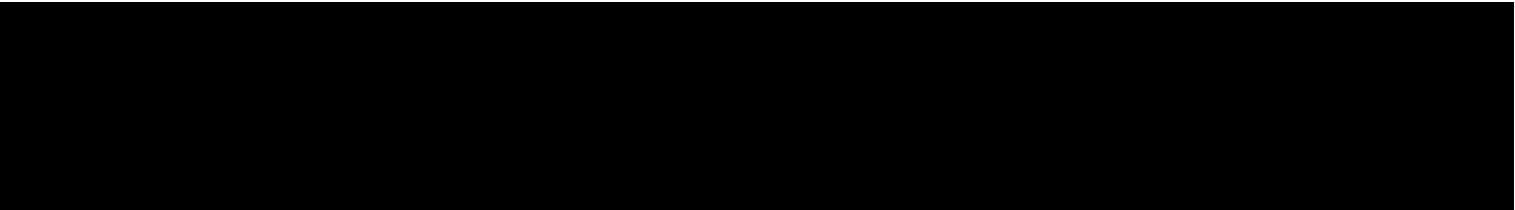




RG-S5750-S



¶

RGOS®10.4(3b16)p1

1.

```
[ ]      [ ]  
{ x | y | ... }  
[ x | y | ... ]  
//
```

2.

✎

3.



-

↑ А 3 ~ ЛЮ '

1. CLI
- 2.
3. LINE
4. UPGRADE
- 5.
- 6.
7. CPU-LOG
- 8.
- 9.
10. USB
- 11.
- 12.
13. SRM
- 14.
15. POWER

1 CLI

1.1 alias

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

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

EXEC *mode* *alias*

alias

EXEC *mode* *alias* *command-alias* *original-command*
no alias exec *mode* *alias*
EXEC *mode* *alias* *command-alias* *original-command*
EXEC *mode* *alias* *command-alias* *original-command*

Ruijie(config)#alias ?

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

*command-alias=original-command

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

Ruijie#s?

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

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

Ruijie#s?

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

```

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

```

Ruijie#configure terminal
 Ruijie(config)#alias config def-route ip route 0.0.0.0 0.0.0.0 192.168.1.1
 Ruijie(config)#def-route?
 *def-route="ip route 0.0.0.0 0.0.0.0 192.168.1.1"
 Ruijie(config)#end
 Ruijie#show aliases config
 globle configure mode alias:
 def-route ip route 0.0.0.0 0.0.0.0 192.168.1.1

show aliases	
--------------	--

1.2 privilege

```

no privilege mode [all] {level level | reset} command-string
no privilege mode [all] [level level] command-string

```

mode	
all	


```
0  3  0 EXEC
```

$$\ddot{O} \quad \hat{O} \quad \mathfrak{Z} \quad \cup \quad \mathfrak{Z} \quad \hat{A}$$

ò Ô ѼЮ ~ EXEC Ю 3 " '

```
exec mode alias:
```

h help

p ping

s show

u	undebug
---	---------

un	undebug
----	---------

$\tilde{O}$	$\tilde{O}$	
	alias	$\tilde{\mu}$

$$\ddot{O} \quad \wedge \quad \hat{O}$$

2

2.1 banner login

no banner login banner login *c message c*

ø	Ô		
		c	↑ a
		message	

ø Ô -

ø Ô

ø Ô Å Å ↑

ø Ô Ô

$$\ddot{\theta} \quad \wedge \quad \hat{O} \quad -$$
$$\ddot{O} \qquad \hat{O}$$

ò Ô Л ы " й' l' flash:/rgos.bin L' й 5Â

$$\ddot{0} \quad \{ \quad \hat{0}$$
[illegible]


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

```
Ruijie# show clock
```

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

ð	ŕ Ô	ŕ	
		show clock	

ð / Ô -

2.6 clock update-calendar

ÿ Â

clock update-calendar

ð	Ô		
		-	-

ð Ô -

ð ŕ Ô

ð ʒ Ô

ð Ô ʒ ÿ Â ɲ ɔ ˘ æ

disable

ð Ô Ю æ ˘

Ruijie# disable 10

ð ʒ Ô	ʒ	
	enable	ÿ ˘ Â

ð ɹ Ô -

2.8 enable

ʒ enable Â

enable

ð Ô		
	-	-

ð Ô -

ð ʒ Ô -

ð Ô -

ð Ô -

ð ʒ Ô	ʒ	
	-	-

ð ɹ Ô -

2.9 enable password

a ˘

ʒ ˘

ʒ enable password Â ʒ no

ʒ Â

enable password [level level] {password | [0 | 7] encrypted-password}

no enable password [level level]

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

$$\ddot{O} \quad \hat{O} \quad -$$
$$\ddot{O} \quad \{ \quad \hat{O}$$

Diagram illustrating a neural network architecture for a classification task. The network consists of three layers: an input layer, a hidden layer, and an output layer. The input layer has 26 nodes, labeled with various symbols. The hidden layer has 10 nodes, labeled with various symbols. The output layer has 10 nodes, labeled with various symbols. The network is divided into three sections: 'EXEC' (Execution), 'EXEC' (Execution), and 'EXEC' (Execution).

```

Ruijie(config)# enable password pw10

```

enable secret

Ồ - Ồ -

2.10 enable secret

```

a ^
{
    enable secret ^A
}
^A

```

```
enable secret [level /level/] {secret | [0 | 5] encrypted-secret}
no enable secret [level /level/]
```

ð	Ô		
	<i>Secret</i>	EXEC	3
	<i>Level</i>		
	0 5	3 7 ~ 0 7 ~ 5 7	
	<i>encrypted-password</i>	3	

$$\ddot{O} \quad \hat{O} \quad -$$
$$\ddot{O} \quad \{ \quad \hat{O}$$

1. 配置密码安全。在配置模式下，使用 `password security` 命令，将密码安全等级设置为 15。

2. 配置密码。在配置模式下，使用 `password` 命令，将密码设置为 `pw10`。

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

配置	
enable password	密码

3. 配置密码安全等级。

2.11 enable service

1. 配置 SSH Server/Telnet Server/Web Server/Snmp Agent。在配置模式下，使用 `enable service` 命令，将服务设置为 `ssh-server`、`telnet-server`、`web-server` 或 `snmp-agent`。

配置	
ssh-server	SSH Server 支持 IPv4 IPv6
telnet-server	Telnet Server 支持 IPv4 IPv6
web-server [http https all]	Web Server 支持 IPv4 IPv6
snmp-agent	Snmp Agent 支持 IPv4 IPv6

2. 配置密码安全等级。

3. 配置密码安全等级。

配置	
enable service web-server	3 [http https all]
all	http https http
http	https https

4. 配置 SSH Server。在配置模式下，使用 `enable service ssh-server` 命令，将 SSH Server 设置为 `ssh-server`。

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

配置	
show service	配置

ö / Ô -

2.12 exec-timeout

LINE

3

Â

3

3

Â

128K

128K

ð

Ô Ю

line_rcms_script.tex

Э / Telnet П

Ö Ö Ю ÿ " ì BeiJingAgenda

```
Ruijie(config)# hostname BeiJingAgenda
BeiJingAgenda(config)#
```

Ö Ö Ö

Ö	
-	-

Ö / Ö -

2.15 ip http authentication

Http Server Ä Web Ä Web

Ю / Ю **ip http authentication** Ö

ip http authentication { enable | local }

Ö Ö

enable	enable password enable enable secret Ä 15
local	username Ö " Ö 15 Ä

Ö Ö enable Ä

Ö Ö

Ö Ö Ö Web Ä **no ip http authentication** Ö ì Ä

Ö Ö Ю Ö Web local

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

Ö Ö Ö

Ö	
---	--

д 3 О

д О 3 HTTP Е А **no ip http port** 3 и А

д О Ю 3 HTTP Е и 8080

```
Ruijie(config)# ip http port 8080
```

д 3 О

3	
enable service	б Е

д 1 О -

2.17 ip http secure-port

HTTPS Е ~ Ю 1 Л **ip http secure-port** 3
ip http secure-port *number*

д О

<i>number</i>	HTTPS Server ~ и 443 А

д О и 443 А

д 3 О

д О 3 HTTPS Е А **no ip http secure-port** 3 и А

д О Ю 3 HTTPS Е и 4443

```
Ruijie(config)# ip http secure-port 4443
```

д 3 О

3	
enable service	б Е
show web-server status	web Е

д 1 О -

2.18 ip telnet source-interface

Э IP и Telnet ~ Ю 1 Л **ip telnet source-interface**
 3
ip telnet source-interface *interface-name*

д О

--	--

<i>interface-name</i>	Э	IP	й Telnet	Â
-----------------------	---	----	----------	---

д Ò -

д з Ò

д Ò з Э IP й Telnet Â telnet з /l Telnet
Е А~ й ~ Â **no ip telnet**
source-interface з й Â

д Ò Ю з Loopback 1 Э IP й Telnet '

```
Ruijie(config)# ip telnet source-interface Loopback 1
```

д з Ò

д

```
Ruijie# lock
Password: <password>
Again: <password>
Locked
Password: <password>
```

 $\hat{\mathcal{O}}$

3	
lockable	Э В

Λ

2.20 lockable

lock $\exists \hat{A}$ **no lock** $\exists A \quad \hat{A}$

lockable

no lockable

 $\hat{O}$

-	-

 $\hat{O}$

3

2.21 login

```

AAA
no
login
no login

```

0	0		
		-	-

0 0 -

0 3 0 line

```

0 0 AAA
console
VTY

```

0 0 0 VTY 0 0

```

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

```

0	3 0		
		password	line 3

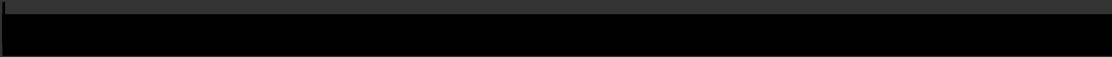
0 1 0 -

2.22 login authentication

```

AAA
no
AAA
p o A ssw

```



2.24 password

line 3 line 3 password 3 no line 3 Â

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

no password

ö	Ô		
		<i>password</i>	line 3
		0 7	3 7 ~ 0 7 7
		<i>encrypted-password</i>	3

ö Ô -

ö 3 Ô line

ö Ô 3 line 3 Â

ö Ô Ю line 3 ì red

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

ö	3 Ô	6@ãôL8K•DsÃ-}AOUY`pORUY0F\	
		login	Э ì 3

ö / Ô -

2.25 password policy

3

ö 3 Ô

ö Ô 3 3 3

ö Ô Ю 3 й 8'

```
Ruijie(config)# password policy min-size 8
```

```
Ю 3 '
```

```
Ruijie(config)# password policy strong
```

```
Ю 5 3'
```

```
Ruijie(config)# password policy no-repeat-times 5
```

```
Ю 3 й 90 '
```

```
Ruijie(config)# password policy life-cycle 90
```

ö 3 Ô

3	
-	-

ö 1 Ô -

2.26 privilege mode

ê CLI й Â

ö Ô

-	-

ö Ô ê CLI й Â

ö 3 Ô ê CLI й Â

ö Ô ê CLI й Â

ö Ô ê CLI й Â

ö 3 Ô

3	
-	-

ö 1 Ô -

2.27 prompt

prompt 3 Â Ю 3 prompt Â 1 3 ~ no
prompt string

ð	Ô					
		<i>string</i>	3	~	1 16	32

ð Ô -

Router will reload in 600 seconds

3	
-	-

0 1 0 -

2.29 Secret

```

line          MD5 a /  3  line      3 secret 3 no      line
3  3
secret { [ 0 ] password | 5 encrypted-secret }
no secret

```

0	0		
0		^ 1 ~ 3 ~ ± MD5 a / 3	
password		3	
5 encrypted-secret		MD5 a / 3 3 ~ ± 5 3 ±	

0 0 -

0 3 0 line

0	0	3	line	MD5 a / 3 3
5	24	1 3 8		
"\$"				
5				
line	password	secret		
	password	secret		
secret	secret			password

0 0 10 line MD5 a / 3 3 5 vty0

Ruijie(config)# line vty 0

Ruijie(config-line)# secret vty0

3 3 vty0 MD5 a / 3 ~ show 10

secret 5 \$1\$X834\$wvx6y794uAD8svzD

3	
---	--

login

Э

й

з

ö / Õ -

2.30 service password-encryption

з п ~ service password-encryption з ~ з no ~
 4 a й Æ

service password-encryption

ö

Õ

-

-

Ö 3 Ô LINE

Ö Ô
LINE Ñ LINE Ñ 1 Ñ

Ö Ô Ю line vty 0 Ñ 5
Ruijie(config-line)# session-timeout 5 output

Ö 3 Ô		
-	-	-

Ö 1 Ô -

2.32 show boot

Â

show boot {config | system [switch all | switched] | ip}

Ö Ô		
config		"
system		Ÿ "
all	VSU Ю VSU	
<i>switchid</i>	VSU Ю VSU	
ip		IP

Ö Ô -

Ö 3 Ô

Ö Ô 3

Service config: [Enabled]

3 ЛЮЮ

Ÿ

"

'

Ruijie# show boot system

Boot system config:

=====

Prio	Size	Modified	Name
1	N/A	N/A	usb1:/rgos.bin
2			
3			
4			
5	3205120	2008-08-26 05:22:46	flash:/rgos.bin
6			
7			
8	3205120	2008-08-26 05:25:09	flash:/rgos_bak.bin
9	N/A	N/A	tftp://192.168.7.24/rgos.bin
10			

=====

4 ЛЮЮ

||

IP

'

Ruijie# show boot ip

System boot ip: [192.168.7.11]

System boot gateway: None

System boot mask: None

5 ЛЮЮ

VSU

Ю

Ÿ

"

'

Ruijie# show boot system switch 3

Switch 3:

Boot system config:

=====

Prio	Size	Modified	Name
1	N/A	N/A	usb1:/rgos.bin
2			
3			
4			
5	3205120	2008-08-26 05:22:46	flash:/rgos.bin
6			
7			
8	3205120	2008-08-26 05:25:09	flash:/rgos_bak.bin
9	N/A	N/A	tftp://192.168.7.24/rgos.bin
10			

=====

ö

3 Ö

3

-

-

3

õ / Ô -

2.33 show clock

show clock

3 show clockÂ

õ Ô

ö Ô Ю 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
```

ö	3 Ô	3	
		-	-

ö 1 Ô -

2.35 show reload

|| ~ Ю 3 show reload Â

show reload

ö	Ô		
		-	-

ö Ô -

ö 3 Ô

ö Ô 3 1 Ю || Â

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

ö	3 Ô	3	
		-	-

ö / Ô -

2.36 show running-config

show running-config Â

show running-config

ö	Ô		
		-	-

ö Ô -

ö 3 Ô

ö Ô -

ö Ô -

ö	3 Ô	3	
		-	-

ö / Ô -

2.37 show startup-config

NVRAM

4 ~ 3

show

startup-config Â

show startup-config

ö	Ô		
		-	-

ö Ô -

ö 3 Ô

ö Ô 3 1 76 ~ ý || ~ ~

Â

ö Ô Ю

```
Ruijie# show version
```

```
System description : Ruijie Dual Stack Multi-Layer Switch(S3760-24) By Ruijie Network
```

```
System start time: 1970-6-14 11:49:53
```

```
System uptime: 3:17:1:17
```

```
System hardware version: 2.0
```

```
System software version: RGOS 10.3.00(4), Release(34679)
```

```
System boot version: 10.2.34077
```

```
System CTRL version: 10.2.24136
```

```
System serial number: 1234942570001
```

ö 3 Ô

3	
-	-

ö 1 Ô -

2.40 show web-server status

Web 7 show web-server status Â

show web-server status

ö Ô

-	-

ö Ô -

ö 3 Ô

ö Ô -

ö Ô Web 7

```
Ruijie# show web-server status
```

3	
-	-

1 -

2.41 speed

no speed 3 Å
speed speed

3	
Speed	bps Å 9600 Å 19200 Å 38400 Å 57600 Å 115200 9600 Å

9600

3

3 Å

3 Ю 57600 bps'

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

3	
-	-

1 -

2.42 telnet

1 Telnet EXEC Ю telnet 3 Å
telnet host [port] [/source {ip A.B.C.D | interface interface-name}]

3	
host	Telnet 1 IPV4 Å IPV6 3 Å
Port	Telnet 1 TCP 3 Å 23
/source	Telnet IP
ip A.B.C.D	Telnet IPV4
interface interface-name	Telnet

3 -


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

```

ö   3 Ô   3
    login local

```

```
ö   /   Ô   -
```

2.44 username permission

3 username permission Â

username *name* **permission** *oper-mode* *filename*
no username *name* **permission** *oper-mode* *filename*

```

ö   Ô
    name
    oper-mode
    filename

```

```
ö   Ô   -
```

```
ö   3   Ô
```

```
ö   Ô
```

```

ö   Ô   IO      test é
    Ruijie(config)# username test permission rw /
    IO      test
    Ruijie(config)# username test permission null /
    IO      test      config.text   é   ä   ä
    Ruijie(config)# username test permission 0 /config.text
    Ruijie(config)# username test permission rwx /

```

```
ö   3 Ô   3
```

```
ö   /   Ô   -
```

2.45 username secret

MD5 a / 3 3

3 username secret Â

username *name* **secret** { [0] *password* | 5 *encrypted-secret* }
no username *name* **secret**

ö

Ô

<i>name</i>	"
0	^ / ~ 3 ~ ± MD5 a / 7
<i>password</i>	3
5 encrypted-secret	MD5 a / 7 3 ~ ± ÿ 7 ± 3

ö

Ô -

ö 3

Ô

ö

Ô

3

ÿ

"

MD5 a / 7

3

Â

✎

3 LINE

3.1 access-class

Line IO ACL ~ **access-class** { *access-list-number* | *access-list-name* }
 { **in** | **out** } **no access-class** { *access-list-number* | *access-list-name* } {**in** | **out**}
access-class { *access-list-number* | *access-list-name* } {**in** | **out**}
no access-class { *access-list-number* | *access-list-name* } {**in** | **out**}

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

Line IO ~

Line

Line IO ~ **access-class** { *access-list-number* | *access-list-name* } {**in** | **out**}
no access-class { *access-list-number* | *access-list-name* } {**in** | **out**}
show running

line vty 0 4 ~ access-list ~

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

show running		

-

3.2 line

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

aux		

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

Ö -

Ö 3 Ö

Ö Ö LINE

Ö Ö LINE VTY 1 3 LINE

Ruijie(config)# line vty 1 3

Ö 3 Ö

3	
-	-

Ö 1 Ö -

3.3 line vty

3 1 16 1 16 VTY 1 3 no 1 16 1 16 VTY

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

Ö Ö

<i>line-number</i>	VTY

Ö Ö 1 1 VTY 1 5 0--4

Ö 3 Ö

Ö Ö 1 1 VTY 1 5 1 5 1 5

до 1 О -

3.4 transport input

Line IO 1 Л transport input 3 Line IO 1 Л Â default
 transport input ы LINE IO ы Â
 transport input {all | ssh | telnet | none}
 default transport input

до

О

all	Line IO Â
ssh	Line IO SSH Â
telnet	Line IO Telnet Â
none	Line IO a Â

Line

до

О

~ VTY

Â

è

TTY

ы NONE a

Â

1 Л

1 Л

default transport input

3

ы

Â

до

3

О Line

A

Г

до

‘

1

i



```
Waiting for image installed....Complete  
(Slot 6): MAIN installed.  
(Slot 6): All images have been installed.
```


5

5.1 cd

Â

cd [*filesystem:*][*directory*]

URL

flash:	flash Â ∅ 1 ƚ Â URL a A~ flash Â Ÿ flash ∅ Â
tftp:	TFTP Ł
xmodem:	xmodem
usb0:	usb
usb1:	γ usb

URL

flash

flash

flash

URL

ò Ô 1' ÿ tftp Ё ЭЮ

```
Ruijie#copy tftp://192.168.201.54/rgos.bin flash:/
```

$$2^{\circ} \quad \exists \quad \text{tftp} \quad \vdash$$

```
Ruijie#copy flash:/rgos.bin tftp://192.168.201.54/rgos.bin
```

3 xmodem IO

```
Ruijie# copy xmodem: flash:/config.text
```

4^t U

```
Ruijie#copy flash:/config.text usb0:/config.text
```

5 4 3 1

Ruijie#copy ?

WORD	Copy from current file system
flash:	Copy from flash file system
ftp:	Copy from ftp: file system
help	Help information
running-config	Copy from current system configuration
startup-config	Copy from startup configuration
tftp:	Copy from tftp: file system
usb0:	Copy from usb0 file system
usb1:	Copy from usb1 file system
xmodem:	Copy from xmodem: file system

```
Ruijie#copy tftp://172.18.2.18/rgos.bin ?
```

WORD	Copy to current file system
flash:	Copy to flash: file system
running-config	Update (merge with) current system configuration

```

startup-config  Copy to startup configuration
usb0:           Copy to usb0 file system
usb1:           Copy to usb1 file system

```

3	Ô	3	
		del	
		rename	"
		dir	

ö 1 Ô -

5.3 delete

Â
delete [recursive] url

ö	Ô		
		recursive	Â
		<i>url</i>	url Â

ö Ô -

ö 3 Ô

ö Ô url æ Â 3 ð ~ URL flash:/ usb0:/ usb1:/
 slave:/ Â url a ~ ð Â

ö Ô 1' IO tmpfile

```
Ruijie# delete tmpfile
```

```
2' y ð rgos.bin.bak
```

```
Ruijie# delete slave:/rgos.bin.bak
```

```
4' flash ð aaa
```

```
Ruijie#delete recursive aaa
```

ö	3 Ô	3	
		copy	
		dir	ð

ö 1 Ô -

5.4 dir

IO Â
dir [*filesystem*:][*directory*]

ð	Ô		
		<i>filesystem</i>	~ "."
		<i>directory</i>	

ð Ô IO

ð 3 Ô

ð Ô IO ~ IO Â

ð Ô 1

5.5 mkdir

Â
mkdir *directory*

ð	Ô		
		<i>directory</i>	"

ð Ô -

ð ³ Ô

ð Ô " 1 () Â

	flash:/backup/temp	flash:/backup
	flash:/bakcup	flash:/backup/temp

ð Ô 1' IO test '

Ruijie# mkdir test

ð	³ Ô	³	
		rmdir	
		pwd	

ð 1 Ô -

5.6 pwd

Â
pwd

ð	Ô		
		-	-

ð Ô -

ð ³ Ô

ð Ô Â

ð Ô 1' IO Â

Ruijie# pwd

```
flash: /
```

ð	3 Ô	3	
		cd	

ð 1 Ô -

5.7 rename

|| " Â

rename *url1 url2*

ð	Ô		
		<i>url1</i>	URL
		<i>url2</i>	URL

ð Ô -

ð 3 Ô

ð Ô 3 1 3 ° IO " 3 3 a °

|| Â 3 || Â a 3 3 Â

usb0/1, flash, slave Â

ð Ô 1' log.txt

directory	" , й
-----------	-------

ö Ô -

ö 3 Ô

ö Ô a , й Â

ö Ô Ю tmp ~ з Â

```
Ruijie# rmdir tmp
```

ö 3 Ô	3	
	mkdir	

ö / Ô -

5.9 show file systems

show file systems

ö Ô		
	-	-

ö Ô -

ö 3 Ô -

ö Ô 3 ~ / Л Э ~ Л Э /
Â

ö Ô 1'

```
Ruijie#show file systems
```

ö 3 Ô	3	
	-	-

ö / Ô -

6.2 hidekeys

ö 3 Ô

ö Ô -

ö Ô 1' Â

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# archive
Ruijie(config-archive)# log config
Ruijie(config-archive-log-config)# hidekeys
```

ö 3 Ô

3	
archive	
log config	
logging enable	1 11

ö 1 Ô -

6.3 log config

↑ ^ log config~ Â 1 10 3 **no** 10

Â

log config
no log config

ö Ô

-	-

ö Ô -

ö 3 Ô

ö Ô **log config** 3 ± ↑ Â

~ **end** 3 CTRL+C Â

archive ~ **exit** 3 Â

ö Ô 1' ↑ log config Â

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# archive
Ruijie(config-archive)# log config
```

ö 3 Ô

3	
archive	

ð 1 Ô -

6.4 logging enable

1 π Â 1 π 3 no

ö Ô -

ö Ô 1' ÿ 50Â

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# archive
Ruijie(config-archive)# log config
Ruijie(config-archive-log-config)# logging size 50
```

ö 3 Ô

3	
archive	
log config	

ö 1 Ô -

6.6 notify syslog

1 Ë Â 1л 3 no 1
Ë Â

notify syslog
no notify syslog

ö Ô

-	-

ö Ô Ю 1 Ë Â

ö 3 Ô

ö Ô -

ö Ô 1' 1 Ë Â

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# archive
Ruijie(config-archive)# log config
Ruijie(config-archive-log-config)# notify syslog
```

ö 3 Ô

3	
archive	
log config	
logging enable	1 П

ö 1 Ô -

6.7 show archive log config

Â

show archive log config {{all | *start-num* [*end-num*]} [**provisioning** | **contenttype** [**plaintext**]] | **statistics**}

ö

Ô

all	
<i>start-num</i> [<i>end-num</i>]	start-num, ÿ end-num, ÿ start-num end-num start-num Œ ÿ end-num Œ ÿ start-num Â ¼ 0- 2147483647 Â
provisioning	
contenttype	
plaintext	
statistics	

ö

Ô

ö

3

Ô

ö

Ô

all start-num Â 1 ¼ end-num
 Â end-num a ÿ start-num
 end-num (end-num Œ ÿ start-num

user@line	" " " "
	15 " ± 3
datetime	
logged command	3

2

```
Ruijie# show archive log config all provisioning
archive
log config
logging enable
logging size 50
```

3

```
Ruijie# show archive log config statistics
Config Log Session Info:
Number of sessions being tracked: 1
Memory being held: 1270 bytes
Total memory allocated for session tracking: 1270 bytes
Total memory freed from session tracking: 0 bytes
Config Log log-queue Info:
Number of entries in the log-queue: 3
Memory being held in the log-queue: 671 bytes
Total memory allocated for log entries: 671 bytes
Total memory freed from log entries:: 0 bytes
```

δ 3 Ô

3	
-	-

δ 1 Ô -

7 CPU-LOG

7.1 cpu-log

CPU , 1 7 **cpu-log** **cpu-log log-limit low_num high_num**

ð	Ô		
		<i>log-limit</i>	3
		<i>low_num</i>	CPU æ
		<i>high_num</i>	CPU

ð Ô Ю ì 100% æ ì 90% Â

ð 3 Ô

ð Ô 3 1 7 CPU æ ~ CPU Ю
 ~ CPU , CPU æ æ ì ,
 , CPU Ю ~ CPU 1 ì æ æ
 Â

ð Ô Ю CPU æ ì 70% CPU ì
 80% Â

```
ruijie(config)# cpu-log log-limit 70 80
```

```
CPU 80% Ю '
```

```
Oct 20 15:47:01 %SYSCHECK-5-CPU_USING_RATE_LOG: CPU utilization rate in one minute: 95%. rl_con  

occupied most CPU utilization rate: 94%.
```

```
CPU æ 70% Ю '
```

```
Oct 20 15:47:01 %SYSCHECK-5-CPU_USING_RATE_LOG: CPU utilization rate in one minute: 68%. rl_con  

occupied most CPU utilization rate: 60%.
```

```
is ktimer : 60%
```

```
Oct 20 15:47:01 %SYSCHECK-5-CPU_USING_RATE_LOG: The CPU utilization ratio has been decreased
```

ð	3 Ô	3	
		-	-

ð 1 Ô -

7.2 show cpu

CPU ~ 3 **show cpu** Â

show cpu

ð

Ô



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_rcv_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%	psnpsd
67	0%	0%	0%	igsnpsd

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%	dhcpcd_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%	bcmK6531_async_tx_thread
88	0%	0%	1%	mngpkt LINKv0thread
89	0%	0%	0%	bcmRX
90	0%	0%	0%	mngpkt_rcv_thread
91	0%	0%	0%	mngpkt_recycle_thread



7v><lc`nĭÁÍDZlIx'I

$$\ddot{O} \quad \hat{O} \quad -$$
$$\ddot{O} \quad \{ \quad \hat{O}$$

ö Ô Ю show memory Â

Used Rate : 96%

Ю й Â

 $\quad \smile \qquad \wedge \qquad \smile \qquad \perp_{\mathcal{U}} \qquad \hat{A}$

Ồ ư Ô -

8.3 show memory protocols

9

9.1 clear logging

clear logging

õ	Ô		
		-	-

õ Ô -

õ 3 Ô

õ Ô 3 ă Â a Â

õ Ô Ю ă Â

Ruijie# clear logging

õ	3 Ô	3	
		logging on	
		show logging	ă
		logging buffered	ă

õ 1 Ô -

9.2 logging buffered

logging buffered [buffer-size] [level]

no logging buffered

default logging buffered

õ	Ô		
		buffer-size	ă ă 6 é 4K 10M Bytes' 4K 1M' 4K 128K Bytes'

<i>level</i>	ш ь 0 7 Â 1 Л	" ь # 1 Л	Â
--------------	---------------	-----------	---

ò Ô ã б ё
 ì 1M Bytes'
 ì 256K Bytes'
 ì 128K Bytes'
 è ì 4K Bytes'
 ш ì 7 Â

ò ь Ô

ò Ô ã ь
 ã ь
 ã ь **show logging** Â
 ã ь **clear logging** ã
 Â FLASH Syslog Server Â
 † ì ЛЮ 8 ^ 1~

Emergencies	0	ь a
Alerts	1	¶
Critical	2	
Errors	3	
warnings	4	
Notifications	5	ь a
informational	6	
Debugging	7	

ь ь 0 Â
 Л ь æ Â

✓

ò Ô Ю ì 6 Л æ 6 ì 10000 ã
 Ruijie(config)# logging buffered 10000 6

ò ь Ô	ь	
	logging on	
	show logging	ã
	clear logging	ã

ò 1 Ô -

9.3 logging console

1 3 1 3 10 3 3 no
1 3 3
logging console [level]
no logging console

Syslog

18 (local2)	Local use
19 (local3)	Local use
20 (local4)	Local use
21 (local5)	Local use
22 (local6)	Local use
23 (local7)	Local use

23 (local7) 23

ö

Ô

ð	³ Ô	³	
		logging on	
		show logging	ǎ ~ ¼
		more flash	FLASH

ð ¼ Ô -

9.7 logging monitor

VTY ^ telnet ǎ SSH ~ ð ~
 ³ Â ³ no VTY ð Â
logging monitor [level]
no logging monitor

ð	Ô		
		level	ш Â ¼ " ~ ≠ ¼ Â

ð Ô Debugging (7)

ð ³ Ô

ð Ô VTY ð ~ ³ **terminal monitor** VTY
 Â **logging monitor** Â
Logging monitor VTY Â

ð Ô Ю VTY ð ñ 6

