp server ip

RGOS10.1

-	-

# 38 DAI

## 38.1 VLAN DAI

### 38.1.1 ip arp inspection vlan

*vlan-id* VLAN DAI *vlan-id* no VLAN DAI

**ip arp inspection vlan** *vlan-id*

**no ip arp inspection vlan** [*vlan-id*]



## 38.2

### 38.2.1 ip arp inspection trust

ip arp inspection trust                      no

ip arp inspection trust

no ip arp inspection trust





**39**

**arp**

**a**

**z**

arp

**show anti-arp-spoofing**


|

|

|

```
Ruijie#show anti-arp-spoofing
      port      ip
      -----
      Fa0/1     192.168.1.1
```

<b>anti-arp-spoofing ip</b>	arp

|

-	-

# 40 IP Source Guard

## 40.1 IP Source Guard

### 40.1.1 ip source binding

IP 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>	

|

|

|

IP Source Guard

DHCP

|

1

Ruijie# **configure terminal**

Ruijie(config)# **ip source binding** 0000.0000.0001 **vlan** 1 1.1.1.1  
**interface FastEthernet** 0/1

Ruijie(config)# **end**

Ruijie# **show ip source binding**

```

MacAddress      IpAddress  Lease(sec)  Type   VLAN  Interface
-----
0000.0000.0001 1.1.1.1   infinite   static  1     FastEthernet 0/1
Total number of bindings: 1
    
```

--	--

<b>show ip source binding</b>		IP
	-	-

## 40.2 IP Source Guard

### 40.2.1 ip verify source

```

IP Source Guard      no
[no] ip verify source [port-security]

```

<b>port-security</b>	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# configure terminal
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip verify source
Ruijie(config-if)# end

```

-	-

## 40.3 IP Source Guard

### 40.3.1 show ip source binding

IP

**show ip source binding** [*ip-address*] [*mac-address*] [**dhcp-snooping**] [**static**] [**vlan** *vlan-id*] [**interface** *interface-id*]

<i>ip-address</i>	ip
<i>mac-address</i>	mac
dhcp-snooping	
static	
<i>vlan-id</i>	vlan
<i>interface-id</i>	

└───

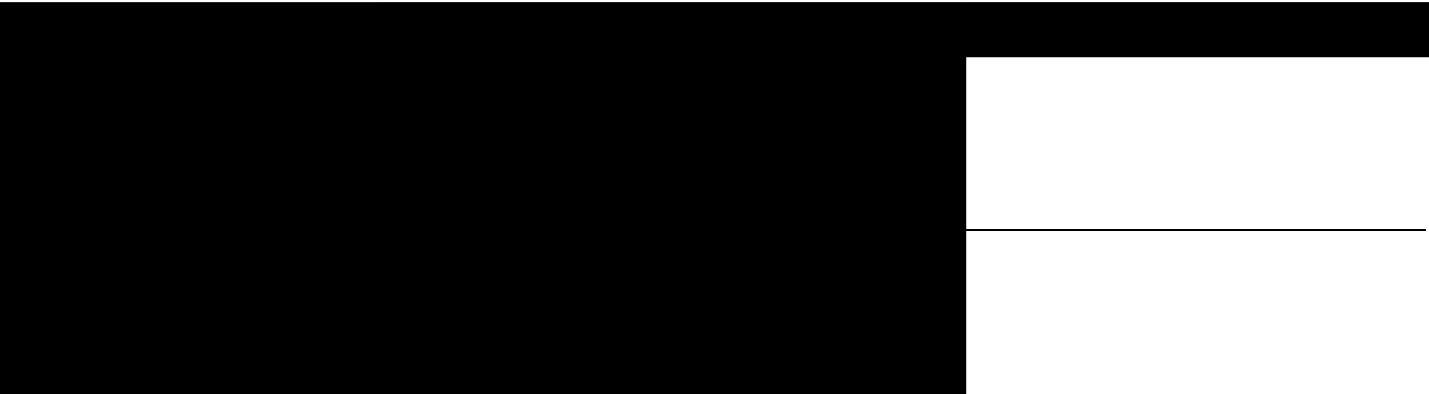
└───

└───

└───

```
Ruijie# show ip source binding static
MacAddress   IpAddress Lease(sec)  Type   VLAN  Interface
-----
0000.0000.0001 1.0.0.1  infinite   static    1  FastEthernet 0/1
Total number of bindings: 1
```

└───



|

---

|

---

-	-

└───

└───

-	-



**cpu-protect sub-interface {manage|protocol|route} percent percent\_vaule**

<i>percent_vaule</i>	1	100

(Manage)	30
(Route)	25
(Protocol)	45

┌

┌

Ruijie(config)# **cpu-protect sub-interface manage percent 60**



	<i>pps</i>	[1,9999]
--	------------	----------

	IP 200	MAC	8
--	-----------	-----	---

NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard attack-threshold per-src-ip 2
Ruijie(config-nfpp)# arp-guard attack-threshold per-src-mac 3
Ruijie(config-nfpp)# arp-guard attack-threshold per-port 50
```

	<b>nfpp arp-guard policy</b>	
	<b>show nfpp arp-guard summary</b>	
	<b>show nfpp arp-guard hosts</b>	



|

|

-	-

### 41.3.4 arp-guard monitor-period

**arp-guard monitor-period** *seconds*

|

<i>seconds</i>	[180, 86400]

|

600

|

NFPP

|

0

0

|

Ruijie(config)# **nfpp**

Ruijie(config-nfpp)# **arp-guard monitor-period 180**

|

<b>show nfpp arp-guard summary</b>	
<b>show nfpp arp-guard hosts</b>	
<b>clear nfpp arp-guard hosts</b>	

### 41.3.5 arp-guard monitored-host-limit

**arp-guard monitored-host-limit** *number*

<i>number</i>		1
	4294967295	

1000

NFPP

1000

1000 %ERROR The value that you configured is smaller than current monitored hosts 1000 please clear a part of monitored hosts.

% NFPP\_ARP\_GUARD-4-SESSION\_LIMIT: Attempt to exceed limit of 1000 monitored hosts.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard monitored-host-limit 200
```

<b>show nfpp arp-guard summary</b>	

-	-

### 41.3.6 arp-guard rate-limit

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

--	--





```
VLAN 1    g 0/1
Ruijie# clear nfpp arp-guard hosts vlan 1 interface g0/1
```

<b>arp-guard attack-threshold</b>	
<b>nfpp arp-guard policy</b>	
<b>show nfpp arp-guard hosts</b>	

-	-

### 41.3.9 clear nfpp arp-guard scan

ARP

**clear nfpp arp-guard scan**

-	-

```
Ruijie# clear nfpp arp-guard scan
```

<b>arp-guard scan-threshold</b>	
<b>nfpp arp-guard scan-threshold</b>	
<b>show nfpp arp-guard scan</b>	ARP

	-	-

### 41.3.10 nfpp arp-guard enable

<i>seconds</i>	0	[30, 86400]
<b>permanent</b>	0	

|

|

|

```
Ruijie(config)# interface G 0/1  
Ruijie(config-if)# nfpp arp-guard isolate-period 180
```



```
arp-guard isolate-period  
show nfpp dfpp 8 0 Td( )TET6605.4-0..36 559.1603 Tm[<48065BLh/
```

└───┘

└───┘

└───┘

```
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
```

└───┘

<b>arp-guard attack-threshold</b>	
<b>arp-guard rate-limit</b>	
<b>show nfpp arp-guard summary</b>	
<b>show nfpp arp-guard hosts</b>	
<b>clear nfpp arp-guard hosts</b>	

└───┘

└───┘

10.4	

### 41.3.13 nfpp arp-guard scan-threshold

**nfpp arp-guard scan-threshold *pkt-cnt***

└───┘

<i>pkt-cnt</i>	[1,9999]

└───┘

ARP

ARP

└───┘

└───┘



	<b>nfpp dhcp-guard policy</b>	
	<b>show nfpp dhcp-guard summary</b>	
	<b>show nfpp dhcp-guard hosts</b>	
	<b>clear nfpp dhcp-guard hosts</b>	

┌

	-	-

### 41.4.2 dhcp-guard enable

DHCP

**dhcp-guard enable**

	-	-

┌

DHCP

┌

NFPP

┌

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard enable
```

	<b>nfpp dhcp-guard enable</b>	DHCP
	<b>show nfpp dhcp-guard summary</b>	

┌

--	--	--

	-	-
--	---	---

### 41.4.3 dhcp-guard isolate-period

**dhcp-guard isolate-period** {*seconds* | **permanent**}

|



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
```

<b>nfpp dhcp-guard policy</b>	
<b>show nfpp dhcp-guard summary</b>	

-	-

#### 41.4.7 clear nfpp dhcp-guard hosts

**clear nfpp dhcp-guard hosts** [*vlan vid*] [**interface** *interface-id*] [*mac-address*]

<i>vid</i>	
<i>interface-id</i>	
<i>mac-address</i>	MAC