```
Ruijie(config)# logging monitor informational
```

ð	³ Ô	³	
		logging on	
		show logging	

ö

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-	-

ö

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a[˘]

Э

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a

Лл

Alga008TYf()Tj/C2_0 1072882.25.807 0[T06B09B7TEDB02C8>67<0433>7<049909C30714

д О з А з 1 Лб А

д О ^ debug~ и 10 ~ warning ш а

```
Ruijie(config)#logging rate-limit all 10 except warnings
```

д з О	з	
	show logging count	
	show logging	б а

д 1 О -

9.10 logging server

syslog server IO з А syslog server

syslog server з no А

logging server {*ip-address* [**vrf** *vrf-name*] | **ipv6** *ipv6-address*}

no logging server {*ip-address* [**vrf** *vrf-name*] | **ipv6** *ipv6-address*}

д О		
	<i>ip-address</i>	й IP
	<i>vrf-name</i>	й VRF VPN ~
	<i>ipv6-address</i>	й IPV6


```

192.168.1.1 и Syslog
Ruijie(config)# logging source ip 192.168.1.1

```

ð	ṛ Ô	ṛ	
		logging	Syslog server

$$\ddot{\theta} = \frac{1}{L} \hat{O} -$$

9.13 logging synchronous

Figure 1 is a line graph showing the number of nodes in the network over time (0 to 100) for two scenarios: 'logging synchronous' and 'no logging synchronous'. The y-axis is labeled 'nodes' and ranges from 0 to 100. The x-axis is labeled 'time' and ranges from 0 to 100. The 'logging synchronous' scenario (blue line) shows a steady increase in nodes, reaching approximately 100 nodes by time 100. The 'no logging synchronous' scenario (orange line) shows a much slower increase, reaching approximately 20 nodes by time 100.

time	logging synchronous (nodes)	no logging synchronous (nodes)
0	0	0
20	20	5
40	40	10
60	60	15
80	80	18
100	100	20

đ	Ô		
	-	-	

$$\ddot{o} \quad \hat{O} \quad \mathcal{H} \quad \mathfrak{b} \quad \mathfrak{z} \quad \mathbb{T} \quad \hat{A}$$
$$\ddot{O} \quad \{ \quad \hat{O}$$

ò Ô } б ° ¶ ° 1 1/2 Â

```

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 //

```

ð	3 Ô	3	
		show running-config	

$$\ddot{\theta} = \frac{1}{L} \hat{O} -$$

9.14 logging trap

syslog Server ~ Ю 3 Â 3 no

syslog Server Â

logging trap [level]

no logging trap

ð	Ô		
		ш	Â 1 Л
		ш	1 Â

ð Ô Informational(6)

ð 3 Ô

ð Ô syslog Server 3 logging syslog Server Â 3
 logging trap ш Â
show logging 3 1 Л Â

ð Ô Ю 6 202.101.11.22 syslog Server

Ruijie(config)# logging 202.101.11.22
 Ruijie(config)# logging trap informational

ð	3 Ô	3	
		logging on	
		logging	Syslog Server
		show logging	щ 3 Л

ð 1 Ô -

9.15 more flash

FLASH ~ Ю 3

more flash:filename

ð	Ô		
		filename	ш

ð Ô -

ð 3 Ô

ð Ô FLASH ш "/f2/" "/f3/" Â 3 ~ a

3 3 3

3 3 3 FLASH

Ruijie# more flash://f2/log.txt

look up file in the extended flash://f2/log.txt

00004 2004-11-17 4:1:32 Ruijie: %5:Reload requested by Administrator. Reload Reason :Reload command

3 3 3

3	
logging file flash:	FLASH 3

3 3 3 -

9.16 service sequence-numbers

3 3 3

3

3 3

no 3

3

3

service sequence-numbers

no service sequence-numbers

3 3 3

-	-

3 3 3

a 3

3 3 3

3 3 3

3 3 3

3 3 3

3 3 3

3 1

3 3 3

3 3 3

3 3

3 3

3 3 3

3 3 3

3 3 3

Ruijie(config)# service sequence-numbers

3 3 3

3	
logging on	
service timestamps	

3 3 3 -

9.17 service sysname

3 3 3

3

3 3

no 3

3

3 3

service sysname



ÿ Æ Å Datetime
Uptime

0 0 Ю Log Debug и Datetime з

```
Ruijie(config)# service timestamps debug datetime msec
Ruijie(config)# service timestamps log datetime msec
Ruijie(config)# end
Oct 8 23:04:58.301 %SYS-5-CONFIG_I: Configured from console by console
```

ð	3 Ô	3	
		logging on	
		service sequence-numbers	

Ồ 1 Ô -

9.19 show logging

$$\grave{a} \qquad \qquad \qquad \grave{a}$$



$$\ddot{O} \quad \hat{O} \quad -$$
$$\ddot{O} \quad \mathfrak{z} \quad \hat{O}$$

logging count show logging count
 logging count show logging count

0 0 Ю show logging count

```
Ruijie# show logging count
```

Module Name	Message Name	Sev	Occur	Last Time
=====	SYS	CONFIG_I	5	1
Jul 6 10:29:57				
-----	SYS	TOTAL	1	

$$\ddot{O} \quad \quad \quad \ddot{O}$$

logging count	-
show logging	б ѡ
clear logging	ѡ

Ồ - Ồ -

9.21 terminal monitor

	3	VTY	Θ	Â	VTY	Θ	~	3
	no	Â						
	terminal monitor							
	terminal no monitor							

$$\ddot{O} \qquad \hat{O}$$

-	-

ö Ô Æ VTY Э а Â

$$\ddot{O} \quad \{ \quad \hat{O}$$

$\tilde{O}$ $\tilde{O}$ $\tilde{O}$ VTY $\tilde{A}$ $\tilde{O}$ $\tilde{O}$ $\tilde{O}$ $\tilde{A}$ VTY
 $\tilde{O}$ $\tilde{O}$ $\tilde{O}$ $\tilde{A}$ $\tilde{O}$ $\tilde{O}$ $\tilde{O}$ $\tilde{O}$ $\tilde{A}$ $\tilde{O}$

ö Ô Ю ˘ VTY Â

```
Ruijie# terminal monitor
```

ö

3 Ö

3	
-	-

ö

1

Ö

-

10 USB

10.1 show usb

USB Å

show usb

ð	Ô		
		-	-

ð Ô -

ð Ô

ð Ô USB Å

ð Ô Ю USB ‘

```
Ruijie# show usb
Device: Mass Storage:
ID: 0
URL prefix: usb0
Disk Partitions:
usb0(type:FAT32)
Size : 131,072,000B(125MB)
Available size 1,260,020B 1.2MB~
```

Ю Э ~ Mass Storage Device “ Å

--	--

URL

U / Ю

U

U

ð	Ô		
		device-id	ÿ Â USB ID Â 1 16 show usb 1 Â

ð Ô -

ð 3 Ô

ð Ô USB ~ 3 ~ 16 Â 11 ~
 ~ 1 Â ~ USB ~ 11 ~
 ~ Â ~ ~ ~ ~ ~ ~

ð Ô Ю ÿ Э USB Â

Ruijie# usb remove 0

OK, now you can pull out the device 0.

*Jan 1 00:18:16: %USB-5-USB_DISK_REMOVED: USB Disk <Mass Storage> has been removed from USB port 0!

À 1 16 USB Â

ð	3 Ô	3	
---	-----	---	--

11

11.1 cluster

ö / Ô -

11.2 cluster enable

π Â 3 no π Â

cluster enable

no cluster enable

ö	Ô		
		-	-

ö Ô Ю π Â

ö 3 Ô

ö Ô **cluster enable** π ~ 3 no ~ π Â

✕

ö Ô 1' Ю 3 й π '

Ruijie(config)# no cluster enable

ö	3 Ô	3	
		cluster	

ö / Ô -

11.3 cluster explore

э 3 ~ || Â

cluster explore

ö	Ô		
		-	-

ö Ô

CLUSTER_1.Ruijie#cluster explore

đ	đ	đ	
		-	-

$$\ddot{\theta} \quad \wedge \quad \hat{O} \quad -$$

11.4 cluster login

$\hat{A}$	$\exists \wedge \mathcal{U}$	$\exists$	$\wedge$	$\exists$	$\hat{A} \dot{y}$	$\neq \wedge \mathcal{U}$
$\exists \hat{A}$	$\dot{y}$	$\exists$	$\sim$	IO	exit	$\exists \hat{A}$

cluster login { administrator | member { member-id | H.H.H } }

δ	$\hat{O}$	
	$member-id$	$\hat{A}$
	$H.H.H$	MAC $\hat{A}$

$$\ddot{O} \qquad \hat{O}$$
$$\ddot{O} \quad \mathfrak{Z} \quad \hat{O} \quad \hat{A}$$

ð	Ô	cluster login administrator	ʒ	ÿ	Θ	Â
		cluster login member	ʒ	ÿ		Â
		ÿ	Θ	˘	Ю	exit ʒ Â

	IP		down
timer hello	<i>hello-seconds</i>	3	90

```

    ð      Ô      1'   Ю      ɹ     ŷ      2   Ə   Â
CLUSTER_1.Ruijie#cluster login member 2

```

ð	ð Ô	ð	
		show cluster	Â
		show cluster member	Â

}

show cluster topology

^

ö / Ô -

11.5 cluster member

"

MAC

^

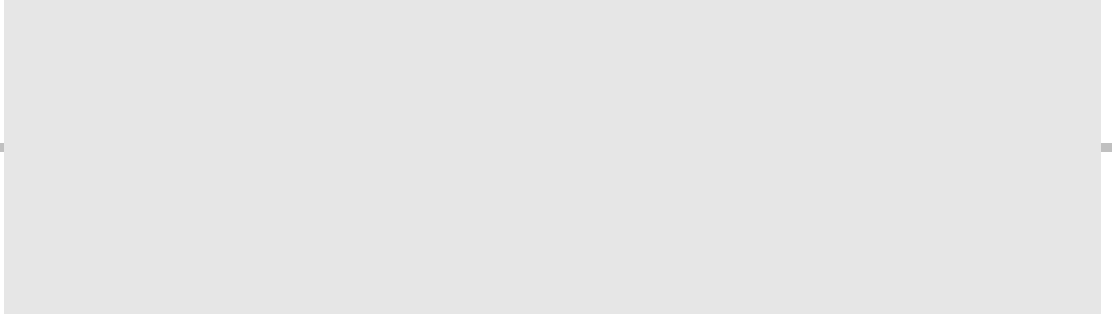
{ no

"

MAC ^

cluster member {

3



ö /l Ô -

11.9 management

~

w ^ ä ı

```
CLUSTER_1.Ruijie(config-cluster)# management ip-pool 10.10.10.0 255.255.255.128
```

3 0

show cluster	
show cluster candidates	
show cluster member	
show cluster topology	

0 1 0 -

11.10 member add

no 1 1

member add [*member-id*] **mac-address** *H.H.H*

no member add *member-id*

0 0

<i>H.H.H</i>	MAC	
<i>member-id</i>		IP
	2-240	24
255.255.255.128	0 à 1	ip 11 ip
2-126	11	2-126

no

Ö Ö 1' IO 3 MAC ñ 00d0.f8fe.1007 ¶ ~ è ñ 2 Â
 CLUSTER_1.Ruijie(config-cluster)#member add 2 mac-address 00d0.f8fe.1007

3	
member auto-add	À ¶ ~ 3 ± ≠ ¶ Â
member black-list	" ¶ ¶ Â
member password	¶ ~ password password ¶ Â
show cluster	Â
show cluster candidates	À Â
show cluster member	Â
show cluster topology	Â

Ö / Ö ò À ~ 3 ± Ü \$
 3 **no** À ¶ M a ¶

Ä

11.11 member auto-add

À ¶ ~ ñ ~ 3 ± À ≠ ¶ Â
 3 **no** ¶ ¶ ¶ Â
member auto-add
no member auto-add

2: " Â

CLUSTER_1.Ruijie(config-cluster) #no member black-list

ð 3 Ô

3	
member add	¶ Â
member auto-add	À ¶ Â
show cluster candidates	À Â
show cluster topology	Â
show cluster black-list	" Â

ð 1 Ô -

11.13 member password

Ï (15) Ï Â 3 **no**
Â

member password { *password-id* | *H.H.H* } { *password* | *encryption-type encrypted-password* }
no member password { *password-id* | *H.H.H* }

ð Ô

<i>password-id</i>	Â
<i>H.H.H</i>	MAC Â
<i>password</i>	Â
<i>encryption-type</i>	¶ (0 ¶ ~ 7 ¶) Â
<i>encrypted-password</i>	¶ ± Â

ð Ô Â

ð 3 Ô Â

ð Ô **member password** *password-id* 3 Ï (15) ~
Ï 16 3 **no** Ï *password-id* Â
member password *H.H.H* 3 Ï Â 3 **no**
Â

✕

✕

member password *H.H.H*

member password *password-id*

11.15 show cluster

Â

Management ip	192.168.176.2
---------------	---------------

Cluster	" 厶
Member-id	
Administrator mac address	MAC
Administrator name	ŷ "
Management vlan	vlan
Management ip	† ip
Management ip-pool	ip
Total number of members	˘
Status	
Run time	
Timer	timer
Timer hello	timer-hello
Timer hold	timer-hold
Hops-limit	
Proxy tftp-server	TFTP 厶

3 Ô	厶	
cluster		Â
cluster enable	3 厶	Â

3 厶 Ô -

11.16 show cluster black-list

" Â
show cluster black-list

3 Ô		
-	-	

3 Ô -

3 厶 Ô

3 Ô

✕

3 Ô 1' 3 " Â

CLUSTER_1.Ruijie #show cluster black-list
MAC Hops LcPort UpSN UpMAC UpPort

00d0.f8fe.43d2 1 Fa0/2 1 00d0.f8fe.1007 Fa0/3
00d0.f8fe.a861 - - - - -

MAC	" MAC ^ ~
Hops	" ^ ~
LcPort	" Э 6 Э ^ ~
UpSN	Э ~ MAC Э ^ ^ 6 Ф ~

MAC	À MAC
Hops	À
LcPort	À 6 3
UpSN	3 ^ ~
UpMAC	3 MAC
UpPort	3 6 À
STATUS	READY INVALID ~ INVALID~

3 Ô	
cluster	
cluster member	À 1
cluster enable	3 À

3 1 Ô -

11.18 show cluster member

À

show cluster members [*member-id* | **detail**]

3 Ô	
<i>member-id</i>	À
detail	À

3 Ô -

3 3 Ô

3 Ô **show cluster members** À
show cluster members *member-id* À
show cluster members detail À

show cluster members

3 Ô 1' 3 À

```

CLUSTER_1.Ruijie #show cluster members
SN      MAC      Name      Hops State  LcPort  UpSN      UpMAC      UpPort
-----
1       00d0.f8fe.1007 Ruijie    0    <Admin>

```


2	00d0.f8fe.43d2 Ruijie	1	up	Fa0/2	1	00d0.f8fe.1007	Fa0/3
3	00d0.f8fe.a861 Ruijie	2	up	Fa0/5	2	00d0.f8fe.43d2	Fa0/12

2 3

CLUSTER_1.Ruijie #show cluster member detail

Device 'switch-1' with member id 2 ^ Member~

```

Device type:          S2628G
MAC address:          00d0.f8fe.43d2
Serial Number:        1234942576719
Upstream MAC address: 00d0.f8fe.1007
Local port:           Fa0/2
Upstream port:        Fa0/3
Hops from Administrator: 1
Last topo update:     37 seconds ago
Last udp update:      7 seconds ago
Management ip:        192.168.176.2
State:                up (Active)
no receive topo response: 0 times
no receive udp response: 0 times
add method:           Manually add

```

Device 'switch-2' with member id 3 ^ Member~

```

Device type:          S2628G
MAC address:          00d0.f8fe.a861
Serial Number:        1234942571123
Upstream MAC address: 00d0.f8fe.43d2
Local port:           Fa0/5
Upstream port:        Fa0/12
Hops from Administrator: 2
Last topo update:     37 seconds ago
Last udp update:      7 seconds ago
Management ip:        192.168.176.3
State:                up (Active)
no receive topo response: 0 times
no receive udp response: 0 times
add method:           Manually add

```

3 2 3

CLUSTER_2.Ruijie #show cluster members

SN	MAC	Name	Hops	State	LcPort	UpSN	UpMAC	UpPort
1	00d0.f8fe.1007	Ruijie	0	<Admin>				
2	00d0.f8fe.a861	Ruijie	2	up	Fa0/5	1	00d0.f8fe.43d2	Fa0/12

SN	
MAC	MAC

Name	ý "
Hops	
State	~ up ~ down ~ < Admin> ñ
LcPort	Э б Э'
UpSN	Э ^ ~
UpMAC	Э MAC
UpPort	Э Э б

ö

3 Ô

3	
cluster	

```
-----
[CLUSTER_1.Ruijie:00d0.f822.33c8]
```

```
|
+--(Fa0/11) <--> (Fa0/13)[CLUSTER_3.Ruijie:001a.a97b.d3ac]
| |
| +--(Fa0/23) <--> (Fa0/21)[CLUSTER_4.ruijie:001a.a97e.043b]
|   (Fa0/7) <--> (Fa0/7)
|
+--(Fa0/3) <--> (Fa0/4)[CLUSTER_2.ruijie:001a.a908.7a7e]
```

```
2'          3      3  Ю          Â
```

```
CLUSTER_1.Ruijie#show cluster topology 3
```

```
-----
(PeerPort) ConnectFlag (LocalPort) [HostName:DeviceMac]
```

```
-----
ConnectFlag:
```

```
<--> normal connect      **** cluster unenable -||- in blacklist
???? status down
```

```
-----
[CLUSTER_3.Ruijie:001a.a97b.d3ac]
```

```
|
+--(Fa0/23) <--> (Fa0/21)[CLUSTER_4.ruijie:001a.a97e.043b]
   (Fa0/7) <--> (Fa0/7)
```

PeerPort	
ConnectFlag	
LocalPort	
HostName	" " 7 7 3 (
DeviceMac	CLUSTER_4.)
	MAC
<-->	1 6

```
?8 15.66417529DA1B90RD3
```

11.20 timer

no timer

timer { *topo-seconds* | **hello** *hello-seconds* | **hold** *hold-seconds* }

no timer [*topo-seconds* | **hello** *hello-seconds* | **hold** *hold-seconds*]

<i>topo-seconds</i>	timer	10-300	Æ	Â	
<i>hello-seconds</i>	timer-hello	10-300	Æ	Â	
<i>hold-seconds</i>	timer-hold	10-300	Æ	Â	

timer 60 timer-hello 30 timer-hold 90 Â

Â

timer topo-seconds

1' Ю 80 Â

CLUSTER_1.Ruijie(config-cluster)#timer 80

2' Ю 95 Â

CLUSTER_1.Ruijie(config-cluster)#timer hold 95

show cluster				Â	

1' -

12

12.1 auto-sync

`auto-sync { standard | running-config | startup-config }`
`no auto-sync { standard | running-config | startup-config }`

ö	Ô		
		standard	°
		running-config	°
		startup-config	°

ö Ô ° (auto-sync standard)

ö 3 Ô

ö Ô ° standard° Â

ö Ô 1' IO ° startup-config

```
Ruijie(config)# redundancy
Ruijie(config-red)# auto-sync startup-config
Ruijie(config-red)# exit
```

2' IO ° starup-config è

```
Ruijie(config)# redundancy
Ruijie(config-red)# no auto-sync startup-config
Ruijie(config-red)# exit
```

ö	3 Ô	3	
		-	-

ö / Ô -

12.2 auto-sync time-period

`auto-sync time-period value`
`no auto-sync time-period`

ö	Ô		
		value	° ° Æ ÿ

õ Ô ||[°] ~ 3 ||[°] ñ 1 ^ 3600 ~

õ ð Ô

õ Ô ~ standard^{*}

õ Ô 1' *

õ / Ô -

12.4 redundancy forceswitch

privileged EXEC IO switchover† Â

③ **redundancy reload peer** ~ ý Æ a
 $\hat{A}$
 IO Æ ¿ ì **redundancy reload shelf** Æ ' VSU IO Æ
 ¿ ì **redundancy reload shelf switchid** Æ $\hat{A}$

③ **Ruijie# redundancy reload peer**
 Reload peer? [N/y] y
 Preparing to reload peer!

③ redundancy reload	ý Æ ¿
----------------------------	-------

③ / **redundancy reload**

12.6 show redundancy auto-sync

/ Л user EXEC privileged EXEC IO **show redundancy auto-sync** ¿ / Л
 redundancy ||^{*} $\hat{A}$ (é auto-sync ¿) $\hat{A}$
show redundancy auto-sync

③ show redundancy auto-sync	
-	-

③ **show redundancy auto-sync**

③ ¿ **show redundancy auto-sync**

③ **show redundancy auto-sync**

③ **Ruijie> enable**
Ruijie# show redundancy auto-sync
 Redundancy auto-sync mode: auto-sync standard.

③ show redundancy auto-sync	
-	-

③ / **show redundancy auto-sync**

12.7 show redundancy states

/ Л user EXEC privileged EXEC IO **show redundancy** / Л redundancy
 $\hat{A}$

show redundancy states

12.8 show redundancy switchover

```

user EXEC      privileged EXEC      show redundancy switchover
redundancy     switchover           show redundancy switchover
show redundancy switchover
```

```
Ruijie(config-red)#
Ruijie(config-red)# switchover timeout 4000
Ruijie(config-red)# exit
Ruijie(config)# exit
Ruijie(config)#
```

δ	3 Ô	3	
		-	-

δ 1 Ô -

13 SRM

13.1 cpu

srm-policy HJ **cpu** 3 owner-cpu Â

cpu

ð	Ô		
		-	-

ð Ô -

ð 3 Ô srm-policy

ð Ô -

ð Ô 1' srm-policy HJ cpu 3 owner-cpu Â

Ruijie(config-srm-policy)#cpu
Ruijie(config-owner-cpu)#

ð	3 Ô	3	
		resource manager	srm
		policy policy-name [global]	srm-policy

ð 1 Ô -

13.2 instance

config-res-group HJ **instance** 3 7 Â

instance *resource-user_name*

no instance *resource-user_name*

ð	Ô		
		<i>resource-user_name</i>	" Â 1 7 show resource database 3
		no	ÿ Â

ð Ô -

ð 3 Ô srm

Ö Ö -

Ö Ö 1' " ñ rgos_group ~ snmpd ¶ ~ ¤ Â

```
Ruijie#configure terminal
Ruijie(config)#resource manager
Ruijie(config-srm)#user group rgos_group
Router(config-res-group)#instance snmpd
```

Ö ¶ Ö	3		
	resource manager		srm

Ö / Ö -

13.3 memory

srm-policy HÖ **memory** 3 owner-memory Â

memory

Ö Ö		
	-	-

Ö Ö -

Ö 3 Ö srm-policy

Ö Ö -

Ö Ö 1' srm-policy HÖ memory 3 owner-memory Â

```
Ruijie(config-srm-policy)#memory
Ruijie(config-owner-memory)#
```

Ö ¶ Ö	3		
	resource manager		srm
	policy policy-name [global]		srm-policy

Ö / Ö -

13.4 policy

srm HÖ **policy** 3 srm-policy Â

policy policy-name [global]

no policy policy-name

ö	Ô		
		policy-name	policy-name' " Â
		global	¶ global ~
		no	Â

ö Ô -

ö ¶ Ô srm

ö Ô -

ö Ô 1' " ñ rgos_policy Â

```
Ruijie(config)#resource manager
Ruijie(config-srm)#policy rgos_policy global
Ruijie(config-srm-policy)#
```

2' " ñ rgos_policy Â

```
Ruijie(config)#resource manager
Ruijie(config-srm)#policy rgos_policy
Ruijie(config-srm-policy)#
```

ö	¶ Ô	¶	
		resource manager	srm

ö / Ô -

13.5 policy policy-name

config-res-group Ю **policy policy-name** ¶ Â

policy policy-name

no policy policy-name

ö	Ô		
		policy-name	" Â
		no	б Â

ö Ô -

ö ¶ Ô srm

ö Ô -

ð Ô 1' " ì rgos_group ~ snmpd

ö	Ô		
		rising	rising
		<i>rising-waterline-value</i>	rising ~ Æ ÿ † ~ 1~100
		<i>interval-value</i>	~ Л ÿ Æ ÿ 5 ÿ 86400 24 ~ Å
		falling	falling
		<i>falling-waterline-value</i>	falling ~ ÿ 1 100 3 falling value rising value
		no	

ö Ô -

ö 3 Ô owner-memory owner-cpu

ö	Ô	
		major rising minor rising critical rising major rising

ö Ô 1' critical

```
Ruijie(config-srm-policy)#memory
```

```
Ruijie(config-owner-memory)#critical rising 80 falling 15 interval 10
```

ö	3 Ô	3	
		resource manager	srm
		policy policy-name [global]	policy srm-policy
		memory	owner-memory
		cpu	owner-cpu

ö 1 Ô -

13.8 show resource database

SRM

Å

show resource database [slot *slot-id* [**subsystem** *subsystem-id*]]

ö	Ô		
		slot <i>slot-id</i>	.
		subsystem <i>subsystem-id</i>	~ 1 0-1' show version cpu id

ö Ô -

ö 3 Ô

ö Ô -

SRM

```
Ruijie#show resource database
```

```
Resource Owners          ID
-----
Cpu                       0x0
Memory                   0x1
Resource Users           ID          Priority
-----
Ktimer                   0x1          PROT_TASK
Atimer                   0x2          APP_TASK
printk_task              0x3          APP_TASK_TS
waitqueue_process        0x4          PROT_TASK
tasklet_task             0x5          PROT_TASK
cmic_pause_detect        0x6          PROT_TASK
idle                     0x7          IDLE
kevents                  0x8          PROT_TASK
snmpd                    0x9          PROT_TASK
snmp_trapd               0xa          APP_TASK
mtdblock                 0xb          PROT_TASK
gc_task                  0xc          PROT_TASK
Context                  0xd          PROT_TASK
kswapd                   0xe          PROT_TASK
--More--
```

Resource Owners	
ID	
Resource User Groups	
Resource Users	
Priority	PROT_TASK HAPP_TASK_TS APP_TASK APP_TASK_TS IDLE: ж

SRM

SRM	
-	-

SRM

13.9 show resource notification

SRM Y Â

show resource notification owner {all | cpu | memory} [slot slot-id [subsystem subsystem-id]]

ø	Ô		
	all	RO	
	cpu	CPU	
	memory	Memory	
	slot slot-id	.	
	subsystem subsystem-id	0-1	show version cpu id

ø Ô -

ø Ô

ø Ô -

ø Ô 1' SRM

```
Ruijie#show resource notification owner all
Owner: cpu
Global                      Global Notif.(cr(U/D):ma(U/D):mi(U/D))
-----
global                      Not in monitored
Multi-User Group            User Notif.(cr(U/D):ma(U/D):mi(U/D))
-----
rgnos_group                      (cr(0/0):ma(0/0):mi(0/0))
Single-User Group            User Notif.(cr(U/D):ma(U/D):mi(U/D))
-----
ktimer                              (cr(0/0):ma(0/0):mi(0/0))
Owner: memory
RU Global                      Global Notif.(cr(U/D):ma(U/D):mi(U/D))
-----
global                      Not in monitored
Multi-User Group            User Notif.(cr(U/D):ma(U/D):mi(U/D))
-----
rgnos_group                      (cr(0/0):ma(0/0):mi(0/0))
Single-User Group            User Notif.(cr(U/D):ma(U/D):mi(U/D))
-----
ktimer                              (cr(0/0):ma(0/0):mi(0/0))
```

Global	
Multi-User Group	
Single-User Group	
Global Notif.	
User Notif.	

cr(U/D):ma(U/D):mi(U/D)	critical ~ major ~ minor Ъ ~ D ~ DOWN Y	~ U ~ UP Y
-------------------------	--	------------

3	3	3
-	-	-

3 1 3 -

13.10 show resource owner

SRM

Â

show resource owner {all | cpu | memory} [slot *slot-id* [subsystem *subsystem-id*]]

3	3	3
all		
cpu	cpu	
memory	memory	
slot <i>slot-id</i>		
subsystem		

versionj EMC ET 0.602 g 1190 Tw 64/C2_0 1 [493.1 419 f 119.64 50[<01 119 0.0

flow_age_task	1604440	0	0	0
temperature_handler_task	1604650	0	0	0
keepalive_link_notify	1604700	0	0	0
datapkt_rcv_thread	1604700	0	0	0
rdp_slot_change_thread	1604700	0	0	0
printk_task	2172590	92	92	92
idle	2172590	7	7	7

Resource Owner: memory

Total Size(B): 536870912

Used Size(B): 143081472

Used Ratio(%): 27

RU Group	Allocated Size(B)	Alloc Cnt	Free Cnt
local-1	0	0	0

RU	Allocated Size(B)	Alloc Cnt	Free Cnt
Ktimer	0	7065	14
atimer	92	2343	3
printk_task	0	0	0
waitqueue_process	0	0	0
tasklet_task	2656	21	4
idle	0	0	0
ttipc_timer	0	1610	1610
kevents	0	0	0
iftp_server	0	0	0
snmpd	45312	53	47
snmp_trapd	0	0	0
mtdblock	0	0	0
gc_task	4	13	13
context	0	0	0
kswapd	0	0	0
bdfush	0	0	0
kupdate	0	2	2

Total Size(B)	^ ~
Used Size(B)	л ^ ~
Used Ratio(%)	
RU Group	
RU	
Allocated Size(B)	† ^ ~
Alloc Cnt	†
Honree Cn	‡

Runtime(ms)	^ ~
5Sec	5 . cpu ↑
1Min	1↑ . cpu ↑
5Min	5↑ . cpu ↑

δ 3 Ô	3	
	-	-

δ / Ô -

13.11 show resource policy

SRM Â

show resource policy {all | *policy-name*} [slot *slot-id* [subsystem *subsystem-id*]]

ö Ô		
	all	
	<i>policy-name</i>	é "
	slot <i>slot-id</i>	.
	subsystem <i>subsystem-id</i>	~ 0-1 show version cpu id

ö Ô -

ö 3 Ô

ö Ô -

ö Ô 1' SRM

--

```

Type: User
In Use: No
RO memory:
critical rising 92 interval 2500 falling 20 interval 2500
major rising 79 interval 3000 falling 40 interval 3000
minor rising 63 interval 5000 falling 10 interval 5000
RO cpu:
critical rising 89 interval 2900 falling 20 interval 2900
major rising 86 interval 3800 falling 40 interval 3800
minor rising 61 interval 5900 falling 10 interval 5900
Policy Name: rgnos_policy3
-----

```

```

Type: User
In Use: No
RO memory:
critical rising 92 interval 2500 falling 20 interval 2500
major rising 79 interval 3000 falling 40 interval 3000
minor rising 63 interval 5000 falling 10 interval 5000
RO cpu:
critical rising 89 interval 2900 falling 20 interval 2900
major rising 86 interval 3800 falling 40 interval 3800
minor rising 61 interval 5900 falling 10 interval 5900

```

Policy Name	"
Type	
In Use	
RO memory	-
RO cpu	-cpu

ø 3 Ô

3	
-	-

ø / Ô -

13.12 show resource relationship

SRM 6 RU

show resource relationship [*slot slot-id* [**subsystem** *subsystem-id*]]

ø Ô

slot <i>slot-id</i>	.
subsystem <i>subsystem-id</i>	~ 4 0-1~ show version cpu id Â

ð Ò -

ð 3 Ò

ð Ò -

ð Ò 1' SRM

```
Ruijie#show resource relationship
Policy                Resource User      User Type
-----
global                global            Global Group
rgnos_policy1         rgnos_group       Multi-User Group
rgnos_policy          ktimer            Single-User Group
```

Policy	
Resource User	^ ~
User Type	~ ì Global Group~ Multi-User Group~ Single-User Group ~ ~ ~

ð 3 Ò

3	
-	-

ð 1 Ò -

13.13 show resource user

RU Æ

show resource user {all | **group** {all | *group-name*} | *resource-user-name*} [**slot** *slot-id* [**subsystem** *subsystem-id*]]

ð Ò

all	
group {all <i>group-name</i> }	group' all' group-name' "
<i>resource-user-name</i>	"
slot <i>slot-id</i>	.
subsystem <i>subsystem-id</i>	~ 1 0-1' show version cpu id

ð Ò -

3 3 0

3 0 -

3 0 1 RU group

```
Ruijie#show resource user all
```

```
Total resource user group: 2.
```

```
Multi-User Group: rgnos_group
```

```
-----
```

```
Policy: rgnos_policy1
```


ð	3 Ô	3	
		-	-

ð 1 Ô -

13.14 user

srm HJ **user** 3 Ñ Â

user *resource-user-name resource-policy-name*

no user *resource-user-name*

ð	Ô		
	<i>resource-user-name</i>	" ~ 1 3 3 3 show resouce database	
	<i>resource-policy-name</i>	" Â	
	no	Â	

ð Ô -

ð 3 Ô srm

ð Ô -

ð Ô 1' " ñ rgos_policy ~ snmpd Ñ Â

```
Ruijie#configure terminal
Ruijie(config)#resource manager
Ruijie(config-srm)#policy rgos_policy
Ruijie(config-srm-policy)#exit
Ruijie(config-srm)#user snmpd rgos_policy
```

ð	3 Ô	3	
	resource manager	srm	
	policy <i>policy-name</i>	srm-policy	

ð 1 Ô -

13.15 user global

srm HJ **user global** 3 Ñ Â

user global *global-policy-name*

no user global

ð	Ô		
---	---	--	--

<i>global-policy-name</i>	"
no	б

ö Ô -

ö	3 Ô	3	
		resource manager	srm

ö / Ô -

14

14.1 initialization route pbr

Â

initialization route pbr *max_num*

no initialization route pbr

ð	Ô		
		<i>max_num</i>	

ð Ô 64

ð 3 Ô

ð Ô -

ð Ô ñ 100

```
Ruijie(config)# initialization route pbr ?
<1-256> Max number of policy-based route entry

Ruijie(config)# initialization route pbr 100
```

ð	3 Ô	3	
		-	-

ð 1 Ô -

14.2 initialization route tunnel-termination

Ipv6

Â

initialization route tunnel-termination *max_num*

no initialization route tunnel-termination

ð	Ô		
		<i>max_num</i>	Ipv6

ð Ô 32 Ipv6

ð 3 Ô

ð Ô -

ð Ô Ipv6

14.4 show initialization route

Â

show initialization route

ð	Ô		
		-	-

ð Ô -

ð ð Ô

ð Ô ð ~ ä ä Â

ð Ô 5*66 49685Td()TjEMC /P1 /P <</MCID003>- <00035TT0 1 05500D1 05500Tc 0 4C004004F00

15 POWER

15.1 show power

 $\hat{A}$

show power

 $\hat{O}$ $\hat{O}$



-

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17.

- 1.
2. MAC
3. Aggregate Port
4. LACP
5. VLAN
6. Super-VLAN
7. Protocol VLAN
8. Private VLAN
9. SHARE VLAN
10. Voice VLAN
11. MAC VLAN
12. MSTP
- 13.
14. GVRP
15. LLDP
16. QinQ
17. ERPS

1

1.1 carrier-delay

| IO | | carrier-delay | no | Â |
|---------------------------|---|---|----|---|
| carrier-delay [seconds] | | | | |
| no carrier-delay | | | | |
| ð | Ô | seconds | | |
| | |] 60E345DD09901B440 055D0436@Â 1,1160g 11Qa34E59a402027cA | | |

3

0

0

1 2

3 show interfaces

4

10

clear counters

3

3

Ö 3 Ô

Ö Ô **show interfaces** 3 ~ " Â

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

| | |
|------------------------|---|
| Ö 3 Ô 3 | |
| show interfaces | Â |

Ö 1 Ô -

Ю 3 ↓ Â 3 **no** й Â

duplex {auto | full | half}
no duplex

| | |
|-----|---|
| Ö Ô | — |
|-----|---|

| | | | |
|---|---|---------|---|
| ö | Ô | | |
| | | auto | Â |
| | | off | Â |
| | | on | Â |
| | | receive | |
| | | send | |

ö Ô Â

ö 3 Ô

ö Ô show interfaces Â

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

| | | | |
|---|-----|-----------------|---|
| ö | 3 Ô | | |
| | | show interfaces | Â |

ö 1 Ô -

1.7 interface aggregateport

3 Â 3 ~ ~ Â 3 no
 Â
interface aggregateport *port-number*

| | | | |
|---|---|--------------------|----------------------|
| ö | Ô | | |
| | | <i>port-number</i> | Aggregate port ~ ã Â |

ö Ô -

ö 3 Ô

ö Ô

ö / Ô -

1.8 interface giagbitEthernet

3 3~ π ~ Â
interface gigabitEthernet *mod-num/port-num*

ö Ô █

| | | | |
|---|-----|-----------------|---|
| ö | 3 Ô | 3 | |
| | | show interfaces | Â |

ö 1 Ô -

1.10 line-detect

line-detect 3 1 16 Â

line-detect

| | | | |
|---|---|---|---|
| ö | Ô | | |
| | | - | - |

ö Ô -

ö 3 Ô

ö Ô line-detect 3 3 ~ ^ ~ ~ Æ Æ Â

ö Ô Ruijie(config)#interface gigabitEthernet 0/1
 Ruijie(config-if-GigabitEthernet 0/1)#line-detect
 Interface : GigabitEthernet 0/1
 start cable-diagnoses,please wait...
 cable-daignoses end!this is result:

4 pairs

pair state length(meters)

A Ok 1

pair state length(meters)

B Ok 2

pair state length(meters)

C Short 1

pair state length(meters)

D Short 1

| | |
|-------|-------|
| | |
| pairs | ~ ↓ Â |

| | | | | |
|--------|--|--|--|--|
| state | ~ Æ Ъ ' OK ~ ~ Short ~ ~ Openf | | | |
| | ~ Æ Ю ↓ A ã B ч ì OK C ã D ч ì Short Æ | | | |
| length | ↓ A ã B ã C ã D ì OK Æ | | | |
| | ~ Æ ì Æ state ì OK Æ ~ | | | |
| | Æ ì Short Open length ~ ЛГ Л | | | |

a

SFP

10/100/1000M BASE-T

Â

1.12 mtu

mtu

Mtu num

| | | | |
|---|---|-----|--|
| ö | Ô | | |
| | | num | 64 9216(65536 a ^ˆ a ^ˆ) |

ö Ô ñ 1500 Â

ö 3 Ô

ö Ô mtu^ˆ ~ Â Â

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

| | | | |
|---|-----|-----------------|---|
| ö | 3 Ô | 3 | |
| | | show interfaces | Â |

ö 1 Ô -

1.13 shutdown

~ 3 Â 3 no Â

shutdown

no shutdown

| | | | |
|---|---|---|---|
| ö | Ô | | |
| | | - | - |

ö Ô -

ö 3 Ô

ö Ô ^ Лр ä Ap ä SVI ~ ~ 3 ~ è Ÿ ~ a
 Â show interfaces 3 Â

no shutdown

ö Ô 1' Ap 1'

1.16 switchport access VLAN configuration
 Ruijie(config-if)# switchport access vlan 2

Ruijie(config-if)# switchport

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

1.17 switchport access

switchport access vlan *vlan-id*
 no switchport access vlan

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

switch port access VLAN 1

1.18 switchport mode

switchport mode *access*
 switchport mode *trunk*

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

| | |
|------------------|--|
| switchport mode | |
| switchport trunk | |

1.18 switchport mode

switchport mode *access*
 switchport mode *trunk*

switchport mode {access | trunk}

no switchport mode

| | | | |
|---|---|---------------|-----------------------------|
| ð | Ô | | |
| | | access | switch port ñ access port Â |
| | | trunk | switch port ñ trunk port Â |

ð Ô switch port ñ access

ð ð Ô

ð Ô switch port access' ñ VLAN Â/ Ì **switchport access**
 vlan ð VLAN Â
 switch port trunk' / Ì VLAN Â / Ì VLAN
 Â Ì Z 4 Û I

| | |
|-----------------------------------|-----------------------|
| native vlan <i>vlan-id</i> | Native VLAN $\hat{A}$ |
|-----------------------------------|-----------------------|

ð Ò / VLAN all Native VLAN VLAN 1

ð 3 Ò

ð Ò Native VLAN

 ñ Trunk native VLAN $\hat{A}$ native VLAN ð UNTAG

 ~ ñ VLAN $\hat{A}$ ~ VLAN ID IEEE 802.1Q PVID~

 native VLAN VLAN ID $\hat{A}$ ~ Trunk ð native VLAN ~ UNTAG

$\hat{A}$

 / VLAN

 Trunk / 15 VLAN 1 4094~ $\hat{A}$ ~ / 15 Trunk

 / VLAN VLAN a Trunk $\hat{A}$

 show interfaces switchport 3 $\hat{A}$

ð Ò Ю VLAN 2 ÿ 1/15

```
Ruijie(config)# interface fastethernet 1/15
Ruijie(config-if)# switchport trunk allowed vlan remove 2
Ruijie(config-if)# end
Ruijie# show interfaces fastethernet 1/15 switchport
Switchport is enabled
Mode is trunk port
Access vlan is 1,Native vlan is 1
Protected is disabled
Vlan lists is
1,3-4094
```

ð 3 Ò

| | |
|--------------------------|--|
| 3 | |
| show interfaces | $\hat{A}$ |
| switchport access | ñ statics accessport ñ
VLAN $\hat{A}$ |

| | |
|---|------------------------------------|
| | VSL ~ Â |
| counters | Â |
| counters module <i>module-id</i> | Â |
| counters nonzero | aggregateport VSL) Â (Лб ä |
| counters vlan <i>vlan-id</i> | vlan IO Â |
| description | link Â |
| mtu | MTU (Лб aggregateport) Â |
| status | Y ~ ä J Â |
| status module <i>module-id</i> | Â |
| status vlan <i>vlan-id</i> | vlan IO Â |
| switchport | Y ~ Y Â |
| trunk | trunking port ~ ä Aggregate port Â |
| transceiver | "I Â |
| transceiver alarm | "I ~ I' None L Â |
| transceiver diagnosis | "I Â |
| line-detect | Â |
| usage | (Лб aggregateport) Â |

ö Ô Â

ö 3 Ô

ö Ô a ¶ ~ Â
 "I ~ "I ¶ "I Â
 "I "I Digital Diagnostic Monitoring ¶ Â

ö Ô 1' Gi0/1 ñ Trunk ~

```
SwitchA#show interfaces gigabitEthernet 0/1
Index(dec):1 (hex):1
GigabitEthernet 0/1 is DOWN , line protocol is DOWN
Hardware is Broadcom 5464 GigabitEthernet
Interface address is: no ip address
MTU 1500 bytes, BW 1000000 Kbit
Encapsulation protocol is Bridge, loopback not set
Keepalive interval is 10 sec , set
Carrier delay is 2 sec
RXload is 1 ,Txload is 1
Queueing strategy: FIFO
Output queue 0/0, 0 drops;
Input queue 0/75, 0 drops
Switchport attributes:
interface's description:""
medium-type is copper
```

```
lastchange time:0 Day: 0 Hour: 0 Minute:13 Second
Priority is 0
admin duplex mode is AUTO, oper duplex is Unknown
admin speed is AUTO, oper speed is Unknown
flow receive control admin status is OFF,flow send control admin status is OFF,flow receive
control oper status is Unknown,flow send control oper status is Unknown
broadcast Storm Control is OFF,multicast Storm Control is OFF,unicast Storm Control is OFF
Port-type: trunk
Native vlan:1
Allowed vlan lists:1-4094 //Trunk / VLAN
Active vlan lists:1, 3-4 // l e Ĩ í' 3 f
```



```
-----
GigabitEthernet 0/1 enabled Access 11 Disabled ALL
Ruijie# show interfaces gigabitEthernet 0/1 transceiver diagnosis
```

```
5          Gi0/1  "I          '
```

```
Ruijie# show interfaces gigabitEthernet 0/1 transceiver
```

```
Transceiver Type      : 1000BASE-SX-SFP
```

```
Connector Type       : LC
```

```
Wavelength(nm)       : 850
```

```
Transfer Distance     :
```

```
50/125 um OM2 fiber
```

```
-- 550m
```

```
62.5/125 um OM1 fiber
```

```
-- 270m
```

```
Digital Diagnostic Monitoring : YES
```

```
Vendor Serial Number      : 101680093602489
```

```
6          Gi0/1  "I          '
```

```
Ruijie# show interfaces gigabitEthernet 0/1 transceiver diagnosis
```

```
Current diagnostic parameters[AP:Average Power]:
```

| Temp(Celsius) | Voltage(V) | Bias(mA) | RX power(dBm) | TX power(dBm) |
|---------------|------------|----------|-------------------|---------------|
| 38(OK) | 3.20(OK) | 0.04(OK) | -40.00(alarm)[AP] | -40.00(alarm) |

```
7          Gi0/1  "I          '
```

```
Ruijie# show interfaces gigabitEthernet 0/1 transceiver alarm
```

```
RX power low
```

```
TX power low
```

```
8          "          (      è      †      ~
      )
```

```
Ruijie# show interfaces counters nonzero
```

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

```
5 minutes input rate :0 bits/sec, 0 packets/sec
```

```
5 minutes output rate :0 bits/sec, 0 packets/sec
```

```
InOctets      : 408
```

```
InUcastPkts   : 4
```

```
InMulticastPkts : 0
```

```
InBroadcastPkts : 0
```

```
OutOctets     : 408
```

```
OutUcastPkts  : 4
```

```
OutMulticastPkts : 0
```

```
OutBroadcastPkts : 0
```

```
Undersize packets : 0
```

```
Oversize packets : 0
```

```
collisions     : 0
```

```
Fragments      : 0
```

```
Jabbers        : 0
```

```

CRC alignment errors : 0
AlignmentErrors      : 0
FCSErrors            : 0
dropped packet events (due to lack of resources): 0
packets received of length (in octets):
  64 : 0
  65-127 : 4
  128-255 : 0
  256-511 : 0
  512-1023 : 0
  1024-1518 : 0

```

Interface : GigabitEthernet 1/0/2

5 minutes input rate :0 bits/sec, 0 packets/sec

5 minutes output rate :0 bits/sec, 0 packets/sec

InOctets : 408

InUcastPkts : 4

InMulticastPkts : 0

InBroadcastPkts : 0

OutOctets : 408

OutUcastPkts : 4

OutMulticastPkts : 0

OutBroadcastPkts : 0

Undersize packets : 0

Oversize packets : 0

collisions : 0

Fragments : 0

Jabbers : 0

CRC alignment errors : 0

AlignmentErrors : 0

FCSErrors : 0

dropped packet events (due to lack of resources): 0

packets received of length (in octets):

```

  64 : 0
  65-127 : 4
  128-255 : 0
  256-511 : 0
  512-1023 : 0
  1024-1518 : 0

```

9 1/0 3 (è † ~)

Ruijie# show interfaces counters module 1/0

Interface : GigabitEthernet 1/0/1

5 minutes input rate :0 bits/sec, 0 packets/sec

5 minutes output rate :0 bits/sec, 0 packets/sec

InOctets : 408

```
InUcastPkts      : 4
InMulticastPkts  : 0
InBroadcastPkts  : 0
OutOctets        : 408
OutUcastPkts     : 4
OutMulticastPkts : 0
OutBroadcastPkts : 0
Undersize packets : 0
Oversize packets : 0
collisions       : 0
Fragments        : 0
Jabbers          : 0
CRC alignment errors : 0
AlignmentErrors   : 0
FCSErrors        : 0
dropped packet events (due to lack of resources): 0
packets received of length (in octets):
  64 : 0
  65-127 : 4
  128-255 : 0
  256-511 : 0
  512-1023 : 0
  1024-1518 :
Interface : GigabitEthernet 1/0/2
5 minutes input rate :0 bits/sec, 0 packets/sec
5 minutes output rate :0 bits/sec, 0 packets/sec
InOctets          : 408
InUcastPkts       : 4
InMulticastPkts   : 0
InBroadcastPkts   : 0
OutOctets         : 408
OutUcastPkts      : 4
OutMulticastPkts  : 0
OutBroadcastPkts  : 0
Undersize packets : 0
Oversize packets  : 0
collisions        : 0
Fragments         : 0
Jabbers           : 0
CRC alignment errors : 0
AlignmentErrors    : 0
FCSErrors         : 0
dropped packet events (due to lack of resources): 0
packets received of length (in octets):
```

```

64 : 0
65-127 : 4
128-255 : 0
256-511 : 0
512-1023 : 0
1024-1518 : 0

```

```

10'      VLAN 1
)

```

```
Ruijie# show interfaces counters vlan 1
```

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

```
5 minutes input rate :0 bits/sec, 0 packets/sec
```

```
5 minutes output rate :0 bits/sec, 0 packets/sec
```

```
InOctets      : 408
```

```
InUcastPkts   : 4
```

```
InMulticastPkts : 0
```

```
InBroadcastPkts : 0
```

```
OutOctets     : 408
```

```
OutUcastPkts  : 4
```

```
OutMulticastPkts : 0
```

```
OutBroadcastPkts : 0
```

```
Undersize packets : 0
```

```
Oversize packets : 0
```

```
collisions     : 0
```

```
Fragments      : 0
```

```
Jabbers        : 0
```

```
CRC alignment errors : 0
```

```
AlignmentErrors : 0
```

```
FCSErrors      : 0
```

```
dropped packet events (due to lack of resources): 0
```

```
packets received of length (in octets):
```

```
64 : 0
```

```
65-127 : 4
```

```
128-255 : 0
```

```
256-511 : 0
```

```
512-1023 : 0
```

```
1024-1518 : 0
```

```
Interface : GigabitEthernet 1/0/2
```

```
5 minutes input rate :0 bits/sec, 0 packets/sec
```

```
5 minutes output rate :0 bits/sec, 0 packets/sec
```

```
InOctets      : 408
```

```
InUcastPkts   : 4
```

```
InMulticastPkts : 0
```

```
OutOctets      : 408
```

```
OutUcastPkts  : 4
```

```
OutMulticastPkts : 0
```

```
OutBroadcastPkts : 0
```

```
Undersize packets : 0
```

```
Oversize packets : 0
```

```
collisions     : 0
```

```
Fragments      : 0
```

```
Jabbers        : 0
```

```
CRC alignment errors : 0
```

```
AlignmentErrors : 0
```

```
FCSErrors      : 0
```

```
dropped packet events (due to lack of resources): 0
```

```
packets received of length (in octets):
```

```
64 : 0
```

```
65-127 : 4
```

```
128-255 : 0
```

```
256-511 : 0
```

```
512-1023 : 0
```

```
1024-1518 : 0
```

| | |
|--------------|-----|
| OutUcastPkts | : 4 |
|--------------|-----|

| | |
|------------------|-----|
| OutMulticastPkts | : 0 |
|------------------|-----|

| | |
|------------------|-----|
| OutBroadcastPkts | : 0 |
|------------------|-----|

14' GigabitEthernet 0/1

Ruijie# show interfaces gigabitEthernet 0/1 usage

| Interface | Bandwidth | Bandwidth Usage |
|---------------------|-------------|-----------------|
| GigabitEthernet 0/1 | 100000 Kbit | 0.0% |

ö 3 Ô

| 3 | |
|----------------------------------|---|
| duplex | √ Â |
| flowcontrol | Â |
| interface gigabitEthernet | Љ ^ Љ ~ ~
Â |
| interface aggregateport | ~ Â |
| interface vlan | ^ switch virtual
interface SVI ~ ~ Â |
| shutdown | ~ 3 Â |
| speed | Â |
| switchport priority | 802.1q "I Â |
| switchport protected | й Â |

ö / Ô -

2 MAC

2.1 address-bind

ip mac Â 3 **no** ip 6 mac Â

address-bind *ip-address mac-address*

no address-bind *ip-address*

ô

Ô

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

ö Ô Ю

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

ö 3 Ô

| | |
|--------------------------|--|
| 3 | |
| show address-bind uplink | |

ö / Ô -

2.3 address-bind ip-address

ip mac .Â 3 no ip mac Â

address-bind *ip-address mac-address*

no address-bind *ip-address*

ö Ô

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

ö Ô -

ö 3 Ô

ö Ô

| | | | | | | |
|-----|-----|----|-----|---|----|---|
| IP | MAC | ✓ | IP | й | IP | ✓ |
| MAC | а й | IP | MAC | ✓ | Â | |

ö Ô Ю ip й 3.3.3.3 mac 00d0.f811.1112

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

ö 3 Ô

| | |
|-------------------|--|
| 3 | |
| show address-bind | |

ö / Ô

address-bind ipv6-mode strict
no address-bind ipv6-mode

ö

Ô

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

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† й: ~ ~ ш Ь ~ й ш Â ё ~ Ю

| | Ipv4 |
|---|------------|
| ш | IPV4+MAC Â |
| | IPV4+MAC Â |
| | IPV4+MAC Â |

| | IPV6 |
|---|--------------|
| ш | а ipv6 ^ ~ Â |
| | IPV6 Â |

MAC

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

ö Ô -

ö 3 Ô

ö Ô IP MAC ~ IP й IP ~
 MAC а й IP MAC ~ й ~
 (address-bind install) а Ã

ö Ô Ю fa 0/1 й

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

ö 3 Ô

| | |
|--------------------------|--|
| 3 | |
| show address-bind uplink | |

ö / Ô -

2.6 clear mac-address-table dynamic

2.7 mac-address-learning

配置命令 `no` 取消配置

mac-address-learning
no mac-address-learning

| | | |
|------|----|----|
| 配置命令 | 配置 | 配置 |
| - | - | - |

| | | |
|------|----|----|
| 配置命令 | 配置 | 配置 |
|------|----|----|

| | | |
|------|----|----|
| 配置命令 | 配置 | 配置 |
|------|----|----|

| | | |
|------|----|----|
| 配置命令 | 配置 | 配置 |
|------|----|----|

| | | |
|--|----|----|
| 配置命令 | 配置 | 配置 |
| Ruijie(config-if)# no mac-address-learning | | |

| | | |
|------|----|----|
| 配置命令 | 配置 | 配置 |
| - | - | - |

| | | |
|------|----|----|
| 配置命令 | 配置 | 配置 |
|------|----|----|

2.8 mac-address-table aging-time

配置命令 `no` 取消配置

mac-address-table aging-time seconds
no mac-address-table aging-time

| | | |
|---------|----|----|
| 配置命令 | 配置 | 配置 |
| seconds | 配置 | 配置 |

| | | |
|------|----|----|
| 配置命令 | 配置 | 配置 |
|------|----|----|

| | | |
|------|----|----|
| 配置命令 | 配置 | 配置 |
|------|----|----|

| | | |
|-----------------------------------|----|----|
| 配置命令 | 配置 | 配置 |
| show mac-address-table aging-time | 配置 | 配置 |
| show mac-address-table dynamic | 配置 | 配置 |

| | | |
|--|----|----|
| 配置命令 | 配置 | 配置 |
| Ruijie(config)# mac-address-table aging-time 150 | | |

| | | |
|-----------------------------------|----|----|
| 配置命令 | 配置 | 配置 |
| show mac-address-table aging-time | | 配置 |

```
show mac-address-table dynamic
```

```
^
```

```
ö /l Ô -
```

2.9 mac-address-table filtering

`mac-address-table filtering mac-address vlan vlan-id [source | destination]`
`no mac-address-table filtering mac-address vlan vlan-id`

| ö | Ô | | |
|---|---|---------------------------|---|
| | | <code>mac-address</code> | <code>^</code> |
| | | <code>vlan vlan-id</code> | VLAN ID <code>α ^</code> |
| | | <code>source</code> | MAC <code>^</code> <code>ÿ</code> VLAN
MAC <code>ÿ</code> MAC <code>^</code> |
| | | <code>destination</code> | MAC <code>^</code> <code>ÿ</code> VLAN
MAC <code>ÿ</code> MAC <code>^</code> |

`ö` `Ô` `^`
`MAC` `ÿ` `source` `destination` `ÿ` `VLAN` `ö` `MAC`
`MAC` `ÿ` `MAC` `^`

```
ö 3 Ô
```

`ö` `Ô` `a` `ÿ` `^` `show mac-address-table filtering` `3` `^`

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

| ö | 3 Ô | | |
|---|-----|---|----------------|
| | | <code>show mac-address-table filtering</code> | <code>^</code> |

```
ö /l Ô -
```

2.10 mac-address-table notification

д О и 1 и 50

д 3 О

д О MAC Trap 1 a Trap 1 Л MAC
 Ю 3 **snmp-server enable traps mac-notification** MAC
 Trap 1

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

| | |
|--|-------|
| д 3 О | |
| snmp-server enable traps | trap |
| show mac-address-table notification | MAC 1 |
| snmp trap mac-notification | MAC 1 |

д 1 О -

2.11 mac-address-table static

А 3 no А
mac-address-table static *mac-addr* **vlan** *vlan-id* **interface** *interface-id*
no mac-address-table static *mac-addr* **vlan** *vlan-id* **interface** *interface-id*

| | |
|---------------------|----------------------|
| д О | |
| <i>mac-addr</i> | MAC А |
| <i>vlan-id</i> | VLAN А |
| <i>interface-id</i> | (1 Л AggregatePort) |

д О А

д 3 О

д О 1 А 1 a А a и А **show**
mac-address-table static 3 А

д О Ю 00d0.f800.073c VLAN 4 1 и
 gigabitethernet 1/1 Э
 Ruijie(config)# mac-address-table static 00d0.f800.073c vlan 4 interface gigabitethernet 1/1

| | |
|-------|--|
| д 3 О | |
|-------|--|

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

```
^
```

```

ö /l Ô MAC          ñ 16K
      MAC          ñ 1K

```

2.12 show address-bind

```
^
```

```
show address-bind
```

```

ö Ô
- -

```

```
ö Ô -
```

```
ö 3 Ô
```

```
ö Ô -
```

```

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

```

```

ö 3 Ô
address-bind      ^

```

```
ö /l Ô -
```

2.13 show address-bind uplink

```
^
```

```
show address-bind uplink
```

```

ö Ô
- -

```

```
ö Ô -
```

```
ö 3 Ô
```

```
ö Ô -
```

Ø Ô Ruijie# show address-bind uplink

Ports State

Fa0/1 Disabled

Fa0/2 Disabled

Ø 3 Ô

| QaEno%60tTFfSØ- |
|---------------------|
| address-bind uplink |

Ø / Ô -

2.14 show mac-address-learning

shom Ø 4 M I π I, I i 1c1g

ö Ô -

ö 3 Ô

ö Ô -

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

| Vlan | MAC Address | Type | Interface |
|-------|----------------|--------|-----------|
| ----- | ----- | ----- | ----- |
| 1 | 00d0.f800.1001 | STATIC | Gi1/1 |

ö 3 Ô

| | |
|----------------------------------|------|
| 3 | |
| show mac-address-table static | Â |
| show mac-address-table filtering | Â |
| show mac-address-table dynamic | Â |
| show mac-address-table interface | Â |
| show mac-address-table vlan | VLAN |
| show mac-address-table count | Â |
| show mac-address-table static | Â |
| show mac-address-table filtering | Â |

ö 1 Ô -

2.16 show mac-address-table aging-time

Â

show mac-address-table aging-time

ö Ô

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

ö Ô -

ö 3 Ô

ö Ô -

ö Ô Ruijie# show mac-address-table aging-time

Aging time : 300

ö 3 Ô

| | |
|------------------------------|---|
| 3 | |
| mac-address-table aging-time | Â |

2.17 show mac-address-table count

1

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

| | | | |
|---|---|--------------------------------------|------|
| 2 | 1 | | |
| | | interface <i>interface-id</i> | |
| | | vlan <i>vlan-id</i> | VLAN |

3 1 -

4 3 1

5 1 **show mac-address-table count** 3 MAC
show mac-address-table count interface 3 MAC
show mac-address-table count vlan 3 MAC VLAN 1

6 1 1 MAC

```
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
```

7 VLAN 1 IO MAC

```
Ruijie# show mac-address-table count vlan 1
Dynamic Address Count : 7
Static Address Count : 0
Filter Address Count : 0
Total Mac Addresses : 7
```

8 interface g0/1 IO MAC

```
Ruijie# show mac-address-table interface g0/1
Dynamic Address Count : 10
Static Address Count : 0
Filter Address Count : 0
Total Mac Addresses : 10
```

| | | | |
|---|---|---|---|
| 9 | 1 | 3 | |
| | | show mac-address-table static | 1 |
| | | show mac-address-table filtering | 1 |
| | | show mac-address-table dynamic | 1 |

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

mac-addr

| 3 | |
|---|--------|
| show mac-address-table static | Â |
| show mac-address-table filtering | Â |
| show mac-address-table dynamic | Â |
| show mac-address-table address | |
| show mac-address-table vlan | VLAN Â |
| show mac-address-table count | Â |

0 / 0 -

2.21 show mac-address-table notification

MAC 7 Â
show mac-address-table notification [interface[interface-id] | history]

| 0 | 0 |
|-------------------------------|-------------|
| interface interface-id | Â 3 MAC 7 Â |
| history | MAC Â |

0 0 MAC 7 Â

0 3 0

0 0 -