```
VLAN 1    g 0/1
Ruijie# clear nfpp dhcp-guard hosts vlan 1 interface g0/1
```

<b>dhcp-guard attack-threshold</b>	
<b>nfpp dhcp-guard policy</b>	

<b>show nfpp dhcp-guard hosts</b>	
-	-

### 41.4.8 nfpp dhcp-guard enable

DHCP

**nfpp dhcp-guard enable**

-	-

DHCP

DHCP

DHCP

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp dhcp-guard enable
```

<b>dhcp-guard enable</b>	DHCP
<b>show nfpp dhcp-guard summary</b>	

**nfpp dhcp-guard isolate-period {seconds | permanent}**

<i>seconds</i>	0		[30, 86400]
<b>permanent</b>			

└───┘

└───┘

└───┘

```
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	

### 41.4.10 nfpp dhcp-guard policy

**nfpp dhcp-guard policy { per-src-mac | per-port} rate-limit-pps attack-threshold-pps**

<b>per-src-mac</b>			MAC
<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 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	

## 41.5 DHCPv6

### 41.5.1 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
```

|

<b>nfpp dhcpv6-guard policy</b>	
<b>show nfpp dhcpv6-guard summary</b>	
<b>show nfpp dhcpv6-guard hosts</b>	
<b>clear nfpp dhcpv6-guard hosts</b>	

|

|

10.4	

### 41.5.2 dhcpv6-guard enable

DHCPv6

**dhcpv6-guard enable**

|

-	-

|

DHCPv6

|

NFPP

|

|

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcpv6-guard enable
```

|

--	--

<b>nffp dhcpv6-guard enable</b>	DHCPv6
<b>show nffp dhcpv6-guard summary</b>	
10.4	

### 41.5.3 dhcpv6-guard isolate-period

**dhcpv6-guard isolate-period** {*seconds* | permanent}

--	--

*seconds*

NFPP

	10.4	
--	------	--

#### 41.5.4 dhcpv6-guard monitor-period

**dhcpv6-guard monitor- period** *seconds*

<i>seconds</i>		[180, 86400]

~~5D C8F D1E 4D6 210 420 440 460 480 500 520 540 560 580 600 620 640 660 680 700 720 740 760 780 800 820 840 860 880 900 920 940 960 980~~

NFPP

0

**dhcpv6-guard monitored-host-limit** *number*

<i>number</i>	1
	4294967295

1000

NFPP

1000

1000

%ERROR The value that you configured is smaller than current monitored hosts 1000 please clear a part of monitored hosts.

```
MAC 5 150
```

```
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
```

<b>nfpp dhcpv6-guard policy</b>	
<b>show nfpp dhcpv6-guard summary</b>	

10.4	

### 41.5.7 clear nfpp dhcpv6-guard hosts

**clear nfpp dhcpv6-guard hosts** [*vlan vid*] [**interface** *interface-id*] [*mac-address*]



```
VLAN 1    g 0/1
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	

### 41.5.9 nfpp dhcpv6-guard isolate-period

**nfpp dhcpv6-guard isolate-period** {*seconds* | **permanent**}

<i>seconds</i>	0 [30, 86400]
<b>permanent</b>	

└──

└──

└──

└──

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

```
Ruijie(config-if)# nfpp dhcpv6-guard isolate-period 180
```

<b>dhcpv6-guard isolate-period</b>	

<b>per-src-mac</b>	MAC
<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 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>	



NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard enable
```

<b>nfpp icmp-guard enable</b>	ICMP
<b>show nfpp icmp-guard summary</b>	

-	-

### 41.6.3 icmp-guard isolate-period

**icmp-guard isolate-period** {seconds | permanent}

<i>seconds</i>	0 [30, 86400]
<b>permanent</b>	

0

NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard isolate-period 180
```

	<b>nfpp icmp-guard isolate-period</b>	
	<b>show nfpp icmp-guard summary</b>	

└───

	-	-

### 41.6.4 icmp-guard monitor-period

**icmp-guard monitor-period** *seconds*

	<i>seconds</i>	[180, 86400]

└───

600

└───

NFPP

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### 41.6.6 icmp-guard rate-limit

**icmp-guard rate-limit { per-src-ip | per-port} pps**

<b>per-src-ip</b>	IP
<b>per-port</b>	
<i>pps</i>	[1,9999]

IP 900 1000

NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard rate-limit per-src-ip 500
Ruijie(config-nfpp)# icmp-guard rate-limit per-port 800
```

<b>nfpp icmp-guard policy</b>	
<b>show nfpp icmp-guard summary</b>	

-	-

### 41.6.7 icmp-guard trusted-host

**icmp-guard trusted-host ip mask**

**no icmp-guard trusted-host {all | ip mask}**

--	--

<i>ip</i>	IP
<i>mask</i>	IP
<b>all</b>	no

NFPP

CPU ICMP CPU  
500

Ruijie(config)# **nfpp**  
Ruijie(config-nfpp)# **icmp-guard trusted-host 1.1.1.0 255.255.255.0**

<b>show nfpp icmp-guard trusted-host</b>	

-	-

### 41.6.8 clear nfpp icmp-guard hosts

**clear nfpp icmp-guard hosts** [*vlan vid*] [**interface** *interface-id*] [*ip-address*]

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

|

|

| VLAN 1 g 0/1  
Ruijie# clear nfpp icmp-guard hosts vlan 1 interface g 0/1

icmp-guard attack-threshold	
nfpp icmp-guard policy	
show nfpp icmp-guard hosts	

|

|

-	-

### 41.6.9 nfpp icmp-guard enable

ICMP

nfpp icmp-guard enable

|

-	-

|

ICMP

|

|

ICMP

ICMP

| Ruijie(config)# interface G0/1  
Ruijie(config-if)# nfpp icmp-guard enable

|

icmp-guard enable	ICMP

<b>show nfpp icmp-guard summary</b>	
10.4	

### 41.6.10 nfpp icmp-guard isolate-period

**nfpp icmp-guard isolate-period {seconds | permanent}**

<i>seconds</i>	0 [30, 86400]
<b>permanent</b>	0

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp icmp-guard isolate-period 180
```

<b>icmp-guard isolate-period</b>	
<b>show nfpp icmp-guard summary</b>	

10.4	

**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>		

**nd-guard attack-threshold per-port {ns-na | rs | ra-redirect} pps**

	<b>ns-na</b>		
	<b>rs</b>		
	<b>ra-redirect</b>		
	<i>pps</i>		[1,9999]

		/		30
30		/		30
	0	±		

└── ND

└── NFPP

└──

└── Ruijie(config)# **nfpp**  
Ruijie(config-nfpp)# **nd-guard enable**

```
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	

#### 41.7.4 nfpp nd-guard enable

ND

**nfpp nd-guard enable**

-	-

ND

ND

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp nd-guard enable
```

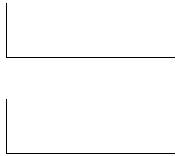
<b>nd-guard enable</b>	ND
<b>show nfpp nd-guard summary</b>	

10.4	

### 41.7.5 nfpp nd-guard policy

**nfpp nd-guard policy per-port {ns-na | rs | ra-redirect} rate-limit-pps attack-thresh old-pps**

<b>ns-na</b>	
<b>rs</b>	
<b>ra-redirect</b>	
<i>rate-limit-pps</i>	1 9999
<i>attack-threshold-pps</i>	1 9999



ND snooping

ND snooping

ND snooping

ND guard  
900

800

ND guard ND snooping

ND snooping

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp nd-guard policy per-port ns-na 50 100
Ruijie(config-if)# nfpp nd-guard policy per-port rs 10 20
Ruijie(config-if)# nfpp nd-guard policy per-port ra-redirect 10 20
```

--	--

	<code>nd-guard attack-threshold</code>	
	<code>nd-guard rate-limit</code>	
	<code>show nfpp nd-guard summary</code>	

└───┘

	10.4	

## 41.8 NFPP

### 41.8.1 clear nfpp log

NFPP

## 41.8.2 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
    
```