```
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
```

| 0 | 3 0 |
|---------------------------------------|---------|
| mac-address-table notification | MAC 7 Â |
| snmp trap mac-notification | MAC 7 Â |

ö / Ô -

2.22 show mac-address-table static

Â

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

| | | | |
|---|---|---------------------|----------------------|
| ö | Ô | | |
| | | <i>mac-addr</i> | MAC Â |
| | | <i>vlan-id</i> | VLAN Â |
| | | <i>interface-id</i> | (/ ¼ AggregatePort) |

ö Ô -

ö 3 Ô

ö Ô -

ö Ô

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 |

| | | | |
|---|-----|---------------------------------|---|
| ö | 3 Ô | 3 | |
| | | mac-address-table static | Â |

ö / Ô -

2.23 show mac-address-table vlan

VLAN

Â

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

| | | | |
|---|---|----------------|-----------|
| ö | Ô | | |
| | | <i>vlan-id</i> | VLAN ID Â |

ö Ô -

ö 3 Ô

Ö -

```
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 |

Ö 3 Ö

| 3 | |
|----------------------------------|---|
| show mac-address-table static | Â |
| show mac-address-table filtering | Â |
| show mac-address-table dynamic | Â |
| show mac-address-table address | Â |
| show mac-address-table interface | Â |
| show mac-address-table count | Â |

Ö 1 Ö -

2.24 snmp trap mac-notification

3 Aggregate Port

3.1 aggregateport load-balance

AP $\hat{A}$ 3 no $\hat{A}$

aggregateport load-balance {dst-mac | src-mac | src-dst-mac | dst-ip | src-ip | src-dst-ip | src-port | src--dst-ip-l4port }

no aggregateport load-balance

| | | |
|--------------------------|--|--|
| $\hat{O}$ | $\hat{O}$ | |
| dst-mac | MAC $\hat{A}$ AP MAC | |
| src-mac | MAC $\hat{A}$ AP MAC | |
| src-dst-ip | IP $\hat{A}$ IP+ IP $\hat{A}$ | |
| dst-ip | IP $\hat{A}$ AP IP | |
| src-ip | IP $\hat{A}$ AP IP | |
| src-dst-mac | MAC $\hat{A}$ MAC+ MAC a | |
| src-port | $\hat{A}$ $\hat{A}$ AP $\hat{A}$ AP-ID | |
| src-dst-ip-l4port | IP $\hat{A}$ IP+ IP+ L4 | |

$\hat{O}$ $\hat{O}$ MAC $\hat{A}$

$\hat{O}$ $\hat{A}$

$\hat{O}$ **show aggregateport load-balance** $\hat{A}$

$\hat{O}$ MAC

0 1 0 -

3.2 port-group

Aggregate Port

Â

3 no

Aggregate Port

Â

port-group *port-group-number*

ö

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Aggregate Port

~

4 LACP

4.1 lacp system-priority

LACP "I Â 3 no Â

lacp system-priority *system-priority*

no lacp system-priority

| | | | |
|---|---|------------------------|---------------------|
| ð | Ô | | |
| | | <i>system-priority</i> | LACP "I ~ 0-65535 Â |

ð Ô "I ñ 32768 Â

ð 3 Ô Â

ð Ô LACP "I Y MAC "I ~ è MAC ~ "I

1 ~ "I ~ MAC

ò

Local information:

| Port | Flags | State | LACP port
Priority | Oper
Key | Port
Number | Port
State |
|-------|-------|-------|-----------------------|-------------|----------------|---------------|
| Gi0/1 | SA | bndl | 4096 | | 0x3 | 0x1 0x3d |
| Gi0/2 | SA | bndl | 4096 | | 0x3 | 0x2 0x3d |
| Gi0/3 | SA | bndl | 4096 | | 0x3 | 0x3 0x3d |

Partner information:

| Port | Flags | Priority | LACP port
Dev ID | Oper
Key | Port
Number | Port
State |
|-------|-------|----------|---------------------|-------------|----------------|---------------|
| Gi0/1 | SA | 61440 | 00d0.f800.0002 | 0x3 | 0x1 | 0x3d |
| Gi0/2 | SA | 61440 | 00d0.f800.0002 | 0x3 | 0x2 | 0x3d |
| Gi0/3 | SA | 61440 | 00d0.f800.0002 | 0x3 | 0x3 | 0x3d |

| Local information | LACP | Â |
|--------------------|-----------------------------------|--------|
| Port | ID | Â |
| Flags | ' S' LACP
LACPPDU ' 'A'
y Â | |
| State | ' I bndl L
~ Down ~ susp
Â | |
| LACP Port Priority | LACP "I | Â |
| Oper Key | Key | Â |
| Port Number | Â | |
| Port State | LACP | Æ Â |
| Partner infomation | ↑ ~ | LACP Â |
| Dev ID | ↑ | MAC Â |

ö 3 Ô

| 3 | |
|---------------------|-----------|
| port-group key mode | LACP ID Â |

ö 1 Ô -

5 VLAN

5.1 add

VLAN 1 Access 2 no 3 4 VLAN 5 Access

add interface { *interface-id* | **range** *interface-range* }
no add interface { *interface-id* | **range** *interface-range* }

| | | | |
|---|-------------------------------------|-----|------|
| ö | Ô | | |
| | <i>interface-id</i> | γ ⅃ | γ AP |
| | range <i>interface-range</i> | γ ⅃ | γ AP |

ö Ô γ ⅃ VLAN1

ö 3 Ô VLAN

ö Ô 3 access port 4
 3 5 IO VLAN 3 6 **switchport access vlan** *vlan-id*
 7 8 9 VLAN 3 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
 17 18 19 20 21 22 23 24

ö Ô 1' VLAN20 ⅃ GigabitEthernet 0/10

```
Ruijie# configure terminal
SwitchA(config)#vlan 20
SwitchA(config-vlan)#add interface GigabitEthernet 0/10
Ruijie# show interface GigabitEthernet 0/10 switchport
Interface  Switchport  Mode  Access  Native Protected  VLAN lists
-----  -
GigabitEthernet 0/10 enabled ACCESS 20 1 Disabled ALL
```

2' VLAN200 ⅃ GigabitEthernet 0/1~ GigabitEthernet 0/10

```
Ruijie# configure terminal
SwitchA(config)#vlan 200
SwitchA(config-vlan)#add interface range GigabitEthernet 0/1-10
Ruijie# show vlan
SwitchA#show vlan
VLAN Name      Status      Ports
-----  -
1 VLAN0001  STATIC  Gi0/11,Gi0/12,Gi0/13,Gi0/14,Gi0/15,
Gi0/16,Gi0/17,Gi0/18,Gi0/19,Gi0/20,Gi0/21, Gi0/22, Gi0/23, Gi0/24
```

```
200 VLAN0200 STATIC Gi0/1,Gi0/2,Gi0/3,Gi0/4,Gi0/5, Gi0/6,Gi0/7,Gi0/8,Gi0/9,Gi0/10
```

```
3 VLAN20 7 AggregatePort 10
```

```
Ruijie# configure terminal
```

```
SwitchA(config)#vlan 20
```

```
SwitchA(config-vlan)#add interface aggregateport 10
```

5.3 name

VLAN 的命名规则如下：
name *vlan-name*
no name

| | | | |
|---|---|------------------|------------|
| ö | Ô | | |
| | | <i>vlan-name</i> | VLAN 的命名规则 |

ö Ô VLAN 的命名规则如下：VLAN ID 为 1-4094，VLAN 2 的命名规则为 "VLAN0002"

ö 3 Ô VLAN

ö Ô **show vlan** 3 vlan

ö Ô Ruijie(config)# vlan 10
 Ruijie(config-vlan)# name vlan10

| | | | |
|---|-----|------------------|------------|
| ö | 3 Ô | 3 | |
| | | show vlan | VLAN 的命名规则 |

ö 1 Ô -

5.4 show vlan

VLAN 的命名规则如下：
show vlan [*id vlan-id*]

| | | | |
|---|---|----------------|---------------|
| ö | Ô | | |
| | | <i>vlan-id</i> | VLAN ID 的命名规则 |

ö Ô

ö 3 Ô

ö Ô **end** 3 **Ctrl+C** **exit** 3

ö Ô Ruijie# show vlan id 1
 VLAN Name Static=MMMM A D m 3 MMMMMM

 1 VLAN0001 STATIC Fa0/1, Fa0/2

3

VLAN

ö

3 Ô

3

name

VLAN

"

Â

| 3 | | | VLAN | | |
|---|---|--------------------|------|-------------|--------|
| ö | Ô | /1 VLAN | all | Native VLAN | VLAN 1 |
| ö | 3 | Ô | | | |
| ö | Ô | Native VLAN | | | |
| | | in Trunk | | | |

end Ctrl+C
exit

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

| | |
|-----------|------|
| 3 | |
| show vlan | VLAN |

1 -

6 Super-VLAN

6.1 proxy-arp

3 VLAN ARP 3 11 Â

proxy-arp
no proxy-arp

| | | | |
|---|---|---|---|
| 0 | 0 | | |
| | | - | - |

0 0 -

0 3 0 VLAN

0 0
end 3 Ctrl+C Â
exit 3

0 0 Ruijie(config)# vlan 3
Ruijie(config-vlan)# proxy-arp

| | | | |
|---|-----|----------------|-------------|
| 0 | 3 0 | 3 | |
| | | show supervlan | supervlan Â |

0 1 0 -

6.2 show supervlan

3 SuperVLAN è SubVLAN Â

show supervlan
show supervlan id *vlan-id*

| | | | |
|---|---|----------------|---------|
| 0 | 0 | | |
| | | <i>vlan-id</i> | VLAN ID |

0 0 -

0 3 0

0 0 -

đ

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7 Protocol VLAN

7.1 protocol-vlan profile

profile

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

profile

no protocol-vlan profile *num*

profile

no protocol-vlan profile

| | | | |
|---|---|-------------|---------|
| ð | Ô | | |
| | | <i>num</i> | profile |
| | | <i>type</i> | profile |

ð Ô -

ð Ô

ð Ô -

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

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

ð Ô -

7.2 protocol-vlan profile

profile

protocol-vlan profile *num* **vlan** *id*

profile

no protocol-vlan profile *id*

profile

no protocol-vlan profile

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

ö Ô -

ö 3 Ô

ö Ô -

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

| | | | |
|---|-----|---------------------------------------|---|
| ö | 3 Ô | 3 | |
| | | show protocol-vlan profile | - |
| | | show protocol-vlan profile <i>num</i> | - |
| | | no protocol-vlan profile | - |
| | | no protocol-vlan profile <i>num</i> | - |

ö /1 Ô -

7.3 show protocol-vlan

Protocol VLAN

show vlan protocol-vlan

| | | | |
|---|---|---|---|
| ö | Ô | | |
| | | - | - |

ö Ô -

ö 3 Ô

ö Ô

ö Ô Ruijie# show protocol-vlan

| | | | |
|---|-----|---|---|
| ö | 3 Ô | 3 | |
| | | - | - |

ö /1 Ô -

8 Private VLAN

8.1 private-vlan association

secondary VLAN 6 primary VLAN 3

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

no private-vlan association

| | | | |
|---|---|---------------|---------------------------------|
| õ | Ô | | |
| | | <i>svlist</i> | й secondary VLAN list |
| | | no | й primary VLAN 6 secondary VLAN |

õ Ô

õ 3 Ô Primary VLAN

õ Ô -

õ Ô Ruijie(config)# vlan 22
Ruijie(config-vlan)# private-vlan association add 24-26

| | | | |
|---|-----|-------------------------------|---|
| õ | 3 Ô | 3 | |
| | | show vlan private-vlan | - |

õ 1 Ô -

8.2 private-vlan mapping

secondary VLAN Б SVI 3

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

no private-vlan mapping

| | | | |
|---|---|---------------|---------------------|
| õ | Ô | | |
| | | <i>svlist</i> | secondary VLAN list |
| | | no | |

õ Ô -

õ 3 Ô Primary VLAN

õ Ô -

```

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

```

| | |
|------------------------|---|
| 3 | |
| show vlan private-vlan | - |

1 -

8.3 private-vlan type

VLAN 24 VLAN 25

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

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

| | |
|--------------------|------|
| promiscuous | VLAN |
| no | VLAN |

Ö -

Ö 3 Ö

Ö -

Ö Ö Ruijie(config)# interface gigabitEthernet 0/2
Ruijie(config-if)# switchport mode private-vlan host

| | | |
|-------|-------------------------------|---|
| Ö 3 Ö | 3 | |
| | show vlan private-vlan | - |

Ö 1 Ö -

8.5 switchport private-vlan association trunk

й Trunk ~ γ б VLANˆ Â

switchport private-vlan association trunk *p_vid* *s_vid*
no switchport private-vlan association trunk *p_vid* *s_vid*

| | | |
|-----|--------------|---------------|
| Ö Ö | | |
| | <i>p_vid</i> | primary VID |
| | <i>s_vid</i> | secondary VID |
| | no | γ б VLAN |

Ö -

Ö 3 Ö

Ö Ö Ruijie(config)# interface gigabitEthernet 0/2
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# switchport private-vlan association trunk 202 203

Ö -

| | | |
|-------|---|---|
| Ö 3 Ö | 3 | |
| | - | - |

Ö 1 Ö -

8.6 switchport private-vlan host-association

private VLAN ỹ primary VLAN secondary VLAN
switchport private-vlan host-association *p_vid s_vid*
no switchport private-vlan host-association

| | | | |
|---|---|--------------|--------------------|
| ö | Ô | | |
| | | <i>p_vid</i> | primary VID |
| | | <i>s_vid</i> | secondary VID |
| | | no | ỹ VLAN ỹ |

ö Ô -

ö 3 Ô

ö Ô -

ö Ô

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

| | | | |
|---|-----|---|--|
| ö | 3 Ô | 3 | |
|---|-----|---|--|

```

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

```

| | |
|------------------------|---|
| 3 | |
| show vlan private-vlan | - |

1 -

8.8 switchport private-vlan promiscuous trunk

Trunk y 6 VLANr Â

```

switchport private-vlan promiscuous trunk p_vid s_list
no switchport private-vlan promiscuous trunk p_vid s_list

```

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

| | |
|----------|---------------|
| isolated | isolated VLAN |
|----------|---------------|

ö Ô private VLAN

ö 3 Ô

ö Ô -

ö Ô Ruijie# show vlan private-vlan

| | | |
|-------|---|---|
| ö 3 Ô | 3 | |
| | - | - |

ö 1 Ô -

8.10 switchport hybrid allowed vlan

hybrid

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

no switchport hybrid allowed vlan

| | | |
|-----|----|--------|
| ö Ô | | |
| | no | hybrid |

ö Ô

ö 3 Ô

ö Ô -

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

| | | |
|-------|---|--|
| ö 3 Ô | 3 | |
| | | |

ö 1 Ô -

8.11 switchport hybrid native vlan

hybrid

vlan

switchport hybrid native vlan *vid*

no switchport hybrid native vlan

| | | | |
|---|---|----|-------------|
| õ | Ô | | |
| | | no | hybrid VLAN |

õ Ô

õ 3 Ô

õ Ô -

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

| | | | |
|---|-----|---|---|
| õ | 3 Ô | 3 | |
| | | - | - |

õ 1 Ô -

8.12 switchport mode hybrid

õ hybrid

switchport mode hybrid

no switchport mode

| | | | |
|---|---|----|--------|
| õ | Ô | | |
| | | no | hybrid |

õ Ô

õ 3 Ô

õ Ô -

õ Ô Ruijie(config-if)# switchport mode hybrid

| | | | |
|---|-----|---|---|
| õ | 3 Ô | 3 | |
| | | - | - |

õ 1 Ô -

exit 3

```

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

```

3 Ô

| | |
|---|---|
| 3 | |
| - | - |

1 Ô -

10 Voice VLAN

10.1 show voice vlan

Voice VLAN 6 ~ Voice VLAN 71

show voice vlan

| | | | |
|---|---|---|---|
| 0 | 0 | | |
| | | - | - |

0 0 -

0 3 0

0 0 3 ~ 1 Voice VLAN 6 ~ Voice VLAN 71

Â

0 0 1' Voice VLAN

Ruijie(config)# show voice vlan

Voice VLAN status: ENABLE //Voice VLAN

Voice VLAN ID: 2 //Voice VLAN ID

Voice VLAN aging time: 5 minutes //

Voice VLAN cos: 6 // CoS

Voice VLAN dscp: 46 // DSCP

10.2 show voice vlan oui

OUI à OUI à Â

show voice vlan oui

| | | | |
|---|---|---|---|
| ð | Ô | | |
| | | - | - |

ð Ô -

ð 3 Ô

ð Ô 3 ~ / OUI Â

ð Ô 1' Voice VLAN OUI

Ruijie(config)# show voice vlan oui

| OUI | Mask | Description |
|-----|------|-------------|
|-----|------|-------------|

| | | |
|----------------|----------------|-------------------|
| 0001.e300.0000 | ffff.ff00.0000 | Siemens phone |
| 0003.6b00.0000 | ffff.ff00.0000 | Cisco phone |
| 0004.0d00.0000 | ffff.ff00.0000 | Avaya phone |
| 0060.b900.0000 | ffff.ff00.0000 | Philips/NEC phone |
| 00d0.1e00.0000 | ffff.ff00.0000 | Pingtel phone |
| 00e0.7500.0000 | ffff.ff00.0000 | Polycom phone |
| 00e0.bb00.0000 | ffff.ff00.0000 | 3com phone |

show voice vlan oui 3 '

| OUI | OUI ~ MAC Â |
|-------------|---------------------------|
| Mask | OUI ~ OUI ~ Â |
| Description | OUI |

| | | |
|-------------|---|--------------------------|
| ð 3 Ô | 3 | |
| | voice vlan mac-address <i>mac-addr</i> mask <i>oui-mask</i> [description text] | Voice VLAN / OUI Â |

ð / Ô -

10.3 voice vlan

Voice VLAN

VLAN à Voice VLAN Â / 3

3 **no**

Voice VLAN

3 Â

voice vlan *vlan-id*

no voice vlan

| | | | |
|---|---|----------------|-----------------|
| ð | Ô | | |
| | | <i>vlan-id</i> | Voice VLAN ID Â |

ð Ô Â

ð ð Ô

ð Ô ð Voice VLAN 7 ~ * Voice VLAN ID Â

| | | |
|---|------------|---------------|
| ✓ | Voice VLAN | VLAN |
| ✓ | VLAN 1 | VLAN 1 |
| ✓ | 802.1x | VLAN |
| | VID | Voice VLAN ID |
| ✓ | RSPAN | Remote VLAN |
| | Voice VLAN | 1 VLAN |

ð Ô 1' Voice VLAN 7 ~ VLAN2 ð Voice VLAN Â

```
Ruijie(config)# vlan 2
Ruijie(config-vlan)# exit
Ruijie(config)# voice vlan 2
```

| | | | |
|---|-----|------------------------|----------------|
| ð | ð Ô | | |
| | | <i>show voice vlan</i> | Voice VLAN 6 Â |

ð 1 Ô -

10.4 voice vlan aging

Voice VLAN Â 1 7 ð **no** Â

voice vlan aging minutes

no voice vlan aging

| | | | |
|---|---|----------------|--------------|
| ð | Ô | | |
| | | <i>minutes</i> | Voice VLAN Â |

ð Ô *minutes* ð 1440† Â

ð ð Ô

ð Ô 1 3 Voice VLAN ~ ~ ÿ

~ ý Voice VLAN Â

ö Ô 1' Voice VLAN ì 10†

Ruijie(config)# voice vlan aging 5

ö 3 Ô

| | |
|-----------------|--------------------------|
| 3 | |
| show voice vlan | Voice VLAN б Â |

ö / Ô -

10.5 voice vlan dscp

Voice VLAN DSCP Â / Л 3 no Â

voice vlan dscp dscp-value

no voice vlan dscp

ö Ô

| | |
|------------|-----------------------------|
| | |
| dscp-value | Voice VLAN DSCP Â |

ö Ô dscp-value ì 46 Â

ö 3 Ô

ö Ô Voice VLAN CoS б DSCP "I ~ Â

ö Ô 1' Voice VLAN "I ~ DSCP ì 40 Â

Ruijie(config)# voice vlan dscp 40

ö 3 Ô

| | |
|-----------------|--------------------------|
| 3 | |
| show voice vlan | Voice VLAN б Â |

ö / Ô -

10.6 voice vlan enable

Ю 3 Voice VLAN Â / Л 3 no

Voice VLAN Â

voice vlan enable

no voice vlan enable

ö Ô

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

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

ð Ô Ю Voice VLAN 71 Â

ð 3 Ô

ð Ô 3 Voice VLAN 71 ~ Voice VLAN 71 3 Â
Access Port à Trunk Port à Hybrid Port à 6 Uplink 3 Voice VLAN

A

ð 3 Ô

| | |
|---------------------|------------|
| 3 | |
| show voice vlan oui | Â OUI ÆOUI |

ð / Ô -

10.8 voice vlan mode auto

Ю Voice VLAN и Â / Л Æ 3 **no**
 Voice VLAN и Â
voice vlan mode auto
no voice vlan mode auto

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ð Ô Voice VLAN и Â

ð 3 Ô

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| | | show voice vlan | Voice VLAN б ~
Voice VLAN П Â |

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10.9 voice vlan security enable

Voice VLAN Â / Лб 3 no Â

voice vlan security enable

no voice vlan security enable

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ö Ô Voice VLAN Â

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| | | | | | | | | |
|-------|---|----------------|----------------|---|-----|------|----------------|-------|
| ö | Ô | й | б | † | ~ | / Лб | Voice VLAN | Â |
| | | ‡ | MAC | ~ | MAC | / | Voice VLAN OUI | ~ |
| | | Voice VLAN | ~ | Â | | | | |
| <hr/> | | | | | | | | |
| | | VLAN | Voice VLAN | | | | | Voice |
| | | untagged | Voice VLAN tag | | | | MAC | |
| | | Voice VLAN tag | VLAN | | | | | Voice |
| | | VLAN / | | | | | | |
| <hr/> | | | | | | | | |

11 MAC VLAN

11.1 mac-vlan enable

```

3 / MAC VLAN 78
mac-vlan enable

```

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$$\ddot{O} \quad \{ \quad \hat{O}$$

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| ð | Ô | Ǝ | MAC VLAN | ı | MAC VLAN | Ǝ | Â |
| | MAC VLAN | ı | hybrid | Ǝ | a | Â | |

```

Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# interface fastethernet 0/10
Ruijie(config-if)# mac-vlan enable
Ruijie(config-if)# no mac-vlan enable
Ruijie(config-if)# end

```

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| ð | ŕ Ô | ŕ | |
| | | show mac-vlan interface | MAC VLAN |

$$\hat{O} =$$

11.2 mac-vlan mac-address

```

{                               MAC VLAN                               IO                               }
mac-vlan mac-address mac-address [mask mac-mask] vlan vlan-id [priority pri_val]

```

[illegible]

ö Ô MAC VLAN Â

ö 3 Ô

ö Ô **mac-vlan mac-address** 3 MAC VLAN 100 è "I Â **no mac-vlan** 3
MAC 6 VLAN Â

ö Ô Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# mac-vlan mac-address 0001.0001.0001 vlan 100 priority 3
Ruijie(config)# mac-vlan mac-address 0002.0002.0000 mask
ffff.ffff.0000 vlan 200 priority 5
Ruijie# show mac-vlan all
The following MAC VLAN address exist:
S: Static D: Dynamic
MAC ADDR MASK VLAN ID PRIO STATE

0002.0002.0000 ffff.ffff.0000 200 5 S
0001.0001.0001 ffff.ffff.ffff 100 3 S
Total MAC VLAN address count: 2

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|--------------------------|----------|
| 3 | |
| show mac-vlan all | MAC VLAN |

ö 1 Ô -

11.3 show mac-vlan

3 MAC VLAN Â

show mac-vlan

| | | |
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| ö Ô | | |
| all | MAC-VLAN | Â |
| dynamic | MAC-VLAN | Â |
| static | MAC-VLAN | Â |
| mac-address mac-address | MAC MAC-VLAN | Â |
| mask mac-mask | MAC MAC-VLAN | Â |
| vlan vlan-id | VLAN MAC-VLAN | Â |

ö Ô -

ö 3 Ô

`mac-address` `mask` MAC MAC-VLAN
`mac-address` `mask` MAC MAC VLAN

```

Ruijie# show mac-vlan all
The following MAC VLAN addresses exist:
S: Static   D: Dynamic
MAC ADDR      MASK          VLAN ID  PRIO  STATE
-----
0011.1100.0000 ffff.ff00.0000 100      1     S
0022.2222.0000 ffff.ffff.0000 200      2     S
0000.0000.0003 ffff.ffff.ffff 300      3     D
0000.0000.0004 ffff.ffff.ffff 400      4     D
0000.0000.0005 ffff.ffff.ffff 500      5     S&D
0000.0000.0006 ffff.ffff.ffff 600      6     S
0000.0000.0007 ffff.ffff.ffff 700      7     S&D
Total MAC VLAN address count: 7
  
```

| mac-vlan | mac-address | mac-address | |
|-----------------|-------------|-------------|--------------------|
| [mask mac-mask] | vlan | vlan-id | [priority pri_val] |
| MAC VLAN | | | |

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11.4 show mac-vlan interface

MAC VLAN `show mac-vlan interface`

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

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3

MAC VLAN `show mac-vlan interface`

```

Ruijie# show mac-vlan interface
MAC VLAN is enabled on following interface:
-----
fastethernet 0/3
fastethernet 0/10
  
```

õ 3 Ô

| | |
|-----------------|-------------|
| 3 | |
| mac-vlan enable | MAC VLAN 11 |

õ 1 Ô -

12 MSTP

12.1 bpdu src-mac-check

bpdu mac $\hat{A}$ 1 J6 3 no bpdu mac $\hat{A}$

| | | | |
|---|-----|---|-----------------------------|
| ö | 3 Ô | 3 | |
| | | | show spanning-tree counters |

STP

ö / Ô -

12.3 clear spanning-tree detected-protocols

RSTP BPDU BPDU Â

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

| | | | |
|---|---|--------------|--|
| ö | Ô | | |
| | | interface-id | |

ö Ô -

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ö Ô Ruijie# clear spanning-tree detected-protocols

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| ö | 3 Ô | 3 | |
| | | | show spanning-tree interface |

STP

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12.4 show spanning-tree

0 0 -

0 3 0 A

0 0 -

0 0 Ruijie# show spanning-tree hello-time

| | | | | | |
|-------|---|------------------------------|--|--|--|
| 0 3 0 | 3 | | | | |
| | | spanningtree pathcost method | | | |

| | |
|-------------------------|---------|
| spanning-tree link-type | a “ ” Â |
|-------------------------|---------|

ö / Ô -

12.6 show spanning-tree mst

IO 3 / Ƨ MST ~ Instance Â

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

ö Ô

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

ö Ô Instance Â

ö 3 Ô .

ö Ô -

ö Ô Ruijie# show spanning-tree mst configuration

ö 3 Ô

| 3 | |
|--|-------------|
| spanning-tree mst configuration | MST region |
| spanning-tree mst cost | instance |
| spanning-tree mst max-hops | instance |
| spanning-tree mst priority | instance "I |
| spanning-tree mst port-priority | instance "I |

ö / Ô -

12.7 spanning-tree

MSTP / MSTP ~ MSTP

ð Ô spanning-tree Â

ð ð Ô Â

ð Ô **forward-time** ã **hello-time** ã **max-age** ß ¨ è è ¼
 Â ß ´

| | | | |
|---|-----|------------------------------|-------|
| ö | 3 Ô | 3 | |
| | | show spanning-tree interface | STP Â |

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12.11 spanning-tree compatible enable

MSTI

~ 7

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spanning-tree compatible enable

no spanning-tree compatible enable

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

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ö Ô Ruijie(config-if)#spanning-tree compatible enable

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| | | - | - |

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12.12 spanning-tree guard loop

∅ loop guard

Â

3 no

loop guard

Â

loop guard 7 ~

a bpdu

/

Â

spanning-tree guard loop

no spanning-tree guard loop

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| ö | Ô | | |
| | | - | - |

ö Ô loop guard 7 Â

ö 3 Ô Â

ö Ô -

```

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

```

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

```

-

```

12.13 spanning-tree guard none

```

spanning-tree guard none
no spanning-tree guard none

```

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

```

guard none

```

```

-

```

```

-

```

```

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

```

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

```

-

```

12.14 spanning-tree guard root

```

spanning-tree guard root
no spanning-tree guard root

```

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

```

root guard

```

```

-

```

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

| | | |
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| | - | - |

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12.15 spanning-tree ignore tc

tc Â 3 no tc Â tc 11 TC

a Â

spanning-tree ignore tc

no spanning-tree ignore tc

| | | |
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| | - | - |

ö Ô TC 11

ö 3 Ô

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ö Ô Ruijie(config-if)# spanning-tree ignore tc

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12.16 spanning-tree link-type

a “ ”Â 11 3 no Â

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

no spanning-tree link-type

| | | |
|-----|----------------|-------------------|
| ö Ô | | |
| | point-to-point | й point-to-point. |
| | shared | й shared |

ö Ô й 11 й point-to-point' й 11 й

shared.

ð 3 Ô Â

ð Ô -

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

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|-------|------------------------------|-----|
| ð 3 Ô | 3 | |
| | show spanning-tree interface | STP |

ð /1 Ô -

12.17 spanning-tree loopguard des 1 B w

no spanning-tree max-hops

| | | | |
|---|---|-----------|-------------|
| ö | Ô | | |
| | | hop-count | BPDU 1 1 40 |

ö Ô hop-count 20

ö 3 Ô

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

ö Ô Ю MST Instance Max-hops 10

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

1 1 3 show spanning-tree mst 3 3

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|---|-----|--------------------|------|
| ö | 3 Ô | | |
| | | show spanning-tree | MSTP |

ö 1 Ô -

12.19 spanning-tree mode

Ю 3 STP Â no 1 1 1 Â

spanning-tree mode [stp | rstp | mstp]

no spanning-tree mode

| | | | |
|---|---|------|--|
| ö | Ô | | |
| | | stp | Spanning tree protocol(IEEE 802.1d) |
| | | rstp | Rapid spanning tree protocol(IEEE 802.1w) |
| | | mstp | Multiple spanning tree protocol(IEEE 802.1s) |

ö Ô MSTP

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ö Ô -

ö Ô Ruijie(config)# spanning-tree mode stp

| | | | |
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| ö | 3 Ô | | |
| | | 3 | |

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|--------------------|--|
| show spanning-tree | |
|--------------------|--|

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12.20 spanning-tree mst configure

Ю 3 1 Л MST ~ MSTP Region Â no 1 Л 3 Ю
^ name à revision à vlan map~ Â

spanning-tree mst configuration

no spanning-tree mst configuration

| | | | |
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| ö | Ô | | |
| | | - | - |

ö Ô instance vlan Vlan Instance 0 Â
name и Â
revision и 0 Â

ö 3 Ô .