--	--

**log-buffer logs** *number\_of\_message interval*



|

| NFPP

|

VLAN

|

```

VLAN 1  VLAN 2  VLAN 3  VLAN 5
Ruijie(config)# nfpp
Ruijie(config-nfpp)# logging vlan 1-3,5

G 0/1
Ruijie(config)# nfpp
Ruijie(config-nfpp)# logging interface G 0/1
    
```

|

show nfpp log summary	NFPP

|

|

10.4	

### 41.8.5 show nfpp log

NFPP

show nfpp log summary

NFPP

show nfpp log buffer [statistics]

|

statistics	NFPP

|

|

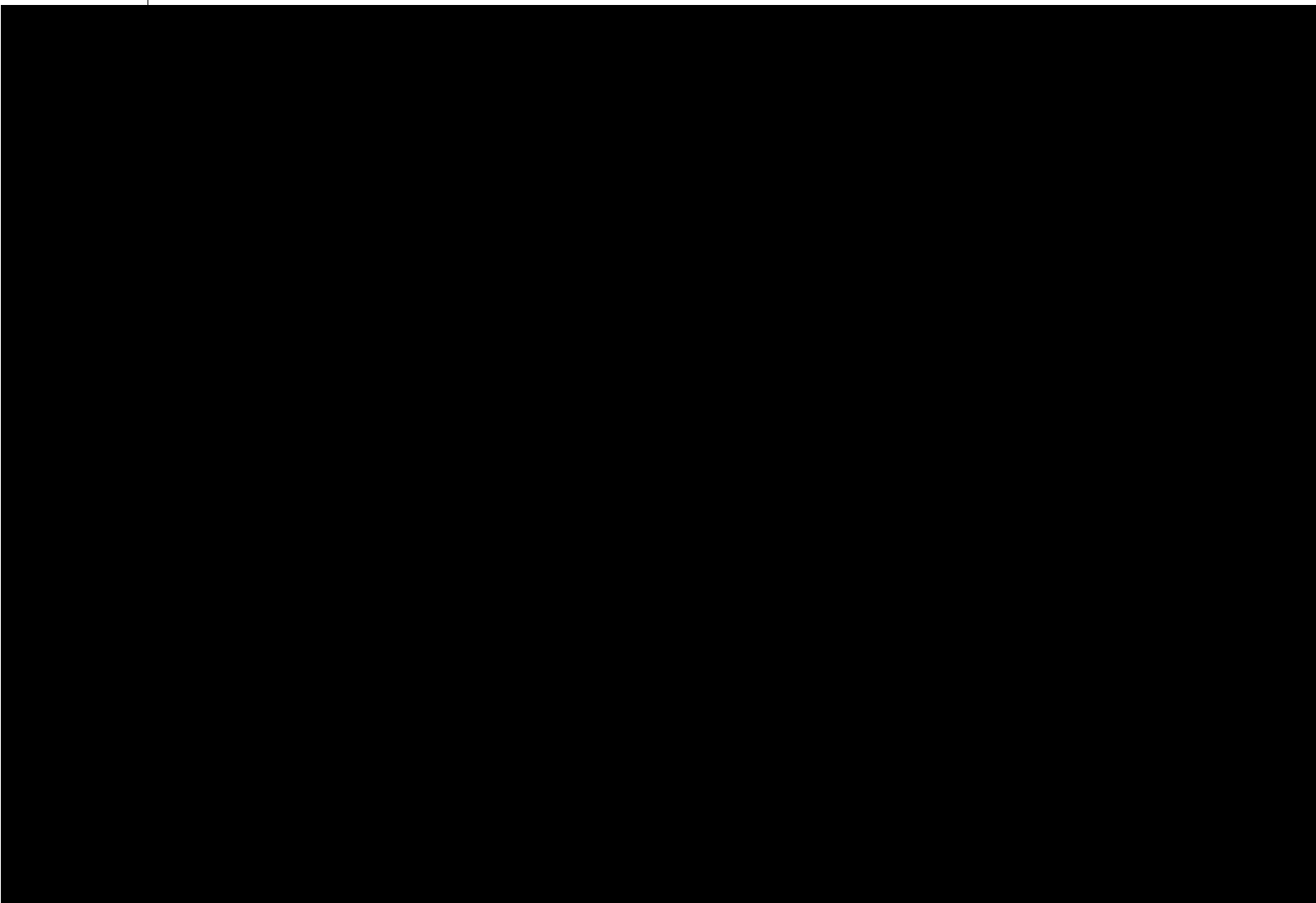
33\_33

Protocol

ARP	ARP
IP	IP
ICMP	ICMP
DHCP	DHCP
DHCPv6	DHCPv6
NS-NA	ND
RS	ND
RA-REDIRECT	ND

Reason 5

DoS



<i>interface-id</i>	
<i>ip-address</i>	IP
<i>mac-address</i>	MAC

1

Ruijie# **show nfpp arp-guard hosts statistics**

```

success    fail    total
-----    ----    -----
100         20     120
           120           100           20
    
```

2

remain-time(seconds)

Ruijie# **show nfpp arp-guard hosts**

If column 1 shows '\*', it means "hardware do not isolate user" .

```

VLAN  interface IP address  MAC address  remain-time(s)
----  -
1     Gi0/1    1.1.1.1    -            110
2     Gi0/2    1.1.2.1    -            61
*3    Gi0/3    -          0000.0000.1111 110
4     Gi0/4    -          0000.0000.2222 61
    
```

Total 4 hosts

<b>clear nfpp arp-guard hosts</b>	

-	-

### 41.9.2 show nfpp arp-guard scan

ARP

**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 16:23:10
2	Gi0/2	1.1.1.1	0000.0000.0002	2008-01-23 16:24:10
3	Gi0/3	N/A	0000.0000.0003	2008-01-23 16:25:10
4	Gi0/4	N/A	0000.0000.0004	2008-01-23 16:26:10

Total 4 record(s)

timestamp	ARP	2008-01-23 16:23:10
2008 1 23 16 23 10	ARP	

Ruijie# **show nfpp arp-guard scan vlan 1 interface G 0/1**

0000.0000.0001

NFPP

---

VLAN	interface	IP address	MAC address	timestamp
----	-----	-----	-----	-----
1	Gi0/1	N/A	0000.0000.0001	2008-01-23 16:23:10
Total 1 record(s)				



Maximum count of monitored hosts: 1000

Monitor period 300s

```

1 .      Interface  Global
2 .      Status
3 .      Rate-limit          IP          /      MAC
      /          Attack-threshold          -
    
```

<b>arp-guard attack-threshold</b>	
<b>arp-guard enable</b>	ARP
<b>arp-guard isolate-period</b>	
<b>arp-guard monitor-period</b>	
<b>arp-guard monitored-host-limit</b>	
<b>arp-guard rate-limit</b>	
<b>arp-guard scan-threshold</b>	
<b>nfpp arp-guard enable</b>	ARP
<b>nfpp arp-guard isolate-period</b>	

<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
    
```

remain-time(seconds)

Ruijie# **show nfpp dhcp-guard hosts**

If column 1 shows '\*', it means "hardware failed to isolate host".

```

VLAN  interface  MAC address  remain-time(seconds)
----  -
1     gi0/2      0000.0000.0001  10
*2    gi0/1      0000.0000.0002  20
Total  2 host(s)
    
```

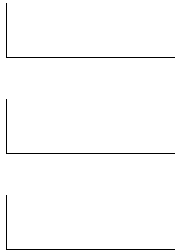
<b>clear nfpp dhcp-guard hosts</b>	

10.4	

## 41.10.2 show nfpp dhcp-guard summary

**show nfpp dhcp-guard summary**

-	-



Ruijie# **show nfpp dhcp-guard summary**

Format of column Rate-limit and Attack-threshold is per-src-ip /per-src-mac/per-port.

Interface	Status	Isolate-period	Rate-limit	Attack-threshold
Global	Enable	300	-/5/150	-/10/300
Gi 0/1	Enable	180	-/6/-	-/8/-
Gi 0/2	Disable	200	-/5/30	-/10/50

Maximum count of monitored hosts: 1000

Monitor period 300s

```

1 .   Interface  Global
2 .   Status
3 .   Rate-limit      IP          /      MAC
/                               Attack-threshold      -
    
```

<b>dhcp-guard attack-threshold</b>	
<b>dhcp-guard enable</b>	DHCP
<b>dhcp-guard isolate-period</b>	
<b>dhcp-guard monitor-period</b>	
<b>dhcp-guard monitored-host-limit</b>	

<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	

## 41.11 DHCPv6

### 41.11.1 show nfpp dhcpv6-guard hosts

**show nfpp dhcpv6-guard hosts** [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*mac-address*]]]

<b>statistics</b>	
<i>vid</i>	
<i>interface-id</i>	
<i>mac-address</i>	MAC

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Ruijie# **show nfpp dhcpv6-guard hosts statistics**

```

success  fail  total
-----  ---  -----
100      20    120
          120          100          20
  
```



```

                                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	

### 41.11.2 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
  
```

Maximum count of monitored hosts: 1000

Monitor period 300s

```

1 .      Interface  Global
2 .      Status
3 .      Rate-limit      IP          /      MAC
          /              Attack-threshold      -
  
```

<b>dhcpv6-guard attack-threshold</b>	
<b>dhcpv6-guard enable</b>	DHCPv6



**show nfpp icmp-guard summary**

	-	-

|

|

<b>nfpp icmp-guard isolate-period</b>	
<b>nfpp icmp-guard policy</b>	

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10.4	

### 41.12.3 show nfpp icmp-guard trusted-host

**show nfpp icmp-guard trusted-host**

-	-

┌

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┌