ö Ô ~ end 3~ Ctrl+C Â
~ exit 3 Â
MST 1~ 1 Л ЛЮ 3
instance *instance-id* **vlan** *vlan-range* Vlan 7 MST Instance Â instance-id и 0
64 Â **vlan** и 1 4095 Â **vlan-range** 1 Л **vlan** ~ VLAN ID ~
VLAN ID 1 Л 1~ 2 ч VLAN ID ~ instance 10 vlan 2,3,6-9 8 VLAN
2 3 6 7 8 9 7 Instance 10 Â VLAN Instance 0 Â VLAN 9
Instance **no** 3' **no instance** *instance-id* [**vlan** *vlan-range*] Â (no 3
Instance и 1 64)
name *name* MST ~ 1 Л 1 Л 32 Â 1 Л no name è Â
revision *version* MST ~ 0 65535 Â 1 Л no revision è Â
show spanning-tree mst configuration MST region Â

ö Ô Ю MST ~ VLAN 3, 5-10 MST Instance 1.

```
Ruijie(config)# spanning-tree mst configuration
Ruijie(config-mst)# instance 1 vlan 3 5-10
Ruijie(config-mst)# name region 1
Ruijie(config-mst)# revision 1
Ruijie(config-mst)# show spanning-tree mst configuration
MST configuration
Name [region1]
Revision 1
Instance Vlans Mapped
-----
```



```
0      1-2,4,11-4094
```

```
1      3,5-10
```

```
-----
```

```
Ruijie(config-mst)# exit
```

```
Ruijie(config)#
```

```
VLAN 3  Instance 1  MST  IO
```

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

```
Instance 1  IO
```

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

```
1  MST  show  A
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| show spanning-tree mst | MSTP Â |
| spanning-tree mst port-priority | "I |
| spanning-tree mst priority | ÿ instance "I |

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12.22 spanning-tree mst port-priority

Ю 3 1 Л a Instance Л a "I ~
 Region Â no 1 Л 3 Â
spanning-tree [mst instance-id] port-priority priority
no spanning-tree [mst instance-id] port-priority

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| Instance-id | Instance ~ ÿ 0 64 |
|-------------|---|
| priority | "I ~ 1 0 16 32 48 64 80 96 112 128 144
160 176 192 208 224 240 16 ~ ÿ 16 |

spanning-tree [mst instance-id] priority priority

no spanning-tree [mst instance-id] priority

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|--------------------|--|
| | |
| <i>instance-id</i> | Instance ~ ñ 0 64 |
| <i>priority</i> | "I ~ Л 0, 4096,8192, 12288, 16384, 20480, 24576, 28672, 32768, 36864, 40960, 45056, 49152,53248, 57344 61440 Â 16 ~ ñ 4096 Â |

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instance-id ñ 0 *priority* ñ 32768

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Ю Instance 20 "I ñ 8192

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

Л Л show spanning-tree mst instance interface interface-id з Э Â

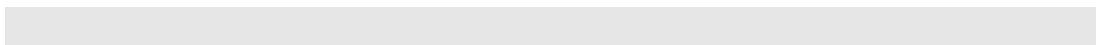
ö

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| з | |
| show spanning-tree mst | MSTP Â |
| spanning-tree mst cost | Â |
| spanning-tree mst port-priority | a ~ Instance |

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ö Ô Ruijie(config)# spanning-tree portfast default

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|------------------------------|-------|
| 3 | |
| show spanning-tree interface | STP Â |

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12.29 spanning-tree reset

spanning-tree 3 Â 3 no Â
spanning-tree reset

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ö Ô Ruijie(config)# spanning-tree reset

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| 3 | |
| show spanning-tree | STP Â |
| show spanning-tree interface | STP Â |

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12.30 spanning-tree tc-guard

tc-guard Â 3 no tc-guard Â0 Â0 Â0 Â0



ö Ô tc-guard Â

ö 3 Ô Â

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

| | | |
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12.33 spanning-tree tx-hold-count

STP TxHoldCount ~ BPDUs Â 3 no
Â

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

no spanning-tree tx-hold-count

| | | |
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| ö Ô | | |
| | tx-hold-count | TxHoldCount Â 1 10 Â |

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

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| ö 3 Ô | 3 | |
| | show spanning-tree | MSTP Â |

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13

13.1 bridge-frame forwarding protocol bpdu

BPDU Â no BPDU Â
 bridge-frame forwarding protocol bpdu
 no bridge-frame forwarding protocol bpdu

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ö Ô BPDU Â

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ö Ô 1' BPDU
 Ruijie(config)# bridge-frame forwarding protocol bpdu
 2' BPDU
 Ruijie(config)# no bridge-frame forwarding protocol bpdu

ö Ô 3 GQËVhEnAYRËx4QI#cnûQIQÄ

ð Ò 1' Ñ GVRP ¶ '

Ruijie(config)# bridge-frame forwarding protocol gvrp

2' Ñ GVRP ¶ '

Ruijie(config)# no bridge-frame forwarding protocol gvrp

ð ¶ Ò

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13.3 bridge-frame forwarding protocol 802.1x

802.1X ¶ Â ¶ no 802.1X ¶ Â

bridge-frame forwarding protocol 802.1x

no bridge-frame forwarding protocol 802.1x

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ð Ò 802.1X ¶ Â

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ð Ò 1' Ñ 802.1X ¶ '

Ruijie(config)# bridge-frame forwarding protocol 802.1x

2' Ñ BPDU ¶ '

Ruijie(config)# no bridge-frame forwarding protocol 802.1x

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14 GVRP

14.1 clear gvrp statistics

GVRP ~ Ë

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

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

ö Ô -

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ö Ô **sh ti<lj**
Ê 003 Tc 1.412C00F614.6 -5.16 -15.6 re119.94 614.6 mhC2_0 1 Tf35385007853813C2_9 62.04 571

ö

3 Ô

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| | | | |
|---|-----|-------------------------|------|
| ð | 3 Ô | 3 | |
| | | show gvrp configuration | GVRP |

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14.5 gvrp registration mode

3 ~ ä 3 VLAN Â 3 no

gvrp registration mode {normal | disabled}

no gvrp registration mode

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

ð Ô ä 3 VLAN

ð 3 Ô

ð Ô **show gvrp configuration** 3

ð Ô Ruijie(config-if)# gvrp registration mode normal

| | | | |
|---|-----|-------------------------|------|
| ð | 3 Ô | 3 | |
| | | show gvrp configuration | GVRP |

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14.6 gvrp timer

GVRP ~ 3 no

gvrp timer {join | leave | leaveall} timer_value

no gvrp timer

| | | | | | | | | | |
|---|---|-------------------|------|--|---------------|---|--------------|---|--|
| ð | Ô | | | | | | | | |
| ⌞ | | join timer_value | | | | 0 | | Â | |
| | | | | | Leave Message | | VLAN | | |
| | | | | | | | Join Message | | |
| | | leave timer_value | VLAN | | | | | | |
| | | | | | Join Message | | Empty | | |

| | |
|----------|---------------------------|
| | LeaveAll Message |
| Message | LeaveAll Message LeaveAll |
| leaveall | leaveall + join |

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

3

show gvrp configuration
no gvrp timer join leave leaveall timer

Ruijie(config)# gvrp timer join 200

| | |
|-------------------------|------|
| show gvrp configuration | GVRP |
|-------------------------|------|

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14.7 show gvrp configuration

GVRP
show gvrp configuration

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

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3

show gvrp configuration

Ruijie# show gvrp configuration
Global GVRP Configuration:

```

Port:GigabitEthernet 3/4 app mode:normal reg mode:normal
Port:GigabitEthernet 3/5 app mode:normal reg mode:normal
Port:GigabitEthernet 3/6 app mode:normal reg mode:normal
Port:GigabitEthernet 3/7 app mode:normal reg mode:normal
Port:GigabitEthernet 3/8 app mode:normal reg mode:normal
Port:GigabitEthernet 3/9 app mode:normal reg mode:normal
Port:GigabitEthernet 3/10 app mode:normal reg
mode:normal
Port:GigabitEthernet 3/11 app mode:normal reg
mode:normal
Port:GigabitEthernet 3/12 app mode:normal reg
mode:normal

```

| | | | |
|---|---|---|--|
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14.8 show gvrp statistics

GVRP

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

| | | | |
|---|---|---------------------|----|
| ö | Ö | | |
| | | <i>interface-id</i> | ID |

ö Ö -

ö 3 Ö

ö Ö **show gvrp statistics** GVRP

```

Ruijie# show gvrp statistics gigabitethernet 1/1
Interface      GigabitEthernet 3/1
RecValidGvrpPdu      0
RecInvalidGvrpPdu    0
RecJoinEmpty         0
RecJoinIn            0
RecEmpty             0
RecLeaveEmpty         0
RecLeaveIn            0
RecLeaveAll           0
SentGvrpPdu          0
SentJoinEmpty        0

```

```

SentJoinIn      0
SentEmpty       0
SentLeaveEmpty   0
SentLeaveIn      0
SentLeaveAll     0
JoinIndicated   0
LeaveIndicated   0
JoinPropagated  0
LeavePropagated  0

```

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| 3 | |
|-----------------------|------|
| clear gvrp statistics | GVRP |

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14.9 show gvrp status

GVRP VLAN 7 VLAN Â

show gvrp status

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ö Ô show gvrp status 3 GVRP

ö Ô Ruijie# show gvrp status

ö 3 Ô

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| - | - |

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15 LLDP

15.1 civic-location

LLDP Â / Лб no

{ country | state | county | city | division | neighborhood | street-group | leading-street-dir | trailing-street-suffix | street-suffix | number | street-number-suffix | landmark | additional-location-information | name | postal-code | building | unit | floor | room | type-of-place | postal-community-name | post-office-box | additional-code } *ca-word*

no {country | state | county | city | division | neighborhood | street-group | leading-street-dir | trailing-street-suffix | street-suffix | number | street-number-suffix | landmark | additional-location-information | name | postal-code | building | unit | floor | room | type-of-place | postal-community-name | post-office-box | additional-code } *ca-word*

ö

Ô

| country | 3 ~ 2 Â china' CH |
|---------------------------------|------------------------|
| state | CA ì 1 |
| county | CA ì 2 |
| city | CA ì 3 |
| division | CA ì 4 |
| neighborhood | CA ì 5 |
| street-group | CA ì 6 |
| leading-street-dir | CA ì 16 |
| trailing-street-suffix | CA ì 17 |
| street-suffix | CA ì 18 |
| number | CA ì 19 |
| street-number-suffix | CA ì 20 |
| landmark | CA ì 21 |
| additional-location-information | CA ì 22 |
| name | CA ì 23 |
| postal-code | CA ì 24 |
| building | CA ì 25 |
| unit | CA ì 26 |
| floor | CA ì 27 |
| room | CA ì 28 |
| type-of-place | CA ì 29 |
| postal-community-name | CA ì 30 |
| post-office-box | CA ì 31 |
| additional-code | CA ì 32 |
| <i>ca-word</i> | |

Ö -

Ö 3 Ö LLDP Civic Address

Ö Ö LL/TT05zmc Address 1 LLDP

Ö Ö lldpT05zic Address id 1 country CH city Fuzhou

```
Ruijie#config
Ruijie(config)# lldp location civic-location identifier 1
Ruijie(config-lldp-civic)# country CH
Ruijie(config-lldp-civic)# city Fuzhou
```

| | | |
|-------|--|--------------------|
| Ö 3 Ö | 3 | |
| | show lldp location civic-location { identifier id interface interface-name static } | LL/TT05zmc Address |

Ö 1 Ö -

15.2 clear lldp statistics

LL/T

clear lldp statistics [interface interface-name]

| | | |
|-----|----------------|---|
| Ö Ö | | |
| | interface-name | " |

Ö Ö -

Ö 3 Ö

Ö Ö interface LL/T

Ö Ö 1 LLDT

```
Ruijie# clear lldp statistics interface GigabitEthernet 0/1
Ruijie# show lldp statistics interface GigabitEthernet 0/1
Lldp statistics information of port [GigabitEthernet 0/1]
-----
The number of lldp frames transmitted      : 0
The number of frames discarded              : 0
The number of error frames                  : 0
The number of lldp frames received          : 0
The number of TLVs discarded                : 0
The number of TLVs unrecognized            : 0
The number of neighbor information aged out : 0
```

| | | | |
|---|-----|---|---|
| ð | 3 Ô | 3 | |
| | | - | - |

ð /l Ô -

15.3 clear lldp table

LLDP

¶ ø ÿ ¶d

lldp ta

device-type *device-type*
no device-type

| | | | |
|---|--------------------|-----|---------------|
| ö | Ô | | |
| | | Â ¼ | Ï 0-2 |
| | <i>device-type</i> | 0 | Ï DHCP Server |
| | | 1 | Ï Switch |
| | | 2 | Ï LLDP MED |

ö Ô 1

ö ¼ Ô LLDP Civic Address

ö Ô LLDP Civic Address ¼ LLDP Â

ö Ô lldp Civic Address` id Ï 1~ Ï' Ï '

```
Ruijie#config
Ruijie(config)# lldp location civic-location identifier 1
Ruijie(config-lldp-civic)# device-type 1
```

| | | | |
|---|-----|--|--------------------|
| ö | ¼ Ô | ¼ | |
| | | show lldp location civic-location { identifier <i>id</i> interface <i>interface-name</i> static } | LLDP Civic Address |

ö ¼ Ô -

15.5 lldp enable

LLDP ¼ Â ¼ **no** LLDP ¼ Â

lldp enable
no lldp enable

ö Ô █

```
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)# no lldp enable
```

| | |
|------------------|------|
| 3 | |
| show lldp status | LLDP |

1 -

15.6 lldp encapsulation snap

LLDP Ethernet II

lldp encapsulation snap

no lldp encapsulation snap

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

Ethernet II

3

| | |
|--|------|
| | LLDP |
|--|------|

LLDP SNAP

```
Ruijie# configure terminal
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)#lldp encapsulation snap
```

| | |
|------------------|------|
| 3 | |
| show lldp status | LLDP |

1 -

15.7 lldp error-detect

LLDP MTU LLDP VLAN

lldp error-detect

no lldp error-detect

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

ö Ô LLDP П

ö 3 Ô

ö Ô LLDP П ч LLDP TLV ÷ ì
П ÷ TLV Â

ö Ô LLDP П ‘
Ruijie# configure terminal
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)#lldp error-detect

ö 3 Ô 3
show interface status LLDP

ö 1 Ô -

15.8 lldp fast-count

÷ LLDP ÿ Rx 1 ì TxRx Tx ÷ ì
÷ LLDP ÷ ì 1 ÷
LLDP ì 3 Â Â
lldp fast-count value
no lldp fast-count

ö Ô
value LLDP ÷ ì 3 ÷ 1 ÷ 1-10

ö Ô Ю LLDP ì 3

ö 3 Ô

ö Ô -

ö Ô LLDP ì 5 ‘
Ruijie# configure terminal
Ruijie(config)#lldp fast-count 5

ö 3 Ô 3
show interface status LLDP

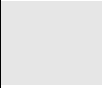
ö 1 Ô -

15.9 lldp hold-multiplier

TTL ~ no / Â

lldp hold-multiplier *value*

no lldp hold-multiplier



ö Ô Ю ñ VLAN IPv4 Â

ö 3 Ô

ö Ô Ю LLDP Â ñ VLAN IPv4 ~
 VLAN IPv4 ~ Ю VLAN IPv4 ñ Â
 IPv4 ~ VLAN IPv6 Â
 Ÿ IPv6 ~ 127.0.0.1 ñ Â

ö Ô LLDP ñ 192.168.1.1

```
Ruijie# configure terminal
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)#lldp management-address-tlv 192.168.1.1
```

ö 3 Ô

| | |
|-----------------------------|------|
| 3 | |
| show lldp local-information | LLDP |

ö 1 Ô -

15.13 lldp mode

LLDP Â 1 2 no LLDP Â

lldp mode {rx | tx | txrx }

no lldp mode

ö Ô

| | |
|------|----------|
| | |
| rx | a LLDPDU |
| tx | a LLDPDU |
| txrx | LLDPDU |

ö Ô txrx

ö 3 Ô

ö Ô LLDP ~ a 2 LLDP Â
 LLDP 1 LLDP LLDP tx ã rx txrx Â

ö Ô LLDP ñ a LLDPDU

```
Ruijie# configure terminal
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)#lldp mode tx
```

ö 3 Ô

| | |
|---|--|
| 3 | |
|---|--|

show lldp status

LLDP

ö / Ô -

15.14 lldp network-policy profile

LLDP network-policy ~ LLDP network-policy Â / Лб no LLDP
network-policy Â
lldp network-policy profile *profile-num*
no lldp network-policy profile *profile-num*

| | | | |
|---|---|--------------------|----------------------------------|
| ö | Ô | | |
| | | <i>profile-num</i> | LLDP network-policy ~ ñ 1-1024 Â |

ö Ô -

ö 3 Ô

ö Ô 3 LLDP network-policy ~ 3 ID Â
LLDP network-policy ± ~ / { **voice** | **voice-signaling** } vlan 3 é
network-policy Â

ö Ô LLDP network-policy ~ ñ 1'
Ruijie#config
Ruijie(config)#lldp network-policy profile 1
Ruijie(config-lldp-network-policy)#

| | | | |
|---|-----|--|--|
| ö | 3 Ô | | |
|---|-----|--|--|

3 0

0 0 Trap 1 1 LLDP 6
~ 1 1 1 1

0 0 LLDP Trap
Ruijie# configure terminal
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)#lldp notification remote-change enable

0 3 0

| | |
|------------------|------|
| 3 | |
| show lldp status | LLDP |

0 1 0 -

15.16 lldp timer notification-interval

LLDP Trap 1 1 no 1 1 1
lldp timer notification-interval seconds
no lldp timer notification-interval

0 0

| | |
|---------|----------------------|
| | |
| seconds | LLDP Trap 5 1 5-3600 |

0 0 5

0 3 0

0 0 LLDP Trap 1 1 LLDP Trap 1
LLDP 1 1 Trap 1 1

0 0 LLDP Trap 10
Ruijie# configure terminal
Ruijie(config)#lldp timer notification-interval 10

0 3 0

| | |
|------------------|------|
| 3 | |
| show lldp status | LLDP |

0 1 0 -

15.17 lldp timer reinit-delay

1 1 no 1 1 1 1

no lldp timer reinit-delay

 $\hat{O}$

И 1-10

 $\hat{O}$

2

3

 $\hat{O}$ $\hat{O}$

4

 $\cup \quad \wedge \quad \vee$ $\hat{A}$ $\hat{O}$

ИЗ

```
Ruijie# configure terminal
```

```
Ruijie(config)#lldp timer reinit-delay 3
```

3

 $\hat{O}$ LLDP

ö / Ô -

15.19 lldp timer tx-interval

LLDP Â no / Л и Â

lldp timer tx-interval seconds

no lldp timer tx-interval

| | | | |
|---|---|---------|--------------------|
| ö | Ô | | |
| | | seconds | LLDP ~ / и 5-32768 |

ö Ô 30

ö з Ô

ö Ô -

ö Ô LLDP и 10 '

```
Ruijie# configure terminal
Ruijie(config)#lldp timer tx-interval 10
```

| | | | |
|---|-----|------------------|------|
| ö | з Ô | з | |
| | | show lldp status | LLDP |

ö / Ô -

15.20 lldp tlv-enable

TLV Â no / Л и TLV Â

| | |
|---------------------------|-------------------------------|
| system-description | System Description TLV |
| system-name | System Name TLV |
| dot1-tlv | 802.1 1X TLV |
| port-vlan-id | Port VLAN ID TLV |
| protocol-vlan-id | Port And Protocol VLAN ID TLV |
| <i>vlan-id</i> | VLAN ID |
| vlan-name | VLAN Name TLV |
| <i>vlan-id</i> | VLAN |

```
Ruijie#config
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)#lldp tlv-enable med-tlv location civic-location
identifier 1
```

(id ñ 1) 0/1 Ð`

```
Ruijie#config
Ruijie(config)#interface gigabitethernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)#lldp location elin identifier 1
```

ð 3 Ô

| 3 | |
|--------------------------------|-----|
| show lldp tlv-config interface | TLV |

ð 1 Ô -

15.21 {voice | voice-signaling} vlan

LLDP network-policy Æ 1 2 no Æ

```
{ voice | voice-signaling } vlan { { vlan-id [ cos cvalue | dscp dvalue ] } | { dot1p [ cos cvalue | dscp dvalue ] } | none | untagged }
no { voice | voice-signaling } vlan
```

ð Ô

| voice | voice |
|------------------------|---|
| voice-signaling | voice-signaling |
| <i>vlan-id</i> | ^ 1 ~ vlan id ñ 1-4094 |
| cos | ^ 1 ~ Class of service |
| <i>cvalue</i> | ^ 1 ~ cos ~ ñ 0-7 5 |
| dscp | ^ 1 ~ differentiated services code point |
| <i>dvalue</i> | ^ 1 ~ dscp ~ ñ 0-63 46 |
| dot1p | ^ 1 ~ 802.1p priority tagging TAG user_priority vlan id ñ 0 |
| none | ^ 1 ~ a IO network-policy ~ voip Æ |
| untagged | ^ 1 ~ voip voice vlan untag ~ vlan id cos |

ð Ô -

ð 3 Ô LLDP network-policy

ð Ô LLDP network-policy 1 LLDP network-policy Æ

voice ~ voice-signaling Æ

ð Ô lldp network-policy profile-num ñ 1 ñ voice ~ Æ untagged'

voice-signaling ~ vlan id 3 cos 4 dscp 6 Æ

$$\ddot{O} \quad \quad \quad \mathfrak{z} \quad \hat{O}$$

Ồ 1 Ô -

```
show lldp local-information [ global | interface interface-name ] - ...
```


| | | |
|---------------------------------|--|---------------------|
| Chassis ID type | Chassis ID | Chassis ID |
| Chassis ID | MAC | |
| System name | | |
| System description | / | |
| System capabilities supported | | |
| System capabilities enabled | | |
| LLDP-MED capabilities | LLDP-MED | |
| Device class | Med
Network connectivity device
Class I
Class II
Class III
IP | Class I
Class II |
| HardwareRev | | |
| FirmwareRe | | |
| SoftwareRev | | |
| SerialNum | | |
| Manufacturer name | | |
| Asset tracking identifier | | |
| Port ID type | ID | |
| Port ID | ID | |
| Port description | | |
| Management address subtype | | |
| Management address | | |
| Interface numbering subtype | | |
| Interface number | ID | |
| Object identifier | | |
| Port VLAN ID | VLAN ID | |
| Port and protocol VLAN ID | VLAN ID | |
| PPVID Supported | VLAN | |
| PPVID Enabled | VLAN | |
| VLAN name of VLAN 1 | VLAN 1 | |
| Protocol Identity | | |
| Auto-negotiation supported | | |
| Auto-negotiation enabled | | |
| PMD auto-negotiation advertised | | |
| Operational MAU type | | |
| Link aggregation supported | | |
| Link aggregation enabled | | |
| Aggregation port ID | ID | |
| Max mum frame Size | | |

| | |
|------------------------------|-----------|
| Power-via-MDI device type | PSE
PD |
| Power-via-MDI power source | |
| Power-via-MDI power priority | "I |
| Power-via-MDI power value | " |
| Model name | " |

| | |
|---|---|
| 3 | |
| - | - |

0 / 0 -

15.23 show lldp location

LLDP

Â

show lldp location { civic-location | elin } { identifier *id* | interface *interface-name* | static }

| | | | |
|---|-----------------------|----|--|
| 0 | 0 | | |
| | civic-location | | |
| | elin | | |
| | identifier | | |
| | <i>id</i> | ID | |
| | interface | IO | |
| | <i>interface-name</i> | " | |
| | static | | |

0 0 -

0 3 0

0 0
 " ~
 6
 a ~

0 0
 Ruijie# show lldp location civic-location static
 LLDP Civic location information

 Identifier : testt
 County : china

```
City Division      : 22
Leading street direction: 44
Street number      : 68
Landmark           : 233
Name               : liuy
Building           : 19bui
Floor              : 1
Room               : 33
City               : fuzhou
Country            : 86
Additional location : aaa
Ports              : Gi0/1
-----
Identifier         : tee
-----
```

on elin static

on

t

iiiiiiiiiii

: Gi1/0/3

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

S

Â

erface *interface-name*] [**detail**]

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

detail

É

Â

interface

ð

Ô

```
Ruijie# show lldp neighbors detail
Lldp neighbor-information of port [GigabitEthernet 0/1]
  Neighbor index          : 1
  Device type             : LLDP Device
  Update time             : 1hour 53minutes 30seconds
  Aging time              : 5seconds

  Chassis ID type         : MAC address
  Chassis id              : 00d0.f822.33cd
  System name             : System name
  System description      : System description
  System capabilities supported : Repeater, Bridge, Router
  System capabilities enabled  : Repeater, Bridge, Router

  Management address subtype : 802 mac address
  Management address        : 00d0.f822.33cd
  Interface numbering subtype :
  Interface number          :
  Object identifier         :

  LLDP-MED capabilities    :
  Device class             :
  HardwareRev              :
  FirmwareRev              :
  SoftwareRev              :
  Serial.umber             :
```

```

Protocol Identity          :
802.3 organizationally information
Auto-negotiation supported : YES
Auto-negotiation enabled   : YES
PMD auto-negotiation advertised : 1000BASE-T full duplex mode, 100BASE-TX full duplex mode,
100BASE-TX half duplex mode, 10BASE-T full duplex mode, 10BASE-T half duplex mode
Operational MAU type      : speed(1000)/duplex(Full)
Link aggregation supported : YES
Link aggregation enabled   : NO
Aggregation port ID       : 0
Maximum frame Size        : 1500
LLDP-MED organizationally information
Power-via-MDI device type :
Power-via-MDI power source :
Power-via-MDI power priority :
Power-via-MDI power value :

```

show lldp neighbors 3

| Neighbor index | |
|-------------------------------|---|
| Device type | |
| Update time | |
| Aging time | |
| Chassis ID type | Chassis ID |
| Chassis ID | MAC |
| System name | |
| System description | / |
| System capabilities supported | |
| System capabilities enabled | |
| Management address subtype | |
| Management address | |
| Interface numbering subtype | |
| Interface number | ID |
| Object identifier | |
| Device class | Med 2
Network connectivity device
Class I
Class II Class I
Class III Class I Class II
IP |
| HardwareRev | |
| FirmwareRev | |
| SoftwareRev | |
| SerialNum | |

| | |
|---------------------------------|-----------|
| Manufacturer name | |
| Asset tracking identifier | |
| Port ID type | ID |
| Port ID | ID |
| Port description | |
| Port VLAN ID | VLAN ID |
| Port and protocol VLAN ID | VLAN ID |
| PPVID Supported | VLAN |
| PPVID Enabled | VLAN |
| VLAN name of VLAN 1 | VLAN 1 |
| Protocol Identity | |
| Auto-negotiation supported | |
| Auto-negotiation enabled | |
| PMD auto-negotiation advertised | |
| Operational MAU type | ↓ |
| Link aggregation supported | |
| Link aggregation enabled | |
| Aggregation port ID | ID |
| Maximum frame Size | |
| Power-via-MDI device type | PSE
PD |
| Power-via-MDI power source | |
| Power-via-MDI power priority | "I |
| Power-via-MDI power value | π |


```
Global status of LLDP          : Enable
Neighbor information last changed time : 1hour 52minute 22second
Transmit interval              : 30s
Hold multiplier                 : 4
Reinit delay                   : 2s
Transmit delay                 : 2s
Notification interval          : 5s
Fast start counts              : 3
```

```
-----
Port [GigabitEthernet 0/1]
```

```
-----
Port status of LLDP          : Enable
Port state                   : UP
Port encapsulation           : Ethernet II
Operational mode              : Ethernet 0/1]
```

15.28 show lldp tlv-config

显示 TLV 配置

show lldp tlv-config [**interface** *interface-name*]

| | | | |
|----|----|-----------------------|-----|
| 显示 | 配置 | | |
| | | <i>interface-name</i> | " " |

显示 -

显示 3 配置

显示 配置 **interface** 显示 LLDP TLV 配置

显示 配置 1 TLV 配置

```
Ruijie# show lldp tlv-config interface GigabitEthernet 0/1
LLDP tlv-config of port [GigabitEthernet 0/1]
```



16 QinQ

16.1 dot1q outer-vid vid register inner-vid v-list

```

tunnel   3
vid      4
dot1q outer-vid vid register inner-vid v_list
no dot1q outer-vid vid register inner-vid v_list

```

| | | | |
|---|---|--------|---------|
| 0 | 0 | | |
| | | v_list | vlan id |
| | | vid | vlan id |
| | | no | 4 |

0 0 -

0 3 0

0 0 -

0 0 Ю tag vid 4-22 ~ 4 tag vid 3

```

ruijie#configure terminal
ruijie(config)#interface gigabitEthernet 0/1
ruijie(config-if)#switchport mode dot1q-tunnel
ruijie(config-if)#dot1q outer-vid 3 register inner-vid 4-22
ruijie(config-if)#end

```

| | | | |
|---|-----|---|---|
| 0 | 3 0 | | |
| | | show registration-table [interface intf-id] | - |

0 1 0 -

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

```

access trunk hybrid uplink 3
vid
dot1q relay-vid vid translate local-vid v-list
no dot1q relay-vid

```

0 0 0 4

no

1

ö Ô

ö 3 Ô

ö Ô -

ö Ô Ю tag vid ы 10-20 ~ vid ы 100

ruijie(config)# interface gigabitEthernet 0/1

ruijie(config-if)# switchport mode access

ruijie(config-if)# dot1q relay-vid 100 translate local-vid 10-20

ruijie(config-if)# end

ö 3 Ô

3

16.4 frame-tag tpid tpid

tpid
frame-tag tpid <tpid>
no frame-tag tpid

| | | | |
|---|---|----|--------|
| ð | Ô | | |
| | | no | ¼ tpid |

ð Ô -

ð ¾ Ô

ð Ô -

ð Ô Ю tpid Ñ 0x9100

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

| | | | |
|---|-----|---------------------|---|
| ð | ¾ Ô | ¾ | |
| | | show frame-tag tpid | - |

ð ¼ Ô -

16.5 inner-priority-trust enable

/¼ tag "I tag
inner-priority-trust enable
no inner-priority-trust enable

| | | | |
|---|---|----|--------------|
| ð | Ô | | |
| | | no | ¼ tag "I tag |

ð Ô -

ð ¾ Ô

ð Ô -

```

ruijie# configure terminal
ruijie(config)# interface gigabitEthernet 0/2
ruijie(config-if)# inner-priority-trust enable
ruijie(config-if)#end

```

| | |
|---------------------------|---|
| 3 | |
| show inner-priority-trust | - |

1 -

16.6 l2protocol-tunnel

```

dot1q-tunnel y
l2protocol-tunnel {stp|gvrp}
no l2protocol-tunnel {stp|gvrp}

```

| | |
|------|------|
| | |
| stp | stp |
| gvrp | gvrp |
| no | 1 |

δ

Ô Ю

Э

Υ

Π