```
Ruijie# show nfpp icmp-guard trusted-host
IP address      mask
-----
1.1.1.0         255.255.255.0
1.1.2.0         255.255.255.0
Total 2 record(s)
```

<b>icmp-guard trusted-host</b>	

┌

--	--

NFPP

NFPP

<b>ndfpp nd6(agu)y</b>	G!5B ÂD_6" 4" İ 66"
<b>nd-guard attack-threshold</b>	
<b>nd-guard enable</b>	ND
<b>nd-guard ra</b>	

# 42      ACL

id	IP    ACL 1-99    1300-1999 IP    ACL 100-199    2000-2699 MAC    ACL 700-799 ACL 2700-2899
name	ACL
sn	ACL        (                    )
start-sn	
inc-sn	
deny	
permit	
prot	IPv6                    ipv6 icmp tcp udp        0-255        IPv4                    eigrp gre ipinip igmp nos ospf icmp udp

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 port[port]	Operator lt- eq- gt- neq- range- port

B	MAC	6	P		35
C		12	Q	IP	36
D	VLAN tag	14	R	ip	38
E	DSAP( )	18	S	ip	42
F	SSAP( )	19	T	TCP	46
G	Ctrl	20	U	TCP	48
H	Org Code	21	V		50
I					

## 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]

Ethernet-type cos

**access-list** *id* {deny | permit} {ethernet-type| cos [out][ inner in]] [VID [out][inner in]] {source source-wildcard | host source | any} {host source-mac-address | any } {destination destination-wildcard | host destination | any} {host destination-mac-address | any} [time-range time-range-name]

Protocol

**access-list** *id* {deny | permit} protocol [VID [out][inner in]] {source source-wildcard | host source | any} {host source-mac-address | any } {destination destination-wildcard | host destination | any} {host destination-mac-address | any} [precedence precedence] [tos tos] [fragments] [range lower upper] [time-range time-range-name]

Expert

**Internet Control Message Protocol (ICMP)**

**access-list** *id* {deny | permit} icmp [VID [out][inner in]] {source source-wildcard | host source | any} {host source-mac-address | any } {destination destination-wildcard | host destination | any} {host destination-mac-address | any} [ icmp-type ] [ [ icmp-type [icmp-code ] ] | [ icmp-message ] ] [precedence precedence] [tos tos] [fragments] [time-range time-range-name]

**Transmission Control Protocol (TCP)**

**access-list** *id* {deny | permit} tcp [VID [out][inner in]] {source source-wildcard | host Source | any} {host source-mac-address | any } [operator port [port] ] {destination destination-wildcard | host destination | any} {host destination-mac-address | any} [operator port [port] ] [precedence precedence] [tos tos] [fragments] [range lower upper] [time-range time-range-name] [match-all tcp-flag]

**User Datagram Protocol (UDP)**

**access-list** *id* {deny | permit} udp[VID [out][inner in]] {source source -wildcard | host source | any} {host source-mac-address | any } [ operator port [port] ] {destination destination-wildcard | host destination | any}{host destination-mac-address | any} [operator port [port] ] [precedence precedence] [tos tos] [fragments] [range lower upper] [time-range time-range-name]

## 5)

**access-list** *list-remark text*

<i>Id</i>	1-99 100-199 1300-1999 2000-2699 2700 – 2899 700 - 799
<b>Deny</b>	
<b>Permit</b>	
<i>Source</i>	
<i>source-wildcard</i>	0.255.0.32
<i>protocol</i>	IP EIGRP GRE IPINIP IGMP NOS OSPF ICMP UDP TCP IP IP 0-255 ICMP/TCP/UDP
<i>Destination</i>	
<i>destination-wildcard</i>	0.255.0.32
<b>fragments</b>	

precedence 0.0 Tc 0.98<01C3D9.4SPF XE\$

<b>match-all</b>	<i>tcp flag</i>
<i>tcp-flag</i>	tcp flag

ACL

**access-list**

dod-host-prohibited  
dod-net-prohibited  
echo  
echo-reply  
fragment-time-exceeded  
general-parameter-problem  
host-isolated  
host-precedence-unreachable  
host-redirect  
host-tos-redirect  
host-tos-unreachable  
host-unknown  
host-unreachable  
information-reply  
information-request  
mask-reply  
mask-request  
mobile-redirect  
net-redirect  
net-tos-redirect  
net-tos-unreachable  
net-unreachable  
network-unknown  
no-room-for-option  
option-missing  
packet-too-big  
parameter-problem  
port-unreachable  
precedence-unreachable  
protocol-unreachable  
redirect  
router-advertisement  
router-solicitation  
source-quench  
source-route-failed  
time-exceeded  
timestamp-reply  
timestamp-request

ttl-exceeded		
unreachable		
TCP		TCP
bgp		
chargen		
cmd		
daytime		
discard		
domain		
echo		
exec		
finger		
ftp		
ftp-data		
gopher		
hostname		
ident		
irc		
klogin		
kshell		
login		
nntp		
pim-auto-rp		
pop2		
pop3		
smtp		
sunrpc		
syslog		
tacacs		
talk		
telnet		
time		
uucp		
whois		
www		
UDP		UDP
biff		
bootpc		

bootps  
discard  
dnsix  
domain  
echo  
isakmp  
mobile-ip  
nameserver  
netbios-dgm  
netbios-ns  
netbios-ss  
ntp  
pim-auto-rp  
rip  
snmp  
snmptrap  
sunrpc  
syslog  
tacacs  
talk  
tftp  
time  
who  
xdmcp

Ethernet-type

aarp  
arp  
appletalk  
decnet-iv  
diagnostic  
etype-6000  
etype-8042  
lat  
lavc-sca  
mop-console  
mop-dump  
mumps  
netbios

vines-echo  
xns-idp

```
1 IP
   IP                192.168.1.64 - 192.168.1.127
```

```
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
```

"



*destination-wildcard* | **host** *destination* | **any** {**host** *destination-mac-address* | **any**}  
**[time-range** *time-range-name*]

b)                    protocol

[*sn*] **deny protocol** [[**VID** [*out*][*inner in*]]] {*source source-wildcard* | **host source** | **any**}  
 {**host source-mac-address** | **any**} {*destinationdestination-wildcard* | **host destination** | **any**}  
 {**host destination-mac-address** | **any**} [**precedence precedence**] [**tos tos**] [**fragments**]  
**[range** *lower upper*] [~~time-range~~ *name*]

c)                    expert

**Internet Control Message Protocol (ICMP)**

[*sn*] **deny icmp** [[**VID** [*out*][*inner in*]]] {*source source-wildcard* | **host source** | **any**} {**host**  
*source-mac-address* | **any**} {*destination destination-wildcard* | **host destination** | **any**} {**host**  
*destination-mac-address* | **any**} [*icmp-type*] [[*icmp-type [icmp-code ]*] | [*icmp-message*]]  
**[precedence** [*pre*] [**tos tos**] [**frag-6( )**]931 Tf0(upper)c 0 Tw 2.571 0 Td[(icmp)-65 Tf2BE3C02D6>T/TT0 1 Tf

[[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragments**]  
 [**time-range** *time-range-name*]

#### 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*]

#### 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*]

<i>Sn</i>	ACL
<i>source-ipv6-prefix</i>	IPv6
<i>destination-ipv6-prefix</i>	IPv6
<i>prefix-length</i>	
<i>source-ipv6-address</i>	IPv6
<i>destination-ipv6-address</i>	IPv6
<b>dscp</b>	
<i>dscp</i>	0-63.
<b>flow-label</b>	
<i>flow-label</i>	0-1048575
<i>protocol</i>	IPV6 <0-255> IPV6   icmp   tcp   udp



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
```

<b>show access-lists</b>	
<b>ipv6 traffic-filter</b>	IPV6
<b>ip access-group</b>	IP ACL
<b>mac access-group</b>	MAC ACL
<b>ip access-list</b>	IP ACL
<b>mac access-list</b>	MAC ACL
<b>expert access-list</b>	ACL
<b>ipv6 access-list</b>	IPV6 ACL
<b>permit</b>	

V10.0	V10.0 arp V10.2(3)
-------	-----------------------

### 42.1.3 expert access-group

EXPERT ACL

no

**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	

ACL

**show expert access-lists**

```

1          ACL
Ruijie(config)# expert access-list extended exp-acl
Ruijie(config-exp-nacl)# show expert access-lists
expert access-list extended exp-acl
Ruijie(config-exp-nacl)#

2          ACL
Ruijie(config)# expert access-list extended 2704
Ruijie(config-exp-nacl)# show expert access-lists
expert access-list extended 2704
Ruijie(config-exp-nacl)#
    
```

<b>show expert access-lists</b>	

V10.0	V10.0

### 42.1.5 ip access-group

**ip access-group**                      no

**ip access-group** {*id* | *name*} {**in** | **out**}

**no ip access-group** { *id* | *name*} {**in** | **out**}

<i>id</i>	IP                      1-199    1300-2699
<i>name</i>	IP
<b>in</b>	
<b>out</b>	

**ip access-group**

fastEthernet0/0 120

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

Ruijie(config-if)#**ip access-group 120 in**

<b>access-list</b>	
<b>show access-lists</b>	
<b>show ip access-list</b>	IP 1-199 1300 - 2699 3000 3199

```

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
    
```