```
ruijie# configure terminal
```

```
ruijie(config-if)#l2pro
```

16.10 show dot1q-tunnel

dot1q-tunnel

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

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

ð Ô -

ð 3 Ô

ð Ô -

ð Ô

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

| | | | |
|---|-----|---|---|
| ð | 3 Ô | 3 | |
| | | - | - |

ð 1 Ô -

16.11 show frame-tag tpid

tpid

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

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

ð Ô a tpid

ð 3 Ô

ð Ô -

ð Ô

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

| | | | |
|---|-----|---|---|
| ð | 3 Ô | 3 | |
| | | - | - |

ð 1 Ô -

16.12 show inner-priority-trust

"I

show inner-priority-trust

| | | | |
|---|---|---|---|
| ð | Ô | | |
| | | - | - |

ð Ô a

ð 3 Ô

ð Ô -

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

| | | | |
|---|-----|---|---|
| ð | 3 Ô | 3 | |
| | | - | - |

ð 1 Ô -

16.13 show interface dot1q-tunnel

dot1q-tunnel

show interface [intf-id] dot1q-tunnel

| | | | |
|---|---|---------|--|
| ð | Ô | | |
| | | intf-id | |

ð Ô -

ð 3 Ô

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

ö Ô a

ö 3 Ô

ö Ô -

ö Ô

```
ruijie# show interface mac-address-mapping 1
Ports          Destination-VID  Source-VID-list
-----
Gi0/1          5                1-3
```

| | | |
|-------|---|---|
| ö 3 Ô | 3 | |
| | - | - |

ö 1 Ô -

16.16 show interface vlan-mapping

VLAN

show interface vlan-mapping x

| | | |
|-----|---|---|
| ö Ô | | |
| | - | - |

ö Ô -

ö 3 Ô

ö Ô -

ö Ô

```
ruijie# show interface vlan-mapping
Ports      Type    Status    Destination-VID  Source-VID-list
-----
Gi0/1      in      active    5                3
Gi0/1      out     active    3                5
```

| | | |
|-------|---|---|
| ö 3 Ô | 3 | |
| | - | - |

ö 1 Ô -

16.17 show l2protocol-tunnel

Y
show l2protocol-tunnel{gvrp|stp}

| | | | |
|---|---|------|------|
| ö | Ô | | |
| | | gvrp | gvrp |
| | | stp | stp |

ö Ô

ö 3 Ô

ö Ô -

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

| | | | |
|---|-----|---|---|
| ö | 3 Ô | 3 | |
| | | - | - |

ö 1 Ô -

16.18 show registration-table

dot1q-tunnel vid ¶
show registration-table [interface intf-id]

| | | | |
|---|---|---------|--|
| ö | Ô | | |
| | | intf-id | |

ö Ô

ö 3 Ô

ö Ô -

ö Ô ruijie# show registration-table
Ports Type Outer-VID Inner-VID-list

| | | | |
|-------|-----------|---|---------------|
| Gi0/7 | Add-outer | 5 | 7-10,15,20-30 |
|-------|-----------|---|---------------|

ö 3 Ô

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

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ruijie# show translation-table

| Ports | Type | Relay-VID | Old-local | Local\inner-VID-list |
|-------|------------|-----------|-----------|----------------------|
| ----- | | | | |
| Gi0/7 | Inner-CVID | 8 | N/A | 10-20 |
| Gi0/7 | Local-SVID | 1001 | N/A | 30-60 |
| Gi0/7 | In+Out | 8 | 20 | 50 |

ö

3

Ô

21

```
ruijie(config)#end
```

| | | |
|-----------------------------|---|--|
| 3 | 3 | |
| show interface dot1q-tunnel | - | |

3 1 3 -

16.22 switchport dot1q-tunnel native vlan

dot1q-tunnel vlan id

switchport dot1q-tunnel native vlan *vid*

no switchport dot1q-tunnel native vlan

| | | |
|------------|----------|--|
| 3 | 3 | |
| <i>vid</i> | vlan id | |
| no | vlan ñ 1 | |

3 3 vlan ñ 1

3 3 3

3 3 -

3 3 Ю dot1q-tunnel vid ñ 8

```
ruijie(config)# interface gigabitEthernet 0/1
ruijie(config-if)# switchport dot1q-tunnel native vlan 8
ruijie(config)#end
```

| | | |
|---|---|--|
| 3 | 3 | |
|---|---|--|

• 3 Ô

• Ô -

• Ô Ю ò dot1q-tunnel
ruijie(config)# interface gigabitEthernet 0/1
ruijie(config-if)# switchport mode dot1q-tunnel
ruijie(config)# end

• 3 Ô

16.25 traffic-redirect access-group acl nested-vlan

```

dot1q-tunnel <vlan-id> vid <vlan-id>
traffic-redirect access-group acl nested-vlan vid in
no traffic-redirect access-group acl nested -vlan

```

| | | | |
|---|---|-----|---------|
| ö | Ô | | |
| | | acl | acl |
| | | vid | ¶ vid |
| | | no | ¶ vid ¶ |

ö Ô

ö ¶ Ô

ö Ô -

ö Ô Ю ñ 1.1.1.3 ¶ vid ñ 9

```

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

```

| | | | |
|---|-----|-----------------------|---|
| ö | ¶ Ô | ¶ | |
| | | show traffic-redirect | - |

ö / Ô -

16.26 vlan-mapping-in vlan src-vlan-list remark dest-vlan

```

access trunk hybrid uplink <vlan-id> <vlan-id> VLAN <vlan-id>
VLAN ID ñ VLAN ID ± "À Â
vlan-mapping-in vlan src-vlan-list remark dest-vlan
no vlan-mapping-in vlan src-vlan-list remark dest-vlan

```

| | | | |
|---|---|---------------|-------|
| ö | Ô | | |
| | | src-vlan-list | vid |
| | | dest-vlan | ± vid |
| | | no | ¶ |

ö Ô

ö 3 Ô

ö Ô -

ö Ô Ю Tag VID ì 3 7 ~ è 8 7A

```
Ruijie# configure terminal
Ruijie# vlan range 3-8
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# vlan-mapping-in vlan 3-7 remark 8
Ruijie(config-if)# end
```

ö 3 Ô

| | |
|--|---|
| 3 | |
| show interface[<i>intf-id</i>] vlan-mapping | - |

ö 1 Ô -

16.27 vlan-mapping-out vlan src-vlan remark dest-vlan

access trunk hybrid uplink 3 VLAN

vlan-mapping-out vlan *src-vlan* remark *dest-vlan*

no vlan-mapping-out vlan *src-vlan* remark *dest-vlan*

ö Ô

| | |
|------------------|-------|
| | |
| <i>src-vlan</i> | vid |
| <i>dest-vlan</i> | ± vid |
| no | 1 |

ö Ô

ö 3 Ô

ö Ô -

ö Ô Ю Tag VID ì 3 ~ è 4 7A

```
Ruijie# configure terminal
Ruijie# vlan range 3-4
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# vlan-mapping-out vlan 3 remark 4
Ruijie(config-if)# end
```

õ 3 Ô

| | |
|--|---|
| 3 | |
| show interface[<i>intf-id</i>] vlan-mapping | - |

õ /1 Ô -

17 ERPS

17.1 associate sub-ring

`associate sub-ring raps-vlan vlan-list`
`no associate sub-ring raps-vlan vlan-list`

| | | | |
|---|---|-----------|------------|
| ð | Ô | | |
| | | vlan-list | R-APS VLAN |

ð Ô Ю Л

ð 3 Ô ERPS

ð Ô Л Э 3 Л è ERPS 1 Л Л Å

ÿ ÿ 1 Л è Л ~ ≠ 1 Л VLAN

3 VLAN 6 VLAN ~ Л 1 Л è Л ~

a Å

ð Ô Ю Л è Л

```

# Å
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
# Л Å
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# exit
Ruijie(config)# interface fastEthernet 0/2
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# exit
# erps Å
Ruijie(config)# erps raps-vlan 4093
# Л ~ ERPS Å
Ruijie(config-erps4093)# ring-port west fastEthernet 0/1 east fastEthernet 0/2
# Л Å
Ruijie(config)# erps raps-vlan 100
Ruijie(config)# interface fastEthernet 0/3
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# exit
Ruijie(config)# erps raps-vlan 100

```

```

Ruijie(config-erps100)# ring-port west fastEthernet 0/3 east virtual-channel
Ruijie(config-if)# exit
#
Ruijie(config)# erps raps-vlan 4093
Ruijie(config-erps4093)# associate sub-ring raps-vlan 100

```

| | |
|---|---|
| 3 | |
| - | - |

1 -

17.2 debug erps

```

ERPS
debug erps { packet | event | error }
undebug erps { packet | event | error }

```

| | |
|--------|---|
| | |
| packet | |
| event | Y |
| error | |

-

EXEC

-

-

| | |
|---|---|
| 3 | |
| - | - |

1 -

17.3 erps enable

```

erps enable
no erps enable

```

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

E

R

```
Ruijie(config)# erps monitor link-state by oam vlan 100
```

$$\ddot{\theta} \quad \Delta \quad \hat{\theta} \quad -$$

Ồ - L - Ô -

no protected-instance

| | | | |
|---|---|------------------|---------------------------|
| ö | Ô | | |
| | | instance-id-list | ЛЪ ^ VLAN й ЛЪ
VLAN~ Â |

ö Ô Ю VLAN Â

ö 3 Ô ERPS Â

ö Ô VLAN ЛЪ R-APS VLAN + ЛЪ VLAN Â

ö Ô й ~ Э ERP1 ERP2 Â ERP1 R-APS VLAN й 100
VLAN й 1-99 101-2000 ERP2 R-APS VLAN й 4093 VLAN й 2001-4092 4094 Â

Ю

Â

Ruijie# configure terminal

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

ERP1 VLAN Â

Ruijie(config)# spanning-tree mst configuration

Ruijie(config-mst)# instance 1 vlan 100, 1-99, 101-2000

Ruijie(config-mst)# exit

Ruijie(config)# erps raps-vlan 100

Ruijie(config-erps100)# protected-instance 1

ERP2 VLAN Â

Ruijie(config)# spanning-tree mst configuration

Ruijie(config-mst)# instance 2 vlan 4093, 2001-4092, 4094

Ruijie(config-mst)# exit

Ruijie(config)# erps raps-vlan 4093

Ruijie(config-erps4093)# protected-instance 2

interface-name2

East port "

ö Ô ERP Â

ö 3 Ô ERPS

ö Ô

- 1) 7 ERP ı a 7Â trunk Â
- 2) **virtual-channel** 9 ı Â
- 3) ERPS a 6 STP ' ERPS RERP à REUP a Â

ö Ô Ю ERPS '

Â

```
Ruijie# configure terminal
```

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

```
# 7 Â
```

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

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

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

```
Ruijie(config)# interface fastEthernet 0/2
```

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

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

```
#
```

ö Ô RPL RPL owner

ö 3 Ô ERPS

ö Ô RPL RPL owner Â

ö Ô IO RPL RPL owner

Â

Ruijie# configure terminal

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

¼ Â

Ruijie(config)# interface fastEthernet 0/1

Ruijie(config-if)# switchport mode trunk

Ruijie(config-if)# exit

Ruijie(config)# interface fastEthernet 0/2

Ruijie(config-if)# switchport mode trunk

Ruijie(config-if)# exit

erps Â

Ruijie(config)# erps raps-vlan 4093

¼ ¼ ~ ERPS Â

Ruijie(config-erps4093)# ring-port west fastEthernet 0/1 east fastEthernet 0/2

RPL RPL owner Â

Ruijie(config-erps4093)# rpl-port west rpl-owner

ö 3 Ô

| 3 | | | | | |
|---|--|------|----|---|-------|
| ring-port west {interface-name1 virtual-channel} east {interface-name2 virtual-channel} | | ERPS | IO | ~ | ERP Â |
| state enable | | ERPS | IO | ~ | ERPS |
| | | Â | | | |

ö 1 Ô -

17.9 show erps

ERPS Â

show erps [{global | raps_vlan vlan-id [sub-ring] }]

ö Ô

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


```

Current Ring State      : Idle
Ruijie# show erps raps_vlan 4093 sub-ring
R-APS VLAN: 4093
Sub-Ring R-APS VLANs   TC Propagation State
-----
100                     Enable
200                     Enable

```

| | | |
|---|---|---|
| 3 | 3 | 3 |
| - | - | - |

3 1 3 -

17.10 state enable

```

3 R-APS 3
state enable
no state enable

```

| | | |
|---|---|---|
| 3 | 3 | 3 |
| - | - | - |

3 3 R-APS

3 3 3 ERPS

3 3 3 ERPS ERPS 3 ERPS 3

3 3 3 ERPS 3
3

```

Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
# 3 3

```

```

Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# exit
Ruijie(config)# interface fastEthernet 0/2
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# exit

```

```

# erps 3

```



```

Ruijie(config)# interface fastEthernet 0/3
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# exit
Ruijie(config)# erps raps-vlan 100
Ruijie(config-erps100)# ring-port west fastEthernet 0/3 east virtual-channel
#
Ruijie(config-erps100)# sub-ring associate raps-vlan 4093
#
Ruijie(config-erps100)# sub-ring tc-propagation enable

```

| | |
|---|---|
| 3 | |
| - | - |

1 -

17.12 timer

```

timer { holdoff-time interval1 | guard-time interval2 | wtr-time interval3 }
no timer { holdoff-time | guard-time | wtr-time }

```

0

```
#  
Ruijie# configure terminal  
Enter configuration commands, one per line. End with CNTL/Z.  
# ERPS  
Ruijie(config)# erps raps-vlan 4093  
#  
Ruijie(config-erps4093)# timer holdoff-time 10  
Ruijie(config-erps4093)# timer guard-time 10  
Ruijie(config-erps4093)# timer wtr-time 10
```

ö 3 Ô

1. IP / Է
2. IPv6
3. DHCP
4. UDP-Helper
5. DHCPv6
6. DNS
7. FTP Srvr
8. FTP Client
9. Է
10. TCP

1 IP /

1.1 arp

Эта команда используется для добавления или удаления записей ARP-таблицы. Синтаксис:

arp [vrf name] ip-address MAC-address type
no arp [vrf name] ip-address

| Параметр | Описание |
|-------------|--|
| vrf name | Имя VRF, в котором будет добавлена запись. По умолчанию — глобальная таблица. |
| ip-address | IP-адрес, который будет добавлен в таблицу. Должен быть валидным IP-адресом. |
| MAC-address | MAC-адрес, который будет добавлен в таблицу. Должен быть валидным MAC-адресом (48 бит). |
| type | Тип записи. Возможные значения: ARP (стандартная запись), ARPA (запись для протокола ARP). |

Примеры использования:

Добавление записи:

В глобальной таблице ARP добавляется запись с IP-адресом 1.1.1.1 и MAC-адресом 4e54.3800.0002:

```

# arp 1.1.1.1 4e54.3800.0002 arpa

```

Удаление записи:

```

# no arp 1.1.1.1 4e54.3800.0002 arpa

```

| Команда | Описание |
|-----------------|---------------------------------|
| clear arp-cache | Очищает ARP-таблицу от записей. |

Дополнительно:

1.2 arp anti-ip-attack

Эта команда используется для защиты от атак на ARP-таблицу. Синтаксис:

```

# arp anti-ip-attack {enable | disable}

```

Включение защиты от атак на ARP-таблицу:

```

# arp anti-ip-attack enable

```

Выключение защиты от атак на ARP-таблицу:

```

# arp anti-ip-attack disable

```

Эта команда позволяет защитить ARP-таблицу от атак, связанных с подделкой IP-адресов. При включении защиты система будет автоматически удалять записи в ARP-таблице, которые были добавлены в результате атаки.

IP ì ~ CPU ١ ٧ é ~ ≠ ١ ٧
٧ Â 3 **arp anti-ip-attack** num ١ ٧ ٧ Â 3 **no**
~ ì 3 Â
arp anti-ip-attack num
no arp anti-ip-attack

arp retry times *number*

no arp retry times

| | | | |
|---|---|---------------|-----------------|
| 0 | 0 | | |
| | | <i>number</i> | ARP <1-100> 1 a |

0 0 ARP ARP 5 1

0 3 0

0 0 ARP 1 ARP

0 0 1 ARP a

arp retry times 1

2 ARP 1

arp retry times 2

| | | | |
|---|-----|----------------------------|-----|
| 0 | 3 0 | | |
| | | arp retry interval seconds | arp |

0 1 0 -

1.6 arp timeout

ARP ARP 1 ARP 3 no 1

arp timeout *seconds*

no arp timeout

| | | | |
|---|---|---------|-----------|
| 0 | 0 | | |
| | | seconds | 0-2147483 |

0 0 3600

0 3 0

0 0 ARP 1 IP MAC ARP ARP

0 0 1 FastEthernet 0/1 ARP 120

interface fastEthernet 0/1

```
arp timeout 120
```

| | | | |
|---|-----|------------------------|-------|
| ö | 3 Ô | 3 | |
| | | clear arp-cache | ARP ă |
| | | show interface | |

ö 1 Ô -

1.7 arp trusted

3 1 1 ARP Â 3 no Â

arp trusted number

no arp trusted

| | | | |
|---|---|---------------|-----------|
| ö | Ô | | |
| | | <i>number</i> | 1 1 1 ARP |

ö Ô 1024

ö 3 Ô

ö Ô 3 1 ARP 1 Â 1 ARP é 1

3 1 1 ARP a Â 3 a Â

ö Ô 1000 1 1000 1 ARP

```
arp trusted 1000
```

| | | | |
|---|-----|---------------------------|---------|
| ö | 3 Ô | 3 | |
| | | service trustedarp | 1 ARP 1 |

ö

Ô

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

0 0 1' 100 ~ ARP 11 11 11

clear arp-cache

2 100 ~ 11 ARP 1.1.1.1

| | | | |
|---|---------------------|--|---|
| ð | Ô | | |
| | <i>ip-address</i> | 32 Æ IP ~ 8 Æ ~ Лб 8 ~ | Â |
| | <i>network-mask</i> | 32 Æ ~ "1" Æ "0" ÿ Æ Â 8 Æ ~
Лб 8 ~ Â | |
| | secondary | IP Â | |

ð Ô IP

ð ð Ô

ð Ô 1 IP ~ 1 Лб IP ~ IP ~
 IP Â
 ≠ 32 Æ ~ IP ÿ Â ~ ÿ 1 L
 IP Æ ÿ ~ ÿ 0 L IP Æ ÿ
 Â A Â ÿ 1 ^ k ~ Á J I3

no ip broadcast-address

Ồ - Ồ -

1.15 ip directed-broadcast

```
IP          ^
            { ip directed-broadcast^      { no      ^
```

no ip directed-broadcast

й Â а Â

б IP ~ Â

 ± ~ й ^ IP й

Е ~ ~ ± Л Э ѳ Â

Л Э ~ || П ~ Л Л

Â з Л ± ~ а è

RGOS
 no ip directed-broadcast

FastEthernet 0/1

```

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

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

-

1.16 ip mask-reply

RGOS
 ip mask-reply
 no ip mask-reply

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

ICMP

M
 1

ip mtu bytes
no ip mtu

| | | | |
|---|---|-------|--------------|
| ö | Ô | | |
| | | bytes | IP 68~1500 Å |

ö Ô 6 3 mtu 5 Å

ö 3 Ô

ö Ô IP IP MTU 5 RGOS 5 Å 5 3
 è IP MTU Å
 3 mtu 5 IP MTU 6 MTU
 Å 1 5 IP MTU 5 MTU a 1 Å

ö Ô 5Ю 5 FastEthernet 0/1 IP MTU 5 512

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

| | | | |
|---|-----|-----|---|
| ö | 3 Ô | 3 | Å |
| | | mtu | Å |

ö 1 Ô -

1.18 ip proxy-arp

3 3 ARP 5 1Ю **ip proxy-arp** 3 Å 3 600(ARP) / C2_04 ET1A 3.26 <153614E3F

65TJMC /P <<5MCID 32 >>04>Tp61DC ()T2

69TJMC /P <<5MCID 32 >>BDC ()T55 /C218

```
interface fastEthernet 0/1
ip proxy-arp
```

ö 3 Ô

| | |
|---|---|
| 3 | |
| - | - |

ö 1 Ô -

1.19 ip redirects

RGOS 7 1 16 ICMP 7 3 ip redirects 3 no 1 16
 ICMP 11 3
ip redirects
no ip redirects

ö Ô

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

ö Ô 3

ö 3 Ô

ö Ô

a 7 1 7 7 3
 7 ICMP 7 3
 11 3 1 3 3 3
 RGOS 7 ICMP 3

ö Ô 1610 7 FastEthernet 0/1 ICMP

```
interface fastEthernet 0/1
no ip redirects
```

ö 3 Ô

| | |
|---|---|
| 3 | |
| - | - |

ö 1 Ô -

1.20 ip source-route

RGOS 7 IP 7 3 ip source-route 3 no
 11 3
ip source-route
no ip source-route

| | | | |
|---|---|---|---|
| õ | Ô | | |
| | | - | - |

õ Ô

õ õ Ô

õ Ô RGOS IP Â IP

| | | | |
|----------|--------|----|--------|
| ~ 11 | Â X.25 | a | Â |
| a ping 3 | ~ ì | IP | Â SNMP |
| 1 16 | Â | | |
| a | Â | | |

1.23 service trustedarp

И ARP-таблица и ARP-сервиса **service trustedarp** можно настроить на интерфейсе. По умолчанию ARP-сервиса не настроен.

| | | | |
|---|---|---|---|
| И | И | | |
| | | - | - |

И ARP-сервиса

И

И ARP-сервиса ARP-таблицы и GSN. По умолчанию GSN не настроен.

И ARP-сервиса **service trustedarp** можно настроить на интерфейсе. По умолчанию ARP-сервиса не настроен.

| | | | |
|---|---|---|---|
| И | И | И | |
| | | - | - |

И ARP-сервиса

1.24 show arp

И ARP-таблицы и ARP-сервиса **show arp** можно настроить на интерфейсе. По умолчанию ARP-сервиса не настроен.

$$\ddot{O} \quad \mathfrak{Z} \quad \hat{O}$$
$$\ddot{O} \quad \hat{O} \quad -$$

ò Ô 1' ѼЮ ì 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 ႁ HX Ю'

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

```
2  ЛЮ  show arp 192.168.195.68
```

```
Ruijie# show arp 192.168.195.68
```

| Protocol | Address | Age(min) | Hardware | Type | Interface |
|----------|---------|----------|----------|------|-----------|
|----------|---------|----------|----------|------|-----------|

| | | | | | |
|----------|----------------|---|----------------|------|--------|
| Internet | 192.168.195.67 | 4 | 001a.a0b5.378d | arpa | VLAN 1 |
|----------|----------------|---|----------------|------|--------|

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| | |
|--------------------|---------|
| <i>mac-address</i> | mac ARP |
| static | arp |
| complete | arp |
| incomplete | arp |

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ö Ô ARP ~ ARP ^ || ä ä ä / ~ ä y ~
/ Лб 3

ö Ô ЛЮ й **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 | -- V13 | -- | -- |
| 20.1.1.1 | 000f.e200.0001 | Static | -- V13 | Gi2/0/1 | -- |
| 193.1.1.70 | 00e0.fe50.6503 | Dynamic | 1 V13 | 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 V12 | Ag2 | -- |
| 192.168.0.39 | 0012.a990.2241 | Local | -- V13 | -- | -- |
| 192.168.0.39 | 0012.a990.2241 | Local | -- Gi2/0/3 | -- | -- |
| 192.168.0.1 | 0012.a990.2241 | Local | -- V13 | -- | -- |
| 192.168.0.1 | 0012.a990.2241 | Local | -- Gi2/3/2 | -- | -- |

ARP ä Лб Ю

| IP Address | б IP Â |
|-------------|--------------------|
| MAC Address | б IP Â |
| Type | ARP ~ ä ä / ä Â |
| Age | ARP ~ æ Â |
| Interface | б IP б Â |
| Port | б ARP y Â |

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1.27 show arp packet statistics

show arp packet statistics [interface-name]

| | | |
|--|----------------|-----|
| | | |
| | interface-name | ARP |

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Результат:

| Ruijie#show arp packet statistics | | | | | |
|-----------------------------------|-------------------|------------------|-----------------|---------------|--------------|
| Interface Name | Received Requests | Received Replies | Received Others | Sent Requests | Sent Replies |
| VLAN 1 | 10 | 20 | 1 | 50 | 10 |
| VLAN 2 | 5 | 8 | 0 | 10 | 10 |
| VLAN 3 | 20 | 5 | 0 | 15 | 12 |
| VLAN 4 | 5 | 8 | 0 | 10 | 10 |
| VLAN 5 | 20 | 5 | 0 | 15 | 12 |
| VLAN 6 | 20 | 5 | 0 | 15 | 12 |
| VLAN 7 | 20 | 5 | 0 | 15 | 12 |
| VLAN 8 | 5 | 8 | 0 | 10 | 10 |
| VLAN 9 | 20 | 5 | 0 | 15 | 12 |
| VLAN 10 | 20 | 5 | 0 | 15 | 12 |
| VLAN 11 | 20 | 5 | 0 | 15 | 12 |
| VLAN 12 | 20 | 5 | 0 | 15 | 12 |

Received Requests ARP
 Received Replies ARP
 Received Others ARP
 Sent Requests ARP
 Sent Replies ARP

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

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1.28 show arp timeout

show arp timeout

show arp timeout

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ð Ô ьЮ ì **show arp timeout** ,

Ruijie# show arp timeout

Interface arp timeout(sec)

VLAN 1 3600

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1.29 show ip arp

^ ARP~ ã ~

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show ip arp

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```

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-таблица

| Protocol | Internet-протокол |
|-----------|---|
| Address | IP-адрес |
| Age (min) | Время жизни в минутах (0 - не обновлялся) |
| Hardware | MAC-адрес |
| Type | Тип интерфейса (ARPA - Ethernet) |
| Interface | Интерфейс |

Вывод:

| | |
|---|---|
| 3 | |
| - | - |

Вывод:

1.30 show ip interface

Показать информацию об IP-адресах на интерфейсах

show ip interface [interface-type interface-number | brief]

Вывод:

| Interface-type | |
|------------------|---|
| Interface-number | |
| brief | IP-адрес, маска, статус, primary ip, secondary ip |

Вывод:

Вывод:

Вывод:

```

1: GigabitEthernet0/0: IP-адрес: 192.168.7.1, маска: 255.255.255.0, статус: up, primary ip
2: GigabitEthernet0/0: IP-адрес: 192.168.7.215, маска: 255.255.255.0, статус: up, secondary ip
3: GigabitEthernet0/0: IP-адрес: 192.168.7.127, маска: 255.255.255.0, статус: up, secondary ip
4: GigabitEthernet0/0: IP-адрес: 192.168.7.195, маска: 255.255.255.0, статус: up, secondary ip
5: GigabitEthernet0/0: IP-адрес: 192.168.7.183, маска: 255.255.255.0, статус: up, secondary ip

```

1' ЛЮИ **show ip interface brief** Â

Ruijie#show ip interface brief

| Interface | IP-Address(Pri) | IP-Address(Sec) | Status | Protocol |
|----------------------|-----------------|-----------------|--------|----------|
| GigabitEthernet 0/10 | 2.2.2.2/24 | 3.3.3.3/24 | down | down |
| GigabitEthernet 0/11 | no address | no address | down | down |
| VLAN 1 | 1.1.1.1/24 | no address | down | down |

Status up down administratively down shutdown

Protocol IPv4 Â

2' ЛЮИ **show ip interface vlan** Â

SwitchA#show ip interface vlan 1

VLAN 1

IP interface state is: DOWN

IP interface type is: BROADCAST

IP interface MTU is: 1500

IP address is:

1.1.1.1/24 (primary)

IP address negotiate is: OFF

Forward direct-broadcast is: OFF

ICMP mask reply is: ON

Send ICMP redirect is: ON

Send ICMP unreachable is: ON

DHCP relay is: OFF

Fast switch is: ON

Help address is:

Proxy ARP is: OFF

ARP packet input number: 0

Request packet: 0

Reply packet: 0

Unknown packet: 0

TTL invalid packet number: 0

ICMP packet input number: 0

Echo request: 0

Echo reply: 0

Unreachable: 0

Source quench: 0

Routing redirect: 0

ИО

| | |
|------------------------|----------|
| | |
| IP interface state is: | Â "UP" Â |

IP interface type is:

IP interface MTU is:

| | |
|----------------|---|
| interface-name | " |
|----------------|---|

0 0 -

0 3 0

0 0 -

0 0 100 3

```
Ruijie#show ip packet statistics
Total
  Received 1000 packets, 10000000 bytes
    Unicast:1000,Multicast:0,Broadcast:0
  Discards:0
    HdrErrors:0(BadChecksum:0,TTLExceeded:0,Others:0)
    NoRoutes:0
    Others:0
  Sent 100 packets, 6000 bytes
    Unicast:50,Multicast:50,Broadcast:0

VLAN 1
  Received 1000 packets, 10000000 bytes
    Unicast:1000,Multicast:0,Broadcast:0
  Discards:0
    HdrErrors:0(BadChecksum:0,TTLExceeded:0,Others:0)
    NoRoutes:0
    Others:0
  Sent 100 packets, 6000 bytes
    Unicast:50,Multicast:50,Broadcast:0
```

0 3 0

| | |
|---|---|
| 3 | |
| - | - |

0 1 0 -

2 IPv6

2.1 clear ipv6 neighbors

清除 IPv6 邻居表

clear ipv6 neighbors

| | |
|----|-------------|
| 命令 | 清除 IPv6 邻居表 |
| 缺省 | - |

命令格式

清除指定接口的 IPv6 邻居表

clear ipv6 neighbors [interface]

命令说明

在 Ruijie# 模式下执行该命令。

| | |
|------|---|
| 命令 | 清除 IPv6 邻居表 |
| 缺省 | - |
| 命令格式 | clear ipv6 neighbors [interface] |
| 命令说明 | 在 Ruijie# 模式下执行该命令。 |