<b>show ip access-lists</b>	IP

V10.0	V10.0

### 42.1.7 ip access-list resequence

```

ip      ACL          IPV6    ACL
no
    
```

**ip access-list resequence {id | name} start-sn inc-sn**

**no ip access-list resequence {id | name}**

<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**

ACL  
Ruijie#

|

|

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

### 42.1.9 ipv6 access-list

|

IPV6 ACL

no

ACL

ipv6 access-list *name*

no ipv6 access-list *name*

|

<i>name</i>	ACL

|

|

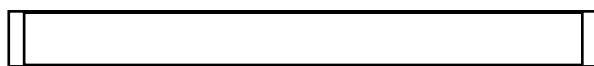
|

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)#
    
```





V10.0	V10.0

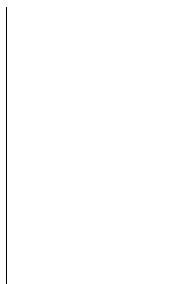
### 42.1.11 MAC access-group

MAC ACL

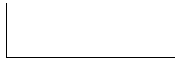
no

**mac access-group** {*id* | *name*}{*in* | *out*}

**no mac access-group** {*id* | *name*} {*in* | *out*}



<i>id</i>	MAC 700-799
<i>name</i>	MAC
<b>in</b>	
<b>out</b>	



ACL



**show running-config**



```

access-list accept_00d0f8xxxxx_only Gigabit 1
Ruijie(config)# interface GigaEthernet 1/1
Ruijie(config-if)# mac access-group accept_00d0f8xxxxx_only in
    
```



--	--

**show access-group**

ACL

MAC ACL

no

ACL

**mac access-list extended** {*id* | *name*}

**no mac access-list extended** {*id* | *name*}

<i>id</i>	MAC	700-799
<i>name</i>	MAC	

MAC ACL

**show mac access-lists**

1 MAC ACL

Ruijie(config)# **mac access-list extended** *mac-acl*

Ruijie(config-mac-nacl)# **show mac access-lists**

mac access-list extended *mac-acl*

2 MAC ACL

Ruijie(config)# **mac access-list extended** 704

Ruijie(config-mac-nacl)# **show mac access-lists**

mac access-list extended 704

<b>show mac access-lists</b>	mac

V10.0	V10.0

### 42.1.13 no sn

ACL

no *sn*

--	--



## 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

**Internet Control Message Protocol (ICMP)**

[sn] **permit icmp** {*source source-wildcard* | **host** *source* | **any**} {*destination destination-wildcard* | **host** *destination* | **any**} [*icmp-type*] [[*icmp-type* [*icmp-code*]]] | [*icmp-message*] [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**time-range** *time-range-name*]

**Transmission Control Protocol (TCP)**

[sn] **permit tcp** {*source source-wildcard* | **host** *source* | **any**} [*destination destination-wildcard* | **host** *destination* | **any**] [*port*] [*port*]

[sn] **permit protocol** [VID [out][inner in]] {source source-wildcard | **host** Source | **any**} {**host** source-mac-address | **any**} {destination destination-wildcard | **host** destination | **any**} {**host** destination-mac-address | **any**} [precedence precedence] [tos tos] [fragments] [range lower upper] [time-range time-range-name]

Expert

#### Internet Control Message Protocol (ICMP)

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

#### Transmission Control Protocol (TCP)

[sn] **permit tcp** [VID [out][inner in]] {source source-wildcard | **host** Source | **any**} {**host** source-mac-address | **any**} [operator port [port]] {destination destination-wildcard | **host** destination | **any**} {**host** destination-mac-address | **any**} [operator port [port]] [precedence precedence] [tos tos] [fragments] [range lower upper] [time-range time-range-name] [match-all tcp-flag]

#### User Datagram Protocol (UDP)

[sn] **permit udp** [VID [out][inner in]] {source source-wildcard | **host** source | **any**} {**host** source-mac-address | **any**} [operator port [port]] {destination destination-wildcard | **host** destination | **any**} {**host** destination-mac-address | **any**} [operator port [port]] [precedence precedence] [tos tos] [fragments] [range lower upper] [time-range time-range-name]

#### Address Resolution Protocol (ARP)

[sn] **permit arp** {vid vlan-id} [host source-mac-address | **any**] [host destination-mac-address | **any**] {sender-ip sender-ip-wildcard | **host** sender-ip | **any**} {sender-mac sender-mac-wildcard | **host** sender-mac | **any**} {target-ip target-ip-wildcard | **host** target-ip | **any**}

#### 5) IPV6

[sn] **permit protocol** {source-ipv6-prefix / prefix-length | **any** | **host** source-ipv6-address} {destination-ipv6-prefix / prefix-length | **any** | **host** destination-ipv6-address} [dscp dscp] [flow-label flow-label] [fragments] [range lower upper] [time-range time-range-name]

IPV6

#### Internet Control Message Protocol (ICMP)


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

**Transmission Control Protocol (TCP)**

[sn] **permit tcp** {*source-ipv6-prefix / prefix-length* | **host** *source-ipv6-address* | **any**}  
[*operator* **port** [*port*]] {*destination-ipv6-prefix / prefix-length* | **host** *destination-ipv6-address*  
| **any**} [*operator* **port** [*port*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragments**] [**range** *lower*  
*upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag*]

**User Datagram Protocol (UDP)**

[sn] **permit udp** {*source-ipv6-prefix / prefix-length* | **host** *source-ipv6-address* | **any**}  
[*operator* **port** [*port*]] {*destination-ipv6-prefix / prefix-length* | **host** *destination-ipv6-address*  
| **any**} [*operator* **port** [*port*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragments**] [**range** *lower*  
*upper*] [**time-range** *time-range-name*]



```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ip access-group 102 in
Ruijie(config-if)#
      3      MAC      ACL      MAC      0013.0049.8272
      100      1
Ruijie(config)# mac access-list extended 702
Ruijie(config-mac-nacl)# permit host 0013.0049.8272 any aarp
Ruijie(config-mac-nacl)# show access-lists
mac access-list extended
10 permit host 0013.0049.8272 any aarp702
Ruijie(config-mac-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mac access-group 702 in
      4      ip      ACL      IP      192.168.4.12
      1
Ruijie(config)# ip access-list standard std-acl
Ruijie(config-std-nacl)# permit host 192.168.4.12
Ruijie(config-std-nacl)# show access-lists
ip access-list standard std-acl
10 permit host 192.168.4.12
Ruijie(config-std-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ip access-group std-acl in
      5      IPV6      ACL      IP      192.168.4.12
      1
Ruijie(config)# ipv6 access-list extended v6-acl
Ruijie(config-ipv6-nacl)# 11 permit ipv6
host ::192.168.4.12 any
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
11 permit ipv6 host ::192.168.4.12 a 7.824641- 40F1D0E>-6<02C 147Tc 0.599
```

<b>ip access-group</b>	IP ACL
<b>mac access-group</b>	MAC ACL
<b>ip access-list</b>	IP ACL
<b>mac access-list</b>	MAC ACL
<b>expert access-list</b>	ACL
<b>ipv6 access-list</b>	IPV6 ACL
<b>deny</b>	ACL

V10.0	V10.0 arp V10.2(3)
-------	-----------------------

## 42.2

### 42.2.1 show access-group

ACL

**show access-group** [interface <interface>]

<interface>	
-------------	--

ACL

ACL

```
Ruijie# show access-group
ip access-list standard ipstd3
Applied On interface GigabitEthernet 0/1.
ip access-list standard ipstd4
Applied On interface GigabitEthernet 0/2.
ip access-list extended 101
```

```

Applied On interface GigabitEthernet 0/3.
ip access-list extended 102
Applied On interface GigabitEthernet 0/8.
    
```

<b>ip access-group</b>	ip
<b>mac access-group</b>	MAC
<b>expert access-group</b>	Expert
<b>ipv6 traffic-filter</b>	IPV6

V10.0	V10.0

### 42.2.2 show access-lists

ACL                      ACL

**show access-lists** [*id* | *name*]

<i>id</i>	
<i>name</i>	

acl                      *id*   *name*                      ACL

```

Ruijie# show access-lists n_acl
ip access-list standard n_acl
Ruijie# show access-lists 102
ip access-list extended 102
Ruijie# show access-lists
ip access-list standard n_acl
    
```

ACL

|

|

V10.0	V10.0

### 42.2.4 show ip access-group

IP ACL

**show ip access-group**[interface <interface>]

|

<interface>	

|

|

|

IP ACL

IP ACL

|

```
Ruijie# show ip access-group interface gigabitethernet 0/1
ip access-group aaa in
Applied On interface GigabitEthernet 0/1.
```

|

<b>ip access-list</b>	IP ACL

|

(

	<i>&lt;interface&gt;</i>	

|

|

|

IPv6 ACL

IPv6 ACL

|  
Ruijie# **show ipv6 traffic-filter interface gigabitethernet 0/4**  
ipv6 traffic-filter v6 in  
Applied On interface GigabitEthernet 0/4.

--	--	--

```
mac access-group mm in
Applied On interface GigabitEthernet 0/3.
```

<b>mac access-list</b>		MAC	ACL

V10.0		V10.0	

## 42.3

### 42.3.1 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
```

<b>show secu-acl</b>			

---

	V10.2	V10.2

### 42.3.2 security global access-group

**security global access-group** {*id*|*name*}

**no security global access-group**

--	--	--



Fa0/6      uplink      --

<b>security global access-group</b>	
<b>security access-group</b>	
<b>security uplink enable</b>	

V10.2	V10.2

# 43 QOS

## 43.1

```

QoS
1 policy-map
  policy-map
  class-map
    1 ACL ACL ACE
      ACE "ACL"
  
```

```

QoS Policy Map
QoS QoS Policy Map Off
QoS
  
```

CoS	0
	8
	WRR A

<b>CoS to DSCP</b>	<b>CoS</b>	<b>DSCP</b>
	0	0
	1	8
	2	16
	3	24
	4	32
	5	40
	6	48
	7	56

## IP-Precedence to DSCP

<b>IP-Precede nce to DSCP</b>	<b>IP-Precedence</b>	<b>DSCP</b>
	0	0
	1	8
	2	16
	3	24
	4	32
	5	40
	6	48
	7	56

## DSCP to CoS

<b>DSCP to CoS</b>	<b>DSCP</b>	<b>CoS</b>
	0	0
	8	1
	16	2
	24	3
	32	4
	40	5
	48	6
	56	7

## 43.2

### 43.2.1 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
```

---





	-	-
--	---	---

### 43.2.4 mls qos cos

CoS

**mls qos cos** *default-cos*

**no mls qos cos**

	<i>default-cos</i>	0 7
	<b>no</b>	

CoS 0

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mls qos cos 7
```

	<b>show mls qos interface</b> <i>interface-id</i>	-

	<b>dscp</b>	
	<b>no</b>	

|

|

|

|

Ruijie(config)# **mls qos map cos-dscp 8 10 16 18 24 26 32 34**

```
Ruijie(config)# mls qos mls qos
```

## 43.2.8 mls qos scheduler

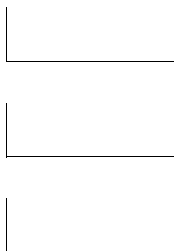
**mls qos scheduler [sp | rr | wrr | drr]**

**no mls qos scheduler**



<b>cos</b>	Qos	CoS
<b>dscp</b>	Qos	DSCP

<i>policy-map-name</i>	polycymap
<b>no policy-map</b> <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>	-



-	-

### 43.2.11 priority-queue

[no] priority-queue

priority-queue	SP
no priority-queue	WRR

WRR

E

!

8

|

|

|

|

Ruijie(config)# **priority-queue cos-map 1 0 1**

|

<b>show mls qos queueing</b>	-

|

|

-	-

### 43.2.13 service-policy

policy map

**service-policy** {input | output} *policy-map-name*

**no service-policy** {input | output}

|

<i>policy-map-name</i>	polycymap
<b>no</b>	policy map

|

|

|

|

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

Ruijie(config-if)# **service-policy input po**

|

--	--



**show policy-map** [*policy-name* [**class** *class-name*]]

<i>policy-name</i>	policy name
<i>class-name</i>	class map

policy name

Ruijie# **show policy-map**

-	-

-	-

### 43.3.3 show mls qos interface

QoS

**show mls qos interface** *interface-id* [**policers**]

<i>interface-id</i>	
<b>policers</b>	police

QoS

```
Ruijie# show mls qos interface fastEthernet 0/1
```

-	-

-	-

### 43.3.4 show mls qos maps

dscp-cos maps, dscp-cos maps ip-prec-dscp maps

**show mls qos maps [cos-dscp | dscp-cos | ip-prec-dscp]**

<b>cos-dscp</b>	cos-dscp maps
<b>dscp-cos</b>	dscp-cos maps
<b>ip-prec-dscp</b>	ip-prec-dscp maps

dscp-cos maps dscp-cos maps ip-prec-dscp maps

```
Ruijie# show mls qos maps
```

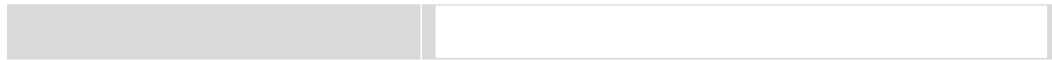
-	-

-	-

### 43.3.5 show mls qos queueing

QoS (cos-to-queue map,wrr weight,drr weight)

**show mls qos queueing**



Ruijie# **show mls qos rate-limit**

-	-

-	-

### 43.3.7 show mls qos scheduler

**show mls qos scheduler**

-	-

Ruijie# **show mls qos scheduler**

-	-

-

-	-

# 44 Voice VLAN

## 44.1

### 44.1.1 voice vlan

```

Voice VLAN
Voice VLAN
voice vlan vlan-id
no voice vlan
    
```

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

```

|
|
|
    
```

	Voice VLAN	Voice VLAN ID
1	Voice VLAN	VLAN
2	VLAN 1	VLAN
3	VLAN	Voice VLAN Super VLAN
4		802.1x VLAN
5	RSPAN	Remote VLAN
	VLAN	Voice VLAN ID
		Voice VLAN 1

```

1 Voice VLAN VLAN2 Voice VLAN
Ruijie(config)# vlan 2
Ruijie(config-vlan)# exit
Ruijie(config)# voice vlan 2
    
```

--	--

**show voice vlan**

Voice VLAN  
44-2







```
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
```

r

1	Voice VLAN		
	Voice VLAN	Voice VLAN	
2			
	native VLAN	Voice VLAN	
3	Trunk Port/Hybrid Port		VLAN
	Voice VLAN	VLAN	Voice
VLAN			Voice VLAN
		Vce VLAN	

Voice VLAN OUI	MAC	MAC
	Voice VLAN	
	Voice VLAN	
	untagged	Voice VLAN tag
MAC VLAN		Voice VLAN tag Voice VLAN /

```

1 Voice VLAN
Ruijie(config)# voice vlan security enable

```

<b>show voice vlan</b>	Voice VLAN

[Redacted]

|

Voice VLAN

Voice VLAN

```

1          Voice VLAN
Ruijie(config)# show voice vlan
Voice VLAN status: ENABLE           //Voice VLAN
Voice VLAN ID: 2                    //Voice VLAN ID
Voice VLAN security mode: Security //
Voice VLAN aging time: 5 minutes   //
Voice VLAN cos: 6                   //      CoS
Voice VLAN dscp: 46                 //      DSCP
Current voice vlan enabled port mode: //      Voice VLAN
PORT                                MODE
-----
Fa0/1                               Auto
    
```

<b>voice vlan</b> <i>vlan-id</i>	Voice VLAN VLAN	Voice VLAN
<b>voice vlan aging</b> <i>minutes</i>	Voice VLAN	
<b>voice vlan cos</b> <i>cos-value</i>	Voice VLAN	CoS
<b>voice vlan dscp</b> <i>dscp-value</i>	Voice VLAN	DSCP
<b>voice vlan enable</b>	Voice VLAN	
<b>voice vlan mode auto</b>	Voice VLAN	
<b>voice vlan security enable</b>	Voice VLAN	

10.4	

### 44.2.2 show voice vlan oui

OUI      OUI

**show voice vlan oui**

Voice VLAN

---

--	--	--

┌

┌



# 46 RLDP

## 46.1

### 46.1.1 rldp detect-interval

RLDP

**rldp detect-interval** *interval*

**no rldp detect-interval**

---

	<i>interval</i>	2-15

---

┌ 3

└

stp

y

**rldp detect-max** *num*

**no rldp detect-max**

<i>num</i>	,	2-10

2

5  
Ruijie(config)# **rldp detect-max 5**

<b>rldp detect-interval</b>	

-	-

### 46.1.3 rldp enable

RLDP

**rldp enable**

**no rldp enable**


	RLDP	RLDP
	Ruijie(config)# <b>rldp enable</b>	
	<b>rldp port</b>	
	-	

### 46.1.4 rldp port

rldp

**rldp port { unidirection-detect | bidirection-detect | loop-detect | shutdown-svi | shutdown-port | block }**

**no rldp port { unidirection-detect | bidirection-detect | loop-detect }**

	<b>unidirection-detect</b>	
	<b>bidirection-detect</b>	
	<b>loop-detect</b>	
	<b>warning</b>	
<b>shutdown-svi</b>	shutdown	svi

```
Ruijie(config)# interface fas 0/1
Ruijie(config-if)# rldp port loop-detect block
```