命令缺省

2.2 ipv6 address

配置 IPv6 地址

ipv6 address ipv6-address/prefix-length

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

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

no ipv6 address

no ipv6 address ipv6-address/prefix-length

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

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

| | |
|------|--|
| 命令 | 配置 IPv6 地址 |
| 缺省 | - |
| 命令格式 | ipv6 address ipv6-address/prefix-length |
| 命令说明 | 在 IPv6 地址模式下执行该命令。 |
| 命令缺省 | - |

| | | | | |
|----------------------|------|------|---------|----|
| <i>prefix-length</i> | IPV6 | IPV6 | 3 | Â |
| <i>prefix-name</i> | Â | Â | | Â |
| <i>sub-bits</i> | 6 ỹ | Â | 6 | |
| | Â | | RFC4291 | Â |
| eui-64 | IPV6 | | 64 | ID |
| | Â | | | |

$$\ddot{O} \quad \{ \quad \hat{O}$$

| | | | | | | | | | |
|----------|-----------|----------------------------------|--------------------|----------------------------------|---------------|-------------------------|-------------------------|-------------|---------------------|
| δ | $\hat{O}$ | IPv6 | z | $\dot{\eta}$ | UP | π | $\dot{\eta}$ | $\parallel$ | $\hat{A}$ |
| | | IPv6 | $\neq \wedge \cup$ | $\emptyset$ | $\hat{A} \in$ | $\emptyset$ | IPv6 | $= \Gamma$ | $L + \Gamma$ |
| | | $L \hat{A}$ | $\wedge \cup$ | ipv6 general-prefix | | $\exists$ | $\sim \neq \wedge$ | DHCPv6 | PD |
| | |) $\cap$ | $\sim \wedge$ | Γ | DHCPv6 | $L \sim \hat{A} \Gamma$ | $L + \Gamma \checkmark$ | L | $\exists$ |
| | | <i>sub-bits/prefix-length</i> | | $\hat{A}$ | | | | | |
| | | no ipv6 address | | a | $\acute{e}$ | $\sim$ | π | $\hat{A}$ | |
| | | no ipv6 address | | <i>ipv6-prefix/prefix-length</i> | | eui-64 | $\wedge \cup$ | $\exists$ | ipv6 address |
| | | <i>ipv6-prefix/prefix-length</i> | | eui-64 | $\hat{A}$ | | | | |

```

Ruijie(config-if)# ip address 2001::1/64

```

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| | | | | | | | | |
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| | | | | | | | | |
| default | ł | Â | Ə | ˘ | Ж | | ˘ | default |
| | | Â | ł | ł | Ь | | | |
| | Â | | | | | | | |

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`Ruijie(config-if)# ipv6 enable`

`show ipv6 interface`

`-`

2.5 ipv6 general-prefix

IPv6 ~ Ю **ipv6 general-prefix** 3 Â 3 Ю

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

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

| <i>prefix-name</i> | “ Â |
|----------------------|-----------|
| <i>ipv6-prefix</i> | Â RFC4291 |
| <i>prefix-length</i> | Â |

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2.6 ipv6 hop-limit

| | | | |
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| | | mtu | |

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2.8 ipv6 nd dad attempts

3 Э ì IPv6 ã ^ NS~ Â

3 no Â

ipv6 nd dad attempts value

no ipv6 nd dad attempts

| | | | |
|---|---|-----------------------|--|
| ö | Ô | | |
| | | ^ NS~ Â ì 0 ì Э | |
| | | Ipv6 ã Â : 0-600 Â | |

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ö Ô Э IPv6 ~ ì || ã ~
 "tentative" ~ Â ã ~
 ã ~ Э
 Э ~ ж || ^ Э IPv6
 ~ ~ down/up || ã Â
 Ю ÿ down 1 ì up ì Э || ã Â

ö Ô Ruijie(config-if)# ipv6 nd dad attempts 3

| | | | |
|---|-----|---------------------|---|
| ö | 3 Ô | 3 | |
| | | show ipv6 interface | Â |

ö / Ô -

2.9 ipv6 nd dad retry

3 ã IPv6 ã Â 3 no

Â

ipv6 nd dad retry value

no ipv6 nd dad retry

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

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|---|-----|-------|---|--------------|---|---|-----|
| ð | Ô | ʒ ʌ ʟ | ˘ | ʔ | ˘ | ʉ | ʔ |
| ˆ | RA~ | ʔ | ə | ipv6 address | ʒ | ˘ | ʟ ʟ |

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

| 显示 | 命令 | 参数 | 说明 |
|------------------|---------------------|---------|--------|
| 显示 IPv6 接口信息 | show ipv6 interface | ra-info | RA 信息 |
| 显示 IPv6 邻居发现寿命 | ipv6 nd ra-lifetime | | RA 寿命 |
| 显示 IPv6 邻居发现间隔 | ipv6 nd ra-interval | | RA 间隔 |
| 显示 IPv6 邻居发现 MTU | ipv6 nd ra-mtu | MTU | RA MTU |

显示命令如下：

2.15 ipv6 nd ra-interval

配置 IPv6 邻居发现间隔的命令如下：

```
ipv6 nd ra-interval {seconds | min-max min_value max_value}
no ipv6 nd ra-interval
```

| 显示 | 命令 | 参数 | 说明 |
|-------------------|---------------------|-----------|----------|
| 显示 IPv6 邻居发现间隔 | ipv6 nd ra-interval | seconds | RA 间隔 |
| 显示 IPv6 邻居发现间隔范围 | ipv6 nd ra-interval | min-max | RA 间隔范围 |
| 显示 IPv6 邻居发现间隔最小值 | ipv6 nd ra-interval | min_value | RA 间隔最小值 |
| 显示 IPv6 邻居发现间隔最大值 | ipv6 nd ra-interval | max_value | RA 间隔最大值 |

配置命令如下：

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

配置 IPv6 邻居发现间隔的命令如下：

```
ipv6 nd ra-interval {seconds | min-max min_value max_value}
no ipv6 nd ra-interval
```

```
Ruijie(config-if)# ipv6 nd ra-interval 110
Ruijie(config-if)# ipv6 nd ra-interval min-max 110 120
```

| 显示 | 命令 | 参数 | 说明 |
|------------------|---------------------|---------|--------|
| 显示 IPv6 接口信息 | show ipv6 interface | ra-info | RA 信息 |
| 显示 IPv6 邻居发现寿命 | ipv6 nd ra-lifetime | | RA 寿命 |
| 显示 IPv6 邻居发现间隔 | ipv6 nd ra-hoplimit | | RA 间隔 |
| 显示 IPv6 邻居发现 MTU | ipv6 nd ra-mtu | MTU | RA MTU |

显示命令如下：

2.16 ipv6 nd ra-lifetime

3 3 2 (RA) 1 1 3 **no**
Â

ipv6 nd ra-lifetime *seconds*

no ipv6 nd ra-lifetime

0

0

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


```
Ruijie(config-if)# ipv6 nd ra-mtu 1400
```

| 配置 | 显示 |
|----------------------------------|---------|
| <code>show ipv6 interface</code> | ra-info |
| <code>ipv6 nd ra-lifetime</code> | |
| <code>ipv6 nd ra-interval</code> | |
| <code>ipv6 nd ra-hoplimit</code> | |

配置 -

2.18 ipv6 nd reachable-time

配置 NDP 消息的可达时间。该命令在接口配置模式下使用。

no
ipv6 nd reachable-time *milliseconds*
no ipv6 nd reachable-time

| 配置 | 显示 |
|---------------------|-----------|
| <i>milliseconds</i> | 0-3600000 |

配置 (RA) 消息的可达时间。该命令在接口配置模式下使用。

配置 30000ms(30)

配置

配置 1 消息的可达时间。该命令在接口配置模式下使用。

配置 1 消息的可达时间。该命令在接口配置模式下使用。

配置 (RA) 消息的可达时间。该命令在接口配置模式下使用。

配置 0

```
Ruijie(config-if)# ipv6 nd reachable-time 1000000
```

| 配置 | 显示 |
|----------------------------------|----|
| <code>show ipv6 interface</code> | |

配置 -

2.19 ipv6 nd suppress-ra

配置 RA 消息的抑制。该命令在接口配置模式下使用。

no
ipv6 nd suppress-ra

no ipv6 nd suppress-ra

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

ö Ô IPv6 3 a 'Ω

ö 3 Ô

ö Ô 3 8 'Ω 1 76 ipv6 suppress-ra 3 Â

ö Ô Ruijie(config-if)# ipv6 nd suppress-ra

| | | | |
|---|-----|---------------------|---------|
| ö | 3 Ô | 3 | |
| | | show ipv6 interface | ra-info |

ö 1 Ô -

2.20 ipv6 neighbor

3 ~ 3 **no** 1 76 Â

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

no ipv6 neighbor *ipv6-address interface-id*

| | | | |
|---|---|------------------|-------------------------------|
| ö | Ô | | |
| | | ipv6-address | IPV6 ~ RFC4291 176 Â |
| | | interface-id | ^ Routed Port L3 AP SVI ~ Â |
| | | hardware-address | ~ 76 XXXX.XXXX.XXXX 48 76 MAC |

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ö Ô 3 ARP 3 ~ 1 IPv6 3 ~

NDP 76 176 176 76 Â

Reachable Â ~ IPV6 76 3 ~

3 6 3 a 5 ^ a IPV6 3 6 3 ~

a mac Â ~ inactive ~ 1 76 show ipv6

neighbor static 3 Â

clear ipv6 neighbors 3 176 (NDP) Â

show ipv6 neighbors 3 Â

ö Ô Ruijie(config)# ipv6 neighbor 2001::1 vlan 1 00d0.f811.1111

| | | | |
|---|-----|----------------------|--|
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| | | show ipv6 neighbors | |
| | | clear ipv6 neighbors | |

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2.21 ipv6 ns-linklocal-src

И~ з~ 8 й Æ I no ipv6 ns-linklocal-src
 а 8 й ~ IPv6 RFC3484
 Æ

ipv6 ns-linklocal-src
 no ipv6 ns-linklocal-src

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

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ö з Ô

ö Ô -

ö Ô Ruijie(config)# no ipv6 ns-linklocal-src

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

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2.22 ipv6 redirects

Э IPV6 й / ЛГ з 8 Э
 ICMPv6 ~ з no Э а ICMPv6
 ipv6 redirects
 no ipv6 redirects

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

ö Ô IPV6 Э ICMPv6

3 0

0 0 ICMPv6 8 10 ICMPv6
(10pps)A

0 0 Ruijie(config-if)# ipv6 redirects

| | | |
|-------|---------------------|--|
| 0 3 0 | 3 | |
| | show ipv6 interface | |

0 1 0 -

2.23

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1'


```

Ruijie#show ipv6 address
Global unicast address limit: 1024, Global unicast address count: 3
Tentative address count: 2,Duplicate address count: 1
Preferred address count: 3,Deprecated address count: 0
Gi 0/5
  FE80::1/64 Preferred
    Preferred lifetime: INFINITE, Valid lifetime: INFINITE
  1000::1/64 Duplicate
    Preferred lifetime: INFINITE, Valid lifetime: INFINITE
Gi 0/6
  FE80::1/64 Tentative
    Preferred lifetime: INFINITE, Valid lifetime: INFINITE
  1111:1111:1111:1111:1111:1111:1111:1111/64 Tentative
    Preferred lifetime: INFINITE, Valid lifetime: INFINITE
Gi 0/7
  FE80::1/64 Preferred
    Preferred lifetime: INFINITE, Valid lifetime: INFINITE
  2000:1111:1111:1111:1111:1111:1111:1111/64 Preferred
    Preferred lifetime: INFINITE, Valid lifetime: INFINITE

```

2 GigabitEthernet 0/13 IPv6 A

```

Ruijie#show ipv6 address Gi 0/5
Global unicast address count: 3
Tentative address count: 0,Duplicate address count: 1
Preferred address count: 1,Deprecated address count: 0
FE80::1/64 Preferred
  Preferred lifetime: INFINITE, Valid lifetime: INFINITE
1000:1111:1111:1111:1111:1111:1111:1111/64 Preferred
  Preferred lifetime: INFINITE, Valid lifetime: INFINITE

```

| | | |
|---|---|---|
| 3 | 3 | 3 |
| - | - | - |

3 1 0 -

2.27 show ipv6 general-prefix

```

show ipv6 general-prefix
show ipv6 general-prefix

```

| | | |
|---|---|---|
| 0 | 0 | 0 |
| - | - | - |

0 0 -

0 3 0

0 0 show ipv6 general-prefix 3 A 6 DHCPv6

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```
Ruijie# show ipv6 general-prefix
There is 1 general prefix.
IPv6 general prefix my-prefix, acquired via Manual configuration
    2001:1111:2222::/48
    2001:1111:3333::/48
```

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| | |
|---------------------|--|
| 3 | |
| ipv6 general-prefix | |

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2.28 show ipv6 interface

IPV6

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

ö

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| <i>interface-id</i> | ^ | л | à aggregateport | à SVI | ~ |
|---------------------|---|----|-----------------|-------|-------|
| ra-info | Э | RA | ~ | Z | p < 3 |

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

Э АЛ INET6: 2001::1 ~ subnet is 2001::/64
 [TENTATIVE] ~ ' INET6 ± [] æ БЖ Ю

| ANYCAST | й Â |
|--------------------|--------------|
| TENTATIVE | й ă (DAD) Â |
| DUPLICATED | Â |
| DEPRECATED | ~ 1 й а
Â |

| | |
|-------------------------|---|
| initcount | RA
Â |
| RA(out/in/inconsistent) | Out
in
inconsistent
a |
| RS(input) | Â |
| Link-layer address | Â |
| Physical MTU | MTU Â |
| !M M | !M
managed-config-flag
M: 6 3 1 Â |
| !O O | !O
other-config-flag
O: 6 3 1 Â |
| ra-info | (Prefix) |

| | |
|-----------------|---------------------------------|
| total | Â |
| fec0:1:1:1::/64 | é Â |
| Def | Â |
| Auto CFG | Auto
 ~ CFG Â |
| !Adv | a 3 Â |
| vltime | () Â |
| pltime | () Â |
| L !L | L
!L 6 3 1 Â on-link 3 3 Â |
| A !A | A
1 Â auto-config 3 3 !A 6 3 |

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2.29 show ipv6 neighbors

IPV6 Â

show ipv6 neighbors [verbose] [interface-id] [ipv6-address]

show ipv6 neighbors static

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| verbose | |
|---------------------|---|
| <i>interface-id</i> | Ë |
| <i>ipv6-addres</i> | |
| static | |

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```
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 IO</p> <p>INCOMP(Incomplete)—</p> <p>(NS)</p> <p>(NA) ^</p> <p>REACH(Reachable) —</p> <p>STALE —</p> <p>NUD (Neighbor Unreachability Detection) ^</p> <p>DELAY—</p> <p>STALE ^ DELAY</p> <p>DELAY_FIRST_PROBE_TIME seconds(5)</p> <p>PROBE ^ (NS)</p> <p>NUD ^</p> <p>PROBE— NUD</p> <p>RetransTimer milliseconds (NS)</p> <p>MAX_UNICAST_SOLICIT(3)</p> <p>?—</p> <p>/R—</p> <p>/H—</p> |
| Age | <p>^</p> <p>^ 'expired'</p> <p>NUD ^</p> |
| Asked | <p>(NS) ^</p> |

3

Ruijie# show ipv6 neighbors static

| IPv6 Address | Linklayer Addr | Interface | State |
|--------------|----------------|----------------------|----------|
| 2001:1::1 | 00d0.f822.33ab | GigabitEthernet 0/14 | ACTIVE |
| 2001:2::2 | 00d0.f822.33ac | VLAN 1 | INACTIVE |

| | | | |
|---|-----|---------------|--|
| ð | 3 Ô | 3 | |
| | | ipv6 neighbor | |

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| | - | - | |

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| | | - | - |

2.31 show ipv6 packet statistics

3 IPv6

show ipv6 packet statistics [total | interface-name]

| | | | |
|---|---|----------------|--|
| 0 | 0 | | |
| | | total | |
| | | interface-name | |

0 0 -

0 3 0

0 0 -

0 0 1' IPv6 3 Â

```
Ruijie#show ipv6 packet statistics
Total
  Received 1000 packets, 10000000 bytes
    Unicast:1000,Multicast:0
  Discards:0
    HdrErrors:0(HoplimitExceeded:0,Others:0)
    NoRoutes:0
    Others:0
  Sent 100 packets, 6000 bytes
    Unicast:50,Multicast:50

VLAN 1
  Received 1000 packets, 10000000 bytes
    Unicast:1000,Multicast:0
  Discards:0
    HdrErrors:0(HoplimitExceeded:0,Others:0)
    NoRoutes:0
    Others:0
  Sent 100 packets, 6000 bytes
    Unicast:50,Multicast:50
```

2 IPv6 Â

```
Ruijie#show ipv6 packet statistics total
Received 1000 packets, 10000000 bytes
  Unicast:1000,Multicast:0
  Discards:0
  HdrErrors:0(HoplimitExceeded:0,Others:0)
  NoRoutes:0
  Others:0
  Sent 100 packets, 6000 bytes
  Unicast:50,Multicast:50
```

| | | | |
|---|-----|---|---|
| 0 | 3 0 | 3 | |
| | | - | - |

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2.32 show ipv6 route

IPv6 Â
show ipv6 route [static | local | connected]

| | | | |
|---|---|-----------|--|
| ö | Ô | | |
| | | static | |
| | | local | |
| | | connected | |

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ö Ô 3 1 16 Â

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IO 3 IPv6 Â

show ipv6 route summary all

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```
Ruijie#show ipv6 route summary
IPv6 routing table count: 2
Total
  Memory: 2000 bytes
  Entries: 20
    Local:2,Connected:2,Static:8,RIP:2,OSPF:2,ISIS:2,BGP:2
Global
  Memory: 1000 bytes
  Entries: 10
    Local:1,Connected:1,Static:4,RIP:1,OSPF:1,ISIS: 1,BGP:1
VRF1
  Memory: 1000 bytes
  Entries: 10
    Local:1,Connected:1,Static:4,RIP:1,OSPF:1,ISIS: 1,BGP:1
```

2'

IPv6

```
Ruijie#show ipv6 route summary all
IPv6 routing table count: 2
Total
  Memory: 2000 bytes
  Entries: 20
    Local:2,Connected:2,Static:8,RIP:2,OSPF:2,ISIS:2,BGP:2
Global
  Memory: 1000 bytes
  Entries: 10
    Local:1,Connected:1,Static:4,RIP:1,OSPF:1,ISIS: 1,BGP:1
VRF1
  Memory: 1000 bytes
  Entries: 10
    Local:1,Connected:1,Static:4,RIP:1,OSPF:1,ISIS: 1,BGP:1
```

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| 3 | |
|---|---|
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2.34 show ipv6 routers

IPv6 ~ Ω Â Ω ~ **show**
ipv6 routers 3 Â è IO
show ipv6 routers [interface-type interface-number]

| | | | |
|---|---|------------------|---------|
| ö | Ô | | |
| | | interface-type | |
| | | interface-number | 1 Â Ω Â |

ö Ô -

ö 3 Ô

ö Ô **show ipv6 routers** Ω Â ~
 Ω Â

ö Ô IPv6 ~ IO

```
Ruijie# show ipv6 routers
Router FE80::2D0:F8FF:FEC1:C6E1 on VLAN 2, last update 62 sec
  Hops 64, Lifetime 1800 sec, ManagedFlag=0, OtherFlag=0, MTU=1500
  Preference=MEDIUM
  Reachable time 0 msec, Retransmit time 0 msec
  Prefix 6001:3::/64 onlink autoconfig
    Valid lifetime 2592000 sec, preferred lifetime 604800 sec
  Prefix 6001:2::/64 onlink autoconfig
    Valid lifetime 2592000 sec, preferred lifetime 604800 sec
```

| | | | |
|---|-----|---|---|
| ö | 3 Ô | 3 | |
| | | - | - |

ö 1 Ô -

2.35 tunnel destination

3 ð è ~ 3 no 3 Â
tunnel destination ipv4-address
no tunnel destination

| | | | |
|---|---|--------------|----------|
| ö | Ô | | |
| | | ipv4-address | ~ IPv4 Â |

ö Ô

| | |
|---------------------------|--|
| tunnel source | |
| tunnel destination | |

до 1 О -

2.37 tunnel source

3 и ẽ ~ 3 no 3

tunnel source {*ipv4-address* | *interface-type interface-number*}

no tunnel source

| | | | |
|----|---|---------------|--------|
| до | О | | |
| | | IPv4 ~ IPv4 и | |
| | | Â | |
| | | ~ | ipv6ip |
| | | ÿ ipv4 и | IPv4 , |
| | | ipv6 | ipv6 и |
| | | IPv6 Â | |

до О

до 3 О

до О 1 Л IPv4 ≠ 1 Л Э IPv4 ~ || (6to4 isatap) ẽ Â

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до О IPv6

```
Ruijie(config)# interface tunnel 1
Ruijie(config-if)# tunnel mode ipv6ip
Ruijie(config-if)# tunnel source vlan 1
Ruijie(config-if)# tunnel destination 192.168.5.1
```

| | | |
|--------|---------------------------|--|
| до 3 О | 3 | |
| | tunnel mode | |
| | tunnel destination | |

до 1 О -

3 DHCP

3.1 address range

DHCP CLASS IP CLASS
address range *low-ip-address high-ip-address*
no address range

| | | | |
|---|---|------------------------|---|
| Ö | Ô | | |
| | | <i>low-ip-address</i> | Â |
| | | <i>high-ip-address</i> | Â |

Ö Ô CLASS

Ö 3 Ô CLASS

Ö Ô CLASS
 Â CLASS
 CLASS CLASS

Ö Ô ¾IO mypool0 class1 172.16.1.1—172.16.1.8Â

Ruijie(config)# ip dhcp pool mypool0

Ruijie(dhcp-config)# class class1

Ruijie(config-dhcp-pool-class)# address range 172.16.1.1 172.16.1.8

| | | | |
|---|-----|---------------------|-----------------------|
| Ö | 3 Ô | | |
| | | ip dhcp pool | DHCP
Â |
| | | class | DHCP CLASS
CLASS Â |

Ö 1 Ô -

3.2 bootfile

no bootfile

| | | | |
|---|---|-----------|------------|
| ö | Ô | | |
| | | file-name | È ~ " Â |

ö Ô È || ~ " Â

ö 3 Ô DHCP .

ö Ô DHCP || IO ä ~ DHCP È ||
 ~ " ~ DHCP / 1 10 È ^ TFTP~ IO ~ Â è È **next-server**
 3 È Â

ö Ô 10 ~ È router.conf ì || ~ " Â

Ruijie(dhcp-config)# bootfile router.conf

| | | | |
|---|-----|--------------|------------------------|
| ö | 3 Ô | | |
| | | ip dhcp pool | È DHCP ~ " ~ DHCP
Â |
| | | next-server | DHCP IO È IP
Â |

ö / Ô -

3.3 class

DHCP CLASS DHCP IO **class** 3 ~ 3 **no**
 / 10 CLASS
class class-name
no class class-name

| | | | |
|---|---|------------|-----------------------------------|
| ö | Ô | | |
| | | class-name | CLASS ~ " ~ / 10 ~
myclass 1 Â |

ö Ô CLASS Â

ö 3 Ô DHCP Â

ö Ô DHCP / 10 Option82 5 ~ Option82 5 ~
 DHCP ì / 10 Â ì CLASS DHCP
 / 10 CLASS CLASS / 10 a * Â
 / 10 ~ " 3 Option82
 è CLASS 3 CLASS IP Â 5

[illegible]

| | | | |
|---|---|------------|----------------|
| ö | Ô | | |
| | | * | DCHP ǎ Â |
| | | ip-address | IP ǎ Â |

ö Ô -

ö ǎ Ô Â

ö Ô DHCP ǎ ping ~ DHCP ǎ ^ ARP~ Âclear ip
dhcp conflict / ǎ ǎ Â

ö Ô ǎ ~ ǎ Â

Ruijie# clear ip dhcp conflict *

| | | | |
|---|--------|-----------------------|------------------------------------|
| ö | ǎ Ô | ǎ | |
| | | ip dhcp ping packets | ǎ DHCP ǎ ~ ǎ
ping Â |
| | | show ip dhcp conflict | DHCP ǎ ~ ǎ
Â |

ö / Ô -

3.6 clear ip dhcp server statistics

ǎ DHCP ǎ ~ clear ip dhcp server statistics ǎ Â
clear ip dhcp server statistics

| | | | |
|---|---|---|---|
| ö | Ô | | |
| | | - | - |

ö Ô -

ö ǎ Ô

ö Ô DHCP ǎ ~ DHCP ǎ || ǎ ~
DHCP Âclear ip dhcp server statistics ǎ / ǎ ~
Â

ö Ô ǎ ~ DHCP ǎ Â

Ruijie# clear ip dhcp server statistics

| | | | |
|---|--------|---|--|
| ö | ǎ Ô | ǎ | |
|---|--------|---|--|

```
show ip dhcp server statistics
```

DHCP

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ö / Ô -
```

3.7 clear ip dhcp relay statistics

```
æ DHCP 3
```

```
clear ip dhcp relay statistics 3 A
```

```
clear ip dhcp relay statistics
```

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|---|---|---|---|
| ö | Ô | | |
| | | - | - |

```
ö Ô -
```

```
ö 3 Ô
```

```
ö Ô DHCP 3 DHCP
3 / 3 A clear ip dhcp relay statistics
```

```
ö Ô 3 DHCP L A
Ruijie# clear ip dhcp relay statistics
```

| | | | |
|---|-----|-------------------------------|----------|
| ö | 3 Ô | | |
| | | show ip dhcp relay-statistics | DHCP 3 A |

```
ö / Ô -
```

3.8 client-identifier

```
æ DHCP
```

```
^ 3
```

```
Ω 8
```

```
~ ~
```

```
DHCP
```

```
3
```

```
client-identifier A 3 no / 3 A
```

```
client-identifier unique-identifier
```

```
no client-identifier
```

| | | | |
|---|---|-------------------|---|
| ö | Ô | | |
| | | unique-identifier | DHCP 3 3 Ω 8 A ' 0100.d0f8.2233.b467.6967.6162.6974.4574.6865.726e.6574.302f.31 A |

```
ö Ô A
```

```
ö 3 Ô DHCP A
```


ö Ô DHCP DHCP L IP ~ " MAC 00d0.f822.33b4 à " ì
GigabitEthernet 0/1 ì
0100.d0f8.2233.b467.6967.6162.6974.4574.6865.726e.6574.302f.31` è 01 3 Л ~
67.6967.6162.6974.4574.6865.726e.6574.302f.31 ì GigabitEthernet0/1 Ω 8 Â 3
Ï Л RFC1700 I Address Resolution Protocol Parameters L Â
Л DHCP Ï ~ Л 3 Â

ö Ô ЛЮ ~ Ï MAC 00d0.f822.33b4 Л DHCP Â

ö 3 Ô

| | |
|------------------|------------|
| hardware-address | Ï DHCP " Â |
| host | Ï IP |

| | | | |
|---|-----|--------------|--------------|
| ð | 3 Ô | | |
| | | | |
| | | | |
| | | host | IP
DHCP |
| | | ip dhcp pool | DHCP
DHCP |

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3.10 debug ip dhcp client

DHCP Client
 debug ip dhcp client
 no debug ip dhcp client

debug ip dhcp client 3 Â

| | | | |
|---|---|---|---|
| ð | Ô | | |
| | | - | - |

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ö Ô 3 dhcp server б ы ~ Л Â

ö Ô ЛЮ ~ Э dhcp Л Â

Ruijie# debug ip dhcp server packet

| | | | |
|-------|---|---|-----|
| ö 3 Ô | 3 | - | - |
| | | C | E T |

```

DNS ґ ҺА
dns-server ip-address [ ip-address2...ip-address8 ]
no dns-server

```

| | | | |
|---|---|----------------------------------|---------------------|
| ö | Ô | | |
| | | <i>ip-address</i> | Һ DNS ґ IP А А |
| | | <i>ip-address2...ip-address8</i> | ^ ґ ~ ґ Ғ 8 DNS ґ А |

ö Ô Һ DNS ґ А

ö 3 Ô DHCP А

ö Ô Һ DNS ґ ~ ~ DHCP ґ 6 DNS ґ ~
Ю DNS ґ А

ö Ô ҒЮ ~ Һ DHCP DNS ґ 192.168.12.3 А

```
Ruijie(dhcp-config)# dns-server 192.168.12.3
```

ö 3 Ô
ö 3 Ô

```
Ruijie(dhcp-config)# domain-name i-net.com.cn
```

ö 3 Ô

| dns-server | ✕ DHCP DNS 𐀀 |
|---------------------|----------------------|
| ip dhcp pool | ✕ DHCP " ~ DHCP
Â |

ö 1 Ô -

3.15 hardware-address

✕ DHCP " ~ DHCP 3 **hardware-address** Â 3 **no** 1
𐀀 " ✕ Â
hardware-address *hardware-address* [type]
no hardware-address

ö Ô

| hardware-address | ✕ DHCP MAC Â |
|-------------------------|--------------------------------|
| | DHCP " 1 ~ 1 𐀀 ✕ Â |
| | ethernet |
| | ieee802 |
| <i>type</i> | 1 10M ethernet~
6 IEEE 802~ |

ö Ô

" Â
✕ " 𐀀 type ~ 𐀀 ethernet Â

ö 3 Ô DHCP Â

ö Ô 1 DHCP ✕ ~ 1 𐀀 3 Â

ö Ô 𐀀 ~ ✕ 𐀀 ethernet MAC 00d0.f838.bf3d Â

```
Ruijie(dhcp-config)# hardware-address 00d0.f838.bf3d
```

ö 3 Ô

| client-identifier | ✕ DHCP ^ 𐀀 𐀀
8 ~ Â |
|--------------------------|-----------------------|
| host | ✕ IP Â DHCP |

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

ö / Ô -

3.16 host

DHCP ý IP DHCP hostÂ no /
 DHCP IP Â
host *ip-address* [*netmask*]
no host

ö Ô

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

ö Ô DHCP ý IP Â

ö ý Ô DHCP Â

ô Ô DHCP IP Â
 255.0.0.0' B ý 255.255.0.0' C ý 255.255.255.0 Â
 / DHCP 255.255.255.0 ý Â

| | | | |
|---|---|---|---|
| ð | Ô | | |
| | | - | - |

ð Ô a DHCP IP Â

ð ð Ô

ð Ô RGOS DHCP IP DHCP 1~ DHCP
 1' 2~ DHCP 3' 3~ DHCP 6' DNS
 4~ DHCP 15' ý ı " 5~ DHCP 44' WINS Â
 RGOS PPP à FR à HDLC dhcp
 L T

ð Ô ЛЮ FastEthernet 0/1 || IP Â

Ruijie(config-FastEthernet 0/1)# ip address dhcp

| | | | |
|---|-----|---|--|
| ð | ð Ô | ð | |
|---|-----|---|--|