<b>rldp enable</b>	rldp

-	-

### 46.1.5 rldp reset

**rldp shutdown    disable                    rldp**

**rldp reset**

-	-

```
Ruijie# rldp reset
```

<b>rldp enable</b>	Rldp

-	-



└──

└── EXEC

└──

└──

└──

-	-

└──

└──

-	-

# 47 TPP

## 47.1

### 47.1.1 topology guard

topology guard

no

[no] topology guard

	-	-

no

**[no] tp-guard port enable**



|

|

tpp

|

Ruijie# **show tpp**

|

<b>topology guard</b>	

|

|

-	-

---

# 48

## 48.1

### 48.1.1 cd

`cd [filesystem:][directory]`

	<i>filesystem</i>	
	<i>directory</i>	

flash

cd / pwd

1 usb0  
Ruijie# **cd** usb0:/  
2 sd  
Ruijie# **cd** sd0:/

	pwd	


## 48.1.2 copy

**copy** *source-url destination-url*

<i>source-url</i>	URL
<i>destination-url</i>	URL

copy

URL

<b>flash:</b>	flash URL flash
<b>tftp:</b>	TFTP
<b>xmodem:</b>	xmodem
<b>slave:</b>	flash
<b>usb0:</b>	usb
<b>usb1:</b>	usb
<b>sd0:</b>	sd

r

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
```

---

url URL flash/  
usb0:/ usb1:/slave:/ url

---

r .

---

1 tmpfile  
Ruijie# **delete** tmpfile  
2 rgos.bin.bak  
Ruijie# **delete** slave:/rgos.bin.bak  
3 sd aaa.bin  
Ruijie# **delete** sd0:/aaa.bin

<b>copy</b>	
<b>dir</b>	



---

r

---

1

Ruijie# **dir** slave0:/

Directory of slave:/

Mode	Link	Size	MTime	Name
1		10838016	2008-01-01 00:01:53	rgos.bin
1		399	2008-01-01 00:01:37	config.text
1		399	2008-01-01 00:17:58	cfg.txt

3 Files (Total size 11210782 Bytes), 0 Directories.  
Total 33030144 bytes (31MB) in this device, 20463616 bytes (19MB) available.

2

Ruijie# **dir**

Directory of temp:/

Mode	Link	Size	MTime	Name
1		399	2008-01-01 00:17:58	a.dat

1 Files (Total size 399 Bytes), 0 Directories.  
Total 33030144 bytes (31MB) in this device, 20463616 bytes (19MB) available.

<b>pwd</b>	
<b>cd</b>	


---

--	--	--

**48.1.5 mkdir**

**mkdir** *directory*

---

### 48.1.6 rename

**rename** *url1 url2*

<i>url1</i>	URL
<i>url2</i>	URL

└──

└──

---

## 48.1.7 rmdir

**rmdir** *directory*

<i>directory</i>	,

|

|

|

|

tmp  
Ruijie# **rmdir** tmp

|

**mkdir**

---


└───

└───

└───

└───  
1  
Ruijie# **pwd**  
**flash:/**

<b>cd</b>	

└───


## 48.2.2 show file systems

**show file systems**


└───

└───

---

┌

┌

1  
Ruijie#show file systems

┌


┌

--	--

---

# 49

## 49.1 CPU

### 49.1.1 cpu-log

CPU , **cpu-log**  
**cpu-log** *log-limit low\_num high\_num*

---

	-	-

	-	-

### 49.1.2 show cpu

	CPU	show cpu
<b>show cpu</b>		
	-	-

┌

┌

┌

	CPU	CPU	5	1	5
	CPU		5	1	5
	CPU	p			1

---

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%	dlx_task
20	0%	0%	0%	secu_policy_task
21	0%	0%	0%	dhcpa_task
22	0%	0%	0%	dhcpsnp_task
23	0%	0%	0%	igmp_snp
24	0%	0%	0%	mstp_event
25	0%	0%	0%	GVRP_EVENT
26	0%	0%	0%	rldp_task
27	0%	2%	1%	rerp_task
28	0%	0%	0%	reup_event_handler
29	0%	0%	0%	tpp_task
30	0%	0%	0%	ip6timer
31	0%	0%	0%	rtadvd
32	0%	0%	0%	tnet6
33	2%	0%	0%	tnet
34	0%	0%	0%	Tarptime
35	0%	0%	0%	gra_arp
36	0%	0%	0%	Ttcptimer
37	8%	1%	0%	ef_res
38	0%	0%	0%	ef_rcv_msg
39	0%	0%	0%	ef_inconsistent_daemon
40	0%	0%	0%	ip6_tunnel_rcv_pkt
41	0%	0%	0%	res6t
42	0%	0%	0%	tunrt6
43	0%	0%	0%	ef6_rcv_msg

---

---

44	0%	0%	0%	ef6_inconsistent_daemon
45	0%	0%	0%	imid
46	0%	0%	0%	nsmd
47	0%	0%	0%	ripd
48	0%	0%	0%	ripngd
49	0%	0%	0%	ospfd
50	0%	0%	0%	ospf6d
51	0%	0%	0%	bgpd
52	0%	0%	0%	pimd
53	0%	0%	0%	pim6d
54	0%	0%	0%	pdmd
55	0%	0%	0%	dvmrpd
56	0%	0%	0%	vty_connect
57	0%	0%	0%	aaa_task
58	0%	0%	0%	Tlogtrap
59	0%	0%	0%	dhcp6c
60	0%	0%	0%	sntp_recv_task
61	0%	0%	0%	ntp_task
62	0%	0%	0%	sla_daemon
63	0%	3%	1%	track_daemon
64	0%	0%	0%	pbr_guard
65	0%	0%	0%	vrrpd
66	0%	0%	0%	psnpd
67	0%	0%	0%	igsnpd
68	0%	0%	0%	coa_recv
69	0%	0%	0%	co_oper
70	0%	0%	0%	co_mac
71	0%	0%	0%	radius_task
72	0%	0%	0%	tac+_acct_task
73	0%	0%	0%	tac+_task
74	0%	0%	0%	dhcpd_task
75	0%	0%	0%	dhcps_task
76	0%	0%	0%	dhcpping_task
77	0%	0%	0%	dhcpc_task
78	0%	0%	0%	uart_debug_file_task
79	0%	0%	0%	ssp_init_task
80	0%	0%	0%	rl_listen
81	0%	0%	0%	ikl_msg_operate_thread
82	0%	0%	0%	bcmDPC

---

83	0%	0%	0%	bcmL2X.0	
84	3%	3%	3%	bcmL2X.0	
85	0%	0%	0%	bcmCNTR.0	
86	0%	0%	0%	bcmTX	
87	0%	0%	0%	bcmXGS3AsyncTX	
88	0%	2%	1%	bcmLINK.0	
89	0%	0%	0%	bcmRX	
90	0%	0%	0%	mngpkt_rcv_thread	
91	0%	0%	0%	mngpkt_recycle_thread	
92	0%	0%	0%	stack_task	
93	0%	0%	0%	stack_disc_task	
94	0%	0%	0%	redun_sync_task	
95	0%	0%	0%	conf_dispatch_task	
96	0%	0%	0%	devprob_task	
97	0%	0%	0%	rdp_snd_thread	
98	0%	0%	0%	rdp_rcv_thread	
99	0%	0%	0%	rdp_slot_change_thread	
100	4%	2%	1%	datapkt_rcv_thread	
101	0%	0%	0%	keepalive_link_notify	
102	0%	0%	0%	rerp_msg_rcv_thread	
103	0%	0%	0%	ip_scan_guard_task	
104	0%	0%	0%	ssp_ipmc_hit_task	
105	0%	0%	0%	ssp_ipmc_trap_task	
106	0%	0%	0%	hw_err_snd_task	
107	0%	0%	0%	rerp_packet_send_task	
108	0%	0%	0%	idle_vlan_proc_thread	
109	0%	0%	0%	cmic_pause_detect	
110	1%	1%	1%	stat_get_and_send	
111	0%	1%	0%	rl_con	
112	75%	80%	90%	idle	
		3	5	1	5
	CPU	LISR	HISR		CPU

No	
5Sec	5 CPU
1Min	1 CPU
5Min	5 CPU

---

2

,X

---

bgp

---

1 BGP  
Ruijie(config)# **memory-lack exit-policy bgp**

<b>show memory</b>	

-

10.3(4b3)	

## 49.2.2 show memory

**show memory**

**show memory**

-	-

└───

└───

---

Free pages: 1079

watermarks : min 379, lower 758, low 1137, high 1516

System Total Memory : 128MB, Current Free Memory : 5283KB

Used Rate : 96%

1. 4k

2.

min	
lower	<b>memory-lack exit-policy</b>
low	OVERFLOW

high

OVERFLOW



# 50

## 50.1

### 50.1.1 threshold set

CPU CPU CPU MIB  
 CPU CPU syslog  
 no

**threshold set {cpu | memory } [M1 | M2 | slot *n* | member *n*] warning\_value  
 critical\_value**

**no threshold set {cpu | memory }**

<b>cpu   memory</b>	CPU	<b>memory</b>	<b>cpu</b>
<b>M1   M2   slot <i>n</i></b>	<i>n</i>		
<b>member <i>n</i></b>	<i>n</i>		
<i>warning_value</i>	1 ~ 100	<b>cpu</b>	<b>memory</b>
<i>critical_value</i>	<b>memory</b>	1 ~ 100	<b>cpu</b>
<b>no</b>			

CPU	90	100.
	90	100.

```

1          M1
Ruijie(config)# threshold set memory M1 70 90

```

```

2          CPU
Ruijie(config)# threshold set cpu member 2 70 90

```

<b>show threshold</b>	

<b>10.3(4b3)</b>	

## 50.2

### 50.2.1 show threshold

**show threshold {cpu | memory } [M1 | M2 | slot *n* | member *n*]**

<b>cpu   memory</b>	<b>cpu CPU</b>
	<b>memory</b>
<b>M1   M2   slot <i>n</i></b>	<b><i>n</i></b>
<b>member <i>n</i></b>	<b><i>n</i></b>

```

1          M1 CPU

```

---

```
Ruijie# show threshold cpu M1
```

```
2
```

```
Ruijie# show threshold memory
```



---

# 51

## 51.1

### 51.1.1 clear logging

clear logging

	-	-

└───

└───

└───

└───  
Ruijie# clear logging

	logging on	
	show logging	
	logging buffered	

└───

	-	-

### 51.1.2 more flash

FLASH

---

**more flash:filename**



<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

6 6 10000

Ruijie(config)# **logging buffered 10000 6**

	-	-

### 51.1.4 logging console

no

**logging console level**

**no logging console**

<i>level</i>		0 7
		1

Debugging (7)

**show logging**

6  
Ruijie(config)# **logging console informational**

<b>logging on</b>		
<b>show logging</b>		

	-	-

---

## 51.1.5 logging count

no

**logging count**

**no logging count**

	-	-

┌

┌

┌

**no logging count**

┌

Ruijie(config)# **logging count**

	<b>show logging count</b>	
	<b>show logging</b>	

┌

	-	-

## 51.1.6 logging facility

no

(23)

**logging facility** *facility-type*

**no logging facility**

<i>facility-type</i>	Syslog
----------------------	--------

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)

---

(local7) 23

Syslog kernel

Ruijie(config)# **logging facility kern**

---

**logging console**

```

FLASH FLASH
FLASH logging file flash

```

```

6
Ruijie(config)# logging file flash:trace

```

logging on	
show logging	
more flash	FLASH

-	-

### 51.1.8 logging monitor

```

VTY telnet SSH
no VTY
logging monitor level
no logging monitor

```

--	--

```

level 50648 ref66.82 -32.68 62.76 0.24 ref142.32534.98 154.38 1.5 r

```

---

VTY

6

Ruijie(config)# **logging monitor informational**

---

<b>logging on</b>	
<b>show logging</b>	

---

---

--	--

---

<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

-	-

### 51.1.10 logging rate-limit

no

**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

---

debug 10 warning

Ruijie(config)#**logging rate-limit all 10 except warnings**

**show logging count**

---

2                    IPV6            AAAA:BBBB::FFFF  
Ruijie(config)# **logging server ipv6**

	<b>logging</b>	Syslog server
	-	-

### 51.1.13 logging source interface

no

**logging source interface** *interface-type interface-number*

**no logging source interface**

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

Syslog Server

IP

IP

IP

-	-

### 51.1.14 logging synchronous

no

**logging synchronous**

**no logging synchronous**

-	-

|

|

|

```
Ruijie(config)#line console 0
Ruijie(config-line)#logging synchronous
                        UP-DOWN
Ruijie#configure terminal
Oct  9 23:40:55 %LINK-5-CHANGED: Interface GigabitEthernet 0/1,
changed state to down
Oct  9 23:40:55 %LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet 0/1, changed state to DOWN
Ruijie# configure terminal      //
```

<b>show running-config</b>	

|

-	-

## 51.1.15 logging trap

```

Syslog Server
no Syslog Server
logging trap level
no logging trap

```

level	1

```

Informational(6)

```

```

Syslog Server logging Syslog
Server logging trap
show logging

```

```

6 202.101.11.22 Syslog Server
Ruijie(config)# logging 202.101.11.22
Ruijie(config)# logging trap informational

```

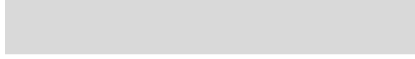
2 e S g o l s

---

no

**service sequence-numbers**

**no service sequence-numbers**



```

Mar 22 15:28:02 %SYS-5-CONFIG: Configured from console by console
Ruijie# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# service sysname
Ruijie(config)# end
Mar 22 15:35:57 S3250 %SYS-5-CONFIG: Configured from console by
console

```

<b>show logging</b>	

-	-

### 51.1.18 service timestamps

no

default

**service timestamps** *message-type* [*uptime* | *datetime* [*msec* | *year*]]

**no service timestamps** *message-type*

**default service timestamps** *message-type*

<i>message-type</i>	log debug log 0 6 debug 7
<i>uptime</i>	* * * * 07:00:10:41

<i>datetime</i>	27 16:53:07	Jul
<i>msec</i>	.	Jul 27 16:53:07.299
<i>year</i>	2007 Jul 27 16:53:07	

RTC

Uptime  
Datetime

```

          Log      Debug      Datetime
Ruijie(config)# service timestamps debug datetime msec
Ruijie(config)# service timestamps log datetime msec
Ruijie(config)# end
Ruijie(config)# Oct 8 23:04:58.301 %SYS-5-CONFIG_I: Configured from
console by console

```

<b>logging on</b>	
<b>service sequence-numbers</b>	

-	-

### 51.1.19 terminal monitor

VTY  
no

VTY

---

**terminal no monitor**

	-	-

VTY

VTY VTY

VTY  
Ruijie# **terminal monitor**

	-	-

	-	-

## 51.2

### 51.2.1 show logging

**show logging**

	-	-

---

**show logging**

```
Ruijie# show logging
Syslog logging: enabled
Console logging: level debugging, 4 messages logged
Monitor logging: level informational, 0 messages logged
Buffer logging: level debugging, 6 messages logged
Timestamp debug messages: datetime
Timestamp log messages: disabled
Sequence log messages: enable
Trap logging: level debugging, 2 message lines logged,0 reserved,0
fail
logging to 202.101.11.22
logging to 192.168.200.112
Log Buffer (Total 4096 Bytes) : have written 680
00001 2004-11-17 10:20:59 Ruijie: %7:%LINK CHANGED: Interface
FastEthernet 0/0, changed state to up
00002 2004-11-17 10:20:59 Ruijie: %7:%LINE PROTOCOL CHANGE:
Interface FastEthernet 0/0, changed state to UP
00003 2004-11-17 10:57:18 Ruijie: %7:%LINK CHANGED: Interface
FastEthernet 0/1, changed state to administratively down
00004 2004-11-17 10:57:21 Ruijie: %7:%LINK CHANGED: Interface
FastEthernet 0/1, changed state to down
00005 2004-11-17 10:57:41 Ruijie: %7:%LINK CHANGED: Interface
FastEthernet 0/1, changed state to administratively down
00006 2004-11-17 10:57:43 Ruijie: %7:%LINK CHANGED: Interface
FastEthernet 0/1, changed state to down
```

Syslog logging	<b>enabled, disabled</b>
Console logging	
Monitor logging	VTY
Buffer logging	
Timestamp debug messages	Debug
Timestamp log messages	Log



---

<b>logging count</b>	
<b>show logging</b>	
<b>clear logging</b>	

-	-

---

# 52

## 52.1

### 52.1.1 device-priority

**device-priority** [*member*] *priority*

<i>member</i>	ID member 1
<i>priority</i>	[1, 10]

|

|

```
1 10 10
1
write
```

```
2 8
Ruijie(config)# device-priority 2 8
```

<b>show member</b>	

|

-	-
---	---

### 52.1.2 device-description

**device-description** [*member member*] *description*

<b>member</b> <i>member</i>	ID member 1
<i>description</i>	31

└──

└──

└──

write

└──

2 red-giant

Ruijie(config)# **device-description member 2 red-giant**

<b>show member</b>	

└──

-	-
---	---

## 52.2

### 52.2.1 show member

**show member** [*member*]

<i>member</i>	ID

└──

└──

└──

---

Ruijie# **show member**

```
Member Mac Address      Priority Software Version
HardwareVersion Description
-----
1 00d0.f810.3323 1 RGOS 10.1.00(2),Release(12889) 1.0 SWITCH
2 00d0.f822.33aa 1 RGOS 10.1.00(2),Release(12889) 1.0 SWITCH
3 00d0.f822.33ae 1 RGOS 10.1.00(2),Release(12889) 1.0 SWITCH
4 00d0.f822.33b0 1 RGOS 10.1.00(2),Release(12889) 1.0 SWITCH
5 00d0.f822.33b2 1 RGOS 10.1.00(2),Release(12889) 1.0 SWITCH
6 00d0.f824.23b4 1 RGOS 10.1.00(2),Release(12889) 1.0 SWITCH
7 00d0.f833.44b4 1 RGOS 10.1.00(2),Release(12889) 1.0 SWITCH
8 00d0.f855.33ae 1 RGOS 10.1.00(2),Release(12889) 1.0 SWITCH
```

-	-

-	-