```
Ruijie(config)# ip dhcp class myclass
```

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3.19ip dhcp database write-delay

no ip dhcp database write-delay

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| | |
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ö 3 Ô 3 1 7 DHCP FLASH ˆ Â

ö Ô 7Ю ˆ || FLASH Â

Ruijie(config)# ip dhcp database write-to-flash

ö Ô -

| | | |
|-------|---|---|
| ö 3 Ô | 3 | |
| - | - | - |

ö 1 Ô -

3.21 ip dhcp excluded-address

7 IP ˆ DHCP ˆ a è DHCP ˆ 3 ip dhcp
excluded-address Â 3 **no** 1 7 1 7 Â
ip dhcp excluded-address *low-ip-address* [*high-ip-address*]
no ip dhcp excluded-address *low-ip-address* [*high-ip-address*]

| | | |
|------------------------|--------------|--|
| ö Ô | | |
| <i>low-ip-address</i> | IP ˆ IP IP Â | |
| <i>high-ip-address</i> | IP Â | |

ö Ô DHCP ˆ IP Â

ö 3 Ô Â

ö Ô IP ˆ DHCP ˆ DHCP IP Â 3 1 7 ˆ
 ˆ IP ˆ DHCP Â 7 IP ˆ ≠ 1 7
 DHCP ˆ ˆ Â

ö Ô 7Ю ˆ DHCP ˆ a 192.168.12.100~150 IP Â

Ruijie(config)# ip dhcp excluded-address 192.168.12.100 192.168.12.150

| | | |
|-----------------------|-----------------|--|
| ö 3 Ô | 3 | |
| ip dhcp pool | 7 DHCP ˆ DHCP Â | |
| network DHCP ˆ | 7 DHCP Â | |

ö 1 Ô -

```

DHCP      ↳      ႁ ping      ႁ ip dhcp ping packets ႁ
no      ႁ
ip dhcp ping packets[ number ]
no ip dhcp ping packets

```

| | | |
|----------------|---------------|--|
| $\hat{\delta}$ | $\hat{O}$ | |
| | <i>number</i> | $\wedge \quad \sim \quad \ddot{y} \quad 0 \quad 10^{\circ} \quad 0 \quad ping \quad \hat{A} \quad ping \text{ ч } \quad \hat{A}$ |

ồ Ô ping ì 2Â

ò ã Ô Â

| | | | | | | | | | | | | |
|---|---|------|----|---|------|---|----|------|------|------|---|---|
| õ | Ô | DHCP | Ł | ŷ | DHCP | | IP | ˘ | ping | | é | ŷ |
| | | ˘ | | | Ю | ˘ | | DHCP | Â | Ping | й | ч |
| | | л ъ | 10 | Â | | | | | | | | ˘ |

ò Ô ЛЮ ~ ping и 3 Â

```
Ruijie(config)# ip dhcp ping packets 3
```

| clear ip dhcp conflict | DHCP ǎ Â |
|-------------------------------|---|
| ip dhcp ping timeout | DHCP ƚ ping Â
ping ˘
/ , ǎ Â |
| show ip dhcp conflict | DHCP ƚ ˘ ǎ
Â |

$$\ddot{\theta} = \frac{1}{L} \hat{O} -$$

| | DHCP | ↳ | ping | ↗ | ↘ | ↖ | ↙ | ip dhcp ping |
|-------------------------|---------------|---|------|---|---|---|---|--------------|
| timeout | ↗ | ↘ | no | ↖ | ↙ | ↗ | ↘ | ↖ |
| ip dhcp ping timeout | milli-seconds | | | | | | | |
| no ip dhcp ping timeout | | | | | | | | |

| | | |
|----------|----------------------|--|
| δ | $\hat{O}$ | |
| | <i>milli-seconds</i> | DHCP ping ^ ~ 100
10000 |

ò Ò ì 500 Â

ö 3 Ô Â

ö Ô Ð ping Â

ö Ô Ð ping ñ 600ms Â

```
Ruijie(config)# ip dhcp ping timeout 600
```

ö 3 Ô

| 3 | |
|-------------------------------|------------------------|
| clear ip dhcp conflict | DHCP ã Â |
| ip dhcp ping packets | Ð DHCP Ð ñ ã
ping Â |
| show ip dhcp conflict | DHCP Ð ñ ã
Â |

ö / Ô -

3.24 ip dhcp pool

Ð DHCP " DHCP ñ **ip dhcp pool** Â 3
no / Ð DHCP Â
ip dhcp pool *pool-name*
no ip dhcp pool *pool-name*

ö Ô

| <i>pool-name</i> | / Ð Â mypool 1 Â |
|------------------|------------------|

ö Ô Ð DHCP Â

ö 3 Ô Â

ö Ô 3 DHCP ñ

```
Ruijie(dhcp-config)#
```

```
ñ / Ð IP ã DNS Ð ã Â
```

ö Ô Ð Ð Ð mypool0 DHCP Â

```
Ruijie(config)# ip dhcp pool mypool0
```

```
Ruijie(dhcp-config)#
```

ö 3 Ô

| 3 | |
|---------------------------------|------------------|
| host | Ð IP Â DHCP
Â |
| ip dhcp excluded-address | Ð DHCP Ð a IP Â |

network DHCP

DHCP

Ä

ö 3 Ô

ö Ô 3

//

```
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 192.168.4.0 0.0.0.255 192.168.4.0 0.0.0.255
```

3.29 ip dhcp relay suppression

DHCP Relay 8 11 111 3 11 3 no
 DHCP relay 8 11 11
ip dhcp relay suppression
no ip dhcp relay suppression

| | | | |
|---|---|---|---|
| 0 | 0 | | |
| | | - | - |

0 0

0 3 0

0 0 3 11 0 DHCP 11

0 0 1110 11 1 0 DHCP relay 8 11 11

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

| | | | |
|---|-----|--------------|--------|
| 0 | 3 0 | 3 | |
| | | service dhcp | DHCP 3 |

0 1 0 -

3.30 ip dhcp use class

CLASS 11 111 111 **ip dhcp use class** 3 3 **no** 11
 11 CLASS 11
ip dhcp use class
no ip dhcp use class

| | | | |
|---|---|---|---|
| 0 | 0 | | |
| | | - | - |

0 0 CLASS 11

0 3 0 11

0 0 -

ö Ô ÌÏÜ CLASS Â

```
Ruijie(config)# ip dhcp use class
```

ö Ì Ô

| | |
|---|---|
| Ì | |
| - | - |

ö Ì Ô -

3.31 ip helper-address

Ï DHCP Ì ÌÏÜ Ì Â Ì **no** Ì Â
 DHCP Ì ÌÏÜ Ì Â
ip helper-address {cycle-mode | [vrf vrf-name]A.B.C.D}
no ip helper-address {cycle-mode | [vrf vrf-name]A.B.C.D}

ö Ô

| | |
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ö Ì Ô / Â

ö Ô Ì ÌÏÜ 20 DHCP Ì Â
 DHCP Ì ÌÏÜ DHCP Relay DHCP Ì ,
 DHCP Ì ÌÏÜ DHCP Relay Ì Ì a Ì Â
 vrf

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|---|-----|--------------|--------|
| ö | 3 Ô | | |
| | | service dhcp | DHCP Â |

ö / Ô -

3.32 lease

DHCP Ì ~ DHCP 3 lease Â 3 no
Â

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

no lease

| | | | |
|---|---|----------|-------------------------------------|
| ö | Ô | | |
| | | days | DHCP ~ Л ÿ Æ Â |
| | | hours | ^ / ~ DHCP ~ Л ÿ Æ Â DHCP DHCP
Â |
| | | minutes | ^ / ~ DHCP ~ Л ÿ Æ Â DHCP DHCP
Â |
| | | infinite | DHCP 8 Â |

ö Ô ÿ Â

ö 3 Ô DHCP

ö Ô ~ DHCP Â DHCP Ì ~ a 4 Â

ö Ô ЛЮ ~ DHCP ÿ 1 ÿ 1 Â

no netbios-name-server

| | | | |
|---|---|---------------------------|-----------------------|
| ö | Ô | | |
| | | Ï WINS | Ë IP Â Â |
| | | ip-address2...ip-address8 | ^ 1 ~ 1 16 8 WINS Ë Â |

ö Ô Ï WINS Ë Â

ö 3 Ô DHCP

ö Ô Ï WINS Ë ~ ~ DHCP 1 6 WINS Ë
~ IO WINS Ë Â

ö Ô 16IO ~ ï DHCP WINS Ë 192.168.12.3 Â

```
Ruijie(dhcp-config)# netbios-name-server 192.168.12.3
```

| | | | |
|---|-----|-----------------|-------------------|
| ö | 3 Ô | 3 | |
| | | ip address dhcp | DHCP 1 IP Â |
| | | ip dhcp pool | Ï DHCP " ~ DHCP Â |

ö 1 Ô -

3.34 netbios-node-type

Ï DHCP ÿ NetBIOS ~ DHCP 3 netbios-node-type Â
3 no 1 16 NetBIOS

netbios-node-type type

no netbios-node-type

| | | | |
|---|---|---------------------|--|
| ö | Ô | | |
| | | Ï NetBIOS ~ 4 Â | |
| | | Ï 0~FF 8 ~ 1 1 16IO | |
| | | 1 3 b-node' | |
| | | 2 3 p-node' | |
| | | 4 3 m-node' | |
| | | 8 3 h-node Â | |
| | | Ï | |

type

0 0 ЛЮ ~ Ж DHCP и 192.168.12.0 и 255.255.255.240 A

ö / Õ -

3.37 option

DHCP

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|---|---|---|-------|---|
| ò | ₃ | Ô | CLASS | Â |
|---|---|---|-------|---|

| ð | Ô | №Ю | ~ | CLASS | Option82 | Û | Â |
|---|---|----|---|--|----------|---|---|
| | | | | Ruijie(config)# ip dhcp class myclass | | | |
| | | | | Ruijie(config-dhcp-class)# relay agent information | | | |
| | | | | Ruijie(config-dhcp-class-relayinfo)# | | | |

| | | |
|-----------|-----------|--|
| $\hat{O}$ | $\hat{O}$ | |
|-----------|-----------|--|

```

Ruijie(config-dhcp-class)# relay agent information
Ruijie(config-dhcp-class-relayinfo)# relay-information
hex 0102256535
Ruijie(config-dhcp-class-relayinfo)# relay-information
hex 010225654565
Ruijie(config-dhcp-class-relayinfo)# relay-information
hex 060225654565
Ruijie(config-dhcp-class-relayinfo)# relay-information
hex 060223*

```

ö

3 Ô

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|---|--|
| 3 | |
|---|--|

ip dhcp class DHCP CLASS vx|VSS!5B0a

3.41 service dhcp

Э DHCP Л 3 ~ 3 **service dhcp** ^ 3 **no** 1 Л

DHCP Л 3 ^

service dhcp

no service dhcp

| | | | |
|---|---|---|---|
| ö | Ô | | |
| | | - | - |

ö Ô DHCP Л 3 ^

ö 3 Ô ^

ö Ô DHCP Л 1 Л || IP ~ DNS Л ä ^DHCP

1 Л DHCP è Л ~ DHCP 7 DHCP ~

DHCP ^

Э 1 DHCP 7 è 7 ä ~ é ~ Л

^

ö Ô ЛЮ ~ DHCP Л ^

Ruijie(config)# service dhcp

| | | | |
|---|-----|---------------------------------------|----------|
| ö | 3 Ô | 3 | |
| | | show ip dhcp server statistics | DHCP Л ^ |

ö 1 Ô -

3.42 show dhcp lease

DHCP ~ EXEC 3 **show dhcp lease**

show dhcp lease

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| ö | Ô | | |
| | | - | - |

ö Ô -

ö 3 Ô ^

ö Ô 7 IP ~ ^ 7 IP ~ 1 IP

^

Ö Ô ЛЮ ì **show dhcp lease** Â

```
Ruijie# show dhcp lease
Temp IP addr: 192.168.5.71 for peer on Interface: FastEthernet0/0
Temp sub net mask: 255.255.255.0
DHCP Lease server: 192.168.5.70, state: 3 Bound
DHCP transaction id: 168F
Lease: 600 secs, Renewal: 300 secs, Rebind: 525 secs
Temp default-gateway addr: 192.168.5.1
Next timer fires after: 00:04:29
Retry count: 0 Client-ID: redgaint-00d0.f8fb.5740-Fa0/0
```

| | |
|------|---|
| Type | ☐ Automatic ☒ Manual |
|------|---|

| | |
|--------------------------------------|--------------------------------------|
| <div> <div></div> <div></div> </div> | <div> <div></div> <div></div> </div> |
| clear ip dhcp binding | DHCP |

3.44 show ip dhcp conflict

DHCP

 EXEC

 show ip dhcp conflict

| | |
|--------------------------------------|--------------------------------------|
| <div> <div></div> <div></div> </div> | <div> <div></div> <div></div> </div> |
| - | - |

DHCP

show ip dhcp conflict

Ruijie# show ip dhcp conflict
 IP address Detection Method

3

3.45 show ip dhcp server statistics

DHCP EXEC show ip dhcp server statistics

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

-

DHCP

show ip dhcp server statistics

Ruijie# show ip dhcp server statistics

Lease count 7

Address pools 4

Automatic bindings 4

Manual bindings 0

Expired bindings 0

Malformed messages 2

Message Received

BOOTREQUEST 216

DHCPDISCOVER 33

DHCPREQUEST 25

DHCPDECLINE 0

DHCPRELEASE 1

DHCPINFORM 150

Message Sent

BOOTREPLY 16

DHCPOFFER 9

DHCPACK 7

DHCPNAK 0

IO

| | |
|--------------------|--------|
| | |
| Lease count | |
| Address pools | |
| Automatic bindings | |
| Manual bindings | |
| Expired bindings | |
| Malformed messages | DHCP a |

| | | | |
|--------------------------|------|---|---|
| Message Received or Sent | DHCP | ↳ | Â |
|--------------------------|------|---|---|

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4.2 ip helper-address

UDP

↳ Â no

UDP

↳ Â

ð Ô UDP-Helper ¶ 69' 53' 37' 137' 138' 49 UDP
 Â

ð Ô IO ¶ UDP ¶

5 DHCPv6

5.1 clear ipv6 dhcp binding

DHCPv6 `clear ipv6 dhcp binding`
`clear ipv6 dhcp binding [ipv6-address]`

| | | | |
|---|---|--------------|------|
| ð | Ô | | |
| | | ipv6-address | IPv6 |

ð Ô -

ð 3 Ô

ð Ô *ipv6-address* DHCPv6 *ipv6-address* /1
Â

ð Ô ¾ÏO DHCPv6
Ruijie# clear ipv6 dhcp binding

EÄED8X5RAVSYAÖS006460!H0C7P00P"R78SY8S@rhn64848
EÄED8X5RAVSYAÖS006460!H0C7P00P"R78SY8S@rhn64848

ø Ô ÌÏ DHCPv6

```
Ruijie# clear ipv6 dhcp client vlan 1
```

ø Ì Ô

ö Ô -

ö 3 Ô

ö Ô 3 1 3 DHCPv6 Relay Â

ö Ô DHCPv6 Relay Agent 3 ^ 3 4 ~ ~ 1 3
ÿ 0 ~ '



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no dns-server *ipv6-address*

| | | | |
|---|---|---------------------|------------|
| ð | Ô | | |
| | | <i>ipv6-address</i> | DNS Server |

ð Ô DHCPv6 Server DNS Server

ð ð Ô DHCPv6

ð Ô 1 2 **dns-server** ð DNS Server Â DNS Server a
DNS Server

ð Ô 3 4 DNS Server
Ruijie(config-dhcp)# dns-server 2008:1::1

| | | | |
|---|-----|-----------------------|--------------------|
| ð | ð Ô | | |
| | | domain-name | DHCPv6 domain name |
| | | ipv6 dhcp pool | DHCPv6 |

ð 1 Ô -

5.7 domain-name

DHCPv6 Server domain name DHCPv6 IO **domain-name** ð Â
ð **no** domain name Â
domain-name *domain*
no domain-name *domain*

| | | | |
|---|---|--|--|
| ð | Ô | | |
|---|---|--|--|

4X[(d-)-9(n0 Tda)1n name

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|----------------|--------|
| ipv6 dhcp pool | DHCPv6 |
|----------------|--------|

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5.8 iana-address prefix

DHCPv6 Server

IANA

iana-address prefix

{

{

no

IANA

Â

iana-address prefix *ipv6-prefix/prefix-length* [**lifetime** {*valid-lifetime* | *preferred-lifetime*}]

no iana-address prefix

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| | |
|----------------------------------|------|
| <i>ipv6-prefix/prefix-length</i> | IPv6 |
|----------------------------------|------|

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ЛЮ

DHCPv6 Server

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```

Ruijie(config-if)# ipv6 dhcp relay destination 2008:1::1
#          Interface VLAN 1   DHCPv6 Relay      3001::2
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#interface vlan 1
Ruijie(config-if)#ipv6 dhcp relay destination 3001::2
Ruijie(config-if)#end

```

ö 3 Ô

| 3 | |
|---|--------|
| show ipv6 dhcp interface | DHCPv6 |
| show ipv6 dhcp relay destination { all interface interface-type interface-number } | Relay |

ö 1 Ô -

5.12 ipv6 dhcp server

DHCPv6 server **ipv6 dhcp server** 3 Â 3 **no** 3
 DHCPv6 server 3 Â
ipv6 dhcp server poolname [rapid-commit] [preference value]
no ipv6 dhcp server

ö Ô

| <i>poolname</i> | 1X DHCPv6 " |
|-------------------------|---------------------------|
| rapid-commit | |
| preference value | advertise Â 1 <1-100> 0 Â |

ö Ô DHCPv6 Server 3

ö 3 Ô

ö Ô **ipv6 dhcp server** 3 3 DHCPv6 3 Â
rapid-commit 3 3 two-message
 Â 3 solicit **rapid-commit** 3 DHCPv6 Server
 3 Reply Â
preference 3 0 3 DHCPv6 Server advertise preference
 Â Preference Server 3 advertise a 3 3
 preference 3 0 preference 3 255 Server request 3
 Â
 DHCPv6 Client 3 Server 3 Relay 3 3 3 3

ö Ô 3 DHCPv6 Server

```

Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ipv6 dhcp server pool1

```


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prefix-delegation pool *poolname* [**lifetime** {*valid-lifetime* | *preferred-lifetime*}]

no prefix-delegation pool *poolname*

| | | | |
|---|---|---------------------------|---|
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| | | <i>poolname</i> | ИЖ " |
| | | lifetime | Λ Λγ Â |
| | | | ~ <i>valid-lifetime</i> <i>preferred-lifetime</i> Â |
| | | <i>valid-lifetime</i> | Λ Λγ Â |
| | | <i>preferred-lifetime</i> | ÿ Â |

ð Ô
valid-lifetime ì 3600 ^ 1 ~
preferred-lifetime ì 3600 ^ 1 ~

ð 3 Ô DHCPv6

ð Ô **prefix-delegation pool** 3 ì DHCPv6 Server ~ Λ Λγ ÿ Â
ipv6 local pool 3 Â
 Server ~ ÿ Λ Λ Â a
 3 Server Λ è Â

ð Ô ΛγЮ ì Server
 Ruijie(config-dhcp)# prefix-delegation pool client-prefix-pool lifetime 2000 1000

| | | | |
|---|-----|-------------------------------|----------|
| ð | 3 Ô | 3 | |
| | | ipv6 dhcp pool | DHCPv6 |
| | | ipv6 local pool | |
| | | prefix-delegation pool | ì DHCPv6 |
| | | show ipv6 dhcp pool | DHCPv6 |

ð Λ Ô -

5.15 show ipv6 dhcp

DUID ~ **show ipv6 dhcp** 3 Â
show ipv6 dhcp

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|---|---|---|---|
| ð | Ô | | |
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ö 3 Ô / /

ö Ô * Æ Æ Æ DUID

ö Ô ¾ÏO DUID ‘

```
Ruijie# show ipv6 dhcp
This device's DHCPv6 unique identifier(DUID): 00:03:00:01:00:d0:f8:22:33:b0
```

ö 3 Ô

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ö / Ô -

5.16 show ipv6 dhcp binding

DHCPv6 Æ ~ show ipv6 dhcp binding 3
show ipv6 dhcp binding [ipv6-address]

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| | |
| ipv6-address | IPv6 |

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ö 3 Ô / /

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5.17 show ipv6 dhcp conflict

DHCPv6 **show ipv6 dhcp conflict**

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DHCPv6 Server **show ipv6 dhcp conflict**

DHCPv6 **show ipv6 dhcp conflict**

Ruijie# show ipv6 dhcp conflict

2008:50::2 declined

2108:50::2 declined

2008:50::3 declined

2008:50::4 declined

2108:50::4 declined

2008:50::5 declined

| | | |
|---------------------------------|--|--|
| | | |
| clear ipv6 dhcp conflict | | |

-

5.18 show ipv6 dhcp interface

DHCPv6 **show ipv6 dhcp interface**

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

-

/ /

interface-type interface-number DHCPv6 **show ipv6 dhcp interface**
interface-type interface-number / **show ipv6 dhcp interface**

ö Ô ¼Ï

```
Ruijie# show ipv6 dhcp interface
VLAN 1 is in server mode
Server pool dhcp-pool
Rapid-Commit: disable
```

ö ¼ Ô

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| ¼ | |
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5.19 show ipv6 dhcp pool

DHCPv6

show ipv6 dhcp pool ¼

show ipv6 dhcp pool [poolname]

ö Ô

| | |
|----------|------------|
| | |
| poolname | ¼ DHCPv6 " |

ö Ô -

ö ¼ Ô / /

ö Ô poolname DHCPv6 Â poolname /

ö Ô ¼Ï DHCPv6

```
Ruijie# show ipv6 dhcp pool
DHCPv6 pool: dhcp-pool
DNS server: 2011:1::1
DNS server: 2011:1::2
Domain name: example.com
```

ö ¼ Ô

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|----------------|----------|
| ¼ | |
| ipv6 dhcp pool | DHCPv6 Â |

ö / Ô -

5.20 show ipv6 dhcp relay destination

ö

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| | |
| all | |
| interface interface-type
interface-number | |

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3 1 16

Relay Agent

Relay

1

DHCPv6

^ 1 ~

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```

    Excess of rate limit      : 0    //
Packets received             : 28    //      DHCPv6
    SOLICIT                   : 0
    REQUEST                   : 0
    CONFIRM                   : 0
    RENEW                     : 0
    REBIND                     : 0
    RELEASE                   : 0
    DECLINE                   : 0
    INFORMATION-REQUEST       : 14
    RELAY-FORWARD              : 0
    RELAY-REPLY                : 14
Packets sent                  : 16    //      DHCPv6
    ADVERTISE                  : 0
    RECONFIGURE                 : 0
    REPLY                       : 8
    RELAY-FORWARD              : 8
    RELAY-REPLY                : 0

```

| | |
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| 3 | |
| clear ipv6 dhcp relay statistics | |

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5.22 show ipv6 dhcp server statistics

```

DHCPv6  show ipv6 dhcp server statistics 3
show ipv6 dhcp server statistics

```

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| 3 | |
| - | - |

1 -

3

1 DHCPv6

1 DHCPv6

```

Ruijie# show ipv6 dhcp server statistics
DHCPv6 server statistics:

Packet statistics:
DHCPv6 packets received:      7

```

```

Solicit received:          7
Request received:         0
Confirm received:         0
Renew received:           0
Rebind received:          0
Release received:         0
Decline received:         0
Relay-forward received:   0
Information-request received: 0
Unknown message type received: 0
Error message received:   0

DHCPv6 packet sent:       0
Advertise sent:           0
Reply sent:               0
Relay-reply sent:         0
Send reply error:         0
Send packet error:        0

Binding statistics:
Bindings generated:       0
IAPD assigned:            0
IANA assigned:            0

Configuration statistics:
DHCPv6 server interface:  1
DHCPv6 pool:              0
DHCPv6 iapd binding:      0

```

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| 3 | |
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| ipv6 dhcp pool | DHCPv6 Å |

ö / Ô -

6 DNS

6.1 clear host

|| ý " ã ~ 1 2
clear host [host-name]

| | | | |
|---|---|---------------------------|--------------|
| ö | Ô | | |
| | | 1 2 ý " ã " " 3 ý " | |
| | | host-name | 1 2 ý " ã |

ö Ô -

ö 3 Ô

ö Ô ý " ã ~ 4 ' ip host ipv6 host ' DNS || " Â 3 DNS || " ý " Â

ö Ô 2Ю ~ ý " -IP ã || " Â
 clear host

| | | | |
|---|-----|------------|-------|
| ö | 3 Ô | 3 | |
| | | show hosts | DNS Â |

ö 1 Ô -

6.2 ip domain-lookup

|| DNS " Â 3 no DNS " 11 Â
ip domain-lookup
no ip domain-lookup

ö Ô @b)h@00

ö Ô 3 ð DNS " ¶ ~ 3 ~ || DNS " Â

ö Ô IO DNS " ¶
Ruijie(config)# ip domain-lookup

ö 3 Ô

| | |
|------------|-----|
| 3 | |
| show hosts | DNS |

ö / Ô -

6.3 ip host

3 3 " IP Â 3 no 3 Â

ip host *host-name ip-address*

no ip host *host-name ip-address*

ö Ô

| | |
|-------------------|-----|
| | |
| <i>host-name</i> | 3 " |
| <i>ip-address</i> | IP |

ö Ô -

ö 3 Ô

ö Ô 3 ~ / ¶ **no ip host** *host-name ip-address* 3 Â

ö Ô Ruijie(config)# ip host switch 192.168.5.243

ö 3 Ô

| | |
|------------|-------|
| 3 | |
| show hosts | DNS Â |

ö / Ô -

6.4 ip name-server

3 " L IP/IPv6 Â / " L || " Â 3

no " L

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 |

ö Ô " £

ö 3 Ô

ö Ô ¶ DNS Server IP/IPv6 Â 3 ¶ DNS Server Â ÿ

Server

ö 1 Ô -

6.6 show hosts

DNS Â
show hosts [hostname]

ö Ô

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| | |
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ö 3 Ô

ö Ô DNS

ö Ô

```
Ruijie# show hosts
Name servers are:
192.168.5.134 static

Host          type      Address      TTL(sec)
switch        static    192.168.5.243  ---
www.ruijie.com dynamic    192.168.5.123  126
```

ö 3 Ô

| | |
|---------|------------|
| 3 | |
| ip host | ÿ " IP Z P |

Ä




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

```
Ruijie(config)# ftp-server password 0 pass
```

```
2  LЮ          й 8001
```

```
Ruijie(config)# ftp-server password 7 8001
```

```
3  LЮ          4
```

```
Ruijie(config)# no ftp-server password
```

ö 3 Ô

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| 3 | |
| - | - |

ö 1 Ô -

7.4 ftp-server timeout

FTP ^ Session idle timeout ~ 3 no й ^ 30
~ Â

ftp-server timeout time

no ftp-server timeout

ö Ô

| | |
|------|----------------|
| | |
| time | ^ Æ' ' 1-3600~ |

ö Ô й 30 Â

ö 3 Ô Â

ö Ô FTP Â ^ ~ FTP Ì
1 й ~ 6 Â

| | | | | |
|---|-----|-----|-----|-----|
| ✓ | FTP | FTP | FTP | FTP |
| | FTP | | 0 | |

FTP Server

7.5 ftp-server topdir

FTP Server topdir configuration command

ftp-server topdir *directory*

no ftp-server topdir

| | |
|------------------|-----|
| | |
| <i>directory</i> | FTP |

FTP Server

FTP Server

FTP Server topdir configuration command

ftp-server topdir *directory*

no ftp-server topdir

FTP Server topdir configuration command

```
Ruijie(config)# ftp-server topdir /syslog
Ruijie(config)# ftp-server enable
```

FTP Server topdir configuration command

```
Ruijie(config)# no ftp-server topdir
```

| | |
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| | |
| - | - |

FTP Server

7.6 ftp-server username

FTP Server username configuration command

ftp-server username *username*

no ftp-server username

| | |
|-----------------|--|
| | |
| <i>username</i> | |

FTP Server

FTP сервера. Для этого необходимо выполнить следующие команды:

```
Ruijie(config)# ftp
Ruijie(config-ftp)# user user
Ruijie(config-ftp)# password user
Ruijie(config-ftp)# local-user user
```

✓ FTP

1. Для того чтобы добавить пользователя user, выполните следующие команды:

```
Ruijie(config)# ftp-server username user
Ruijie(config)# no ftp-server username
```

| | | |
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| 3 | О | |
| - | | - |

1. О -

7.7 show ftp-server

FTP сервера. Для этого необходимо выполнить следующие команды:

```
show ftp-server
```

| | | |
|---|--|---|
| О | | |
| - | | - |

О -

3 О

FTP сервера. Для этого необходимо выполнить следующие команды:

```
show ftp-server
```

8 ^ IP à Port~

^ ы || || ~ Л IP à Port~

À

À

```
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
```

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

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| | |
|-----------|------|
| copy tftp | tftp |
|-----------|------|

ö / Ô -

8.2 default ftp-client

Ю **default ftp-client** 3

FTP Client

й || PASV

й 8^ BINARY

IP a Â

default ftp-client [vrf vrfname]

ö Ô

| <i>vrfname</i> | VRF |
|----------------|-----|

ö Ô й || PASV й 8^ BINARY a IP

ö 3 Ô

ö Ô 3 / Л FTP Client й

ö Ô Ю FTP Client й

Ruijie (config)# default ftp-client

ö 3 Ô

| 3 | |
|---|---|
| - | - |

ö / Ô -

8.3 ftp-client ascii

^ ASCII

FTP

3 **ftp-client ascii** 3 no

й 8^ BINARY Â

ftp-client [vrf vrfname] ascii

no ftp-client [vrf vrfname] ascii

ö Ô

| <i>vrfname</i> | VRF |
|----------------|-----|

ö Ô Ю FTP й 8^ BINARY

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ftp-client [vrf *vrfname*] **source-address** {*ip-address* | *ipv6-address*}

no ftp-client [vrf *vrfname*] **source-address**

| | | | |
|---|---|---------------------|----------|
| ð | Ô | | |
| | | <i>ip-address</i> | FTP IP |
| | | <i>ipv6-address</i> | FTP IPV6 |
| | | <i>vrfname</i> | VRF IP |

ð Ô IO a IP ~ Â

ð 3 Ô

ð Ô 3 1 16 a IP ~ IP 1 Â

ð Ô IO 3 || FTP

Ruijie (config)# ftp-client source-address 192.168.23.236

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

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9

9.1 ping

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

ð

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| ip-address | IPv4 |
|------------|---------------------|
| length | |
| times | |
| seconds | |
| data | |
| source | IPv4 127.0.0.1 |

```
< press Ctrl+C to break >
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!
Success rate is 100 percent (100/100), round-trip min/avg/max = 2/2/3 ms
```

| | | | |
|---|---|---|--|
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9.2 ping ipv6

3 ~ 1 16 || à æ Â 3 Ю
ping [ipv6] [ip-address [length length] [ntimes times] [timeout seconds] [data data] [source source]]

| | | | |
|---|---|-------------------|---|
| ô | Ô | | |
| | | <i>ip-address</i> | IPv6 |
| | | <i>length</i> | |
| | | <i>times</i> | |
| | | <i>seconds</i> | |
| | | <i>data</i> | |
| | | <i>source</i> | IPv6 Â è ~ ^ ::1~ a ñ |

ô Ô ^ ñ 2 ~ ~ 5 ñ 100Byte IP

ô 3 Ô

ô Ô **Ping ipv6** 3 Ю Ю 1 ping ipv6
 11 ~ Ю 1 16 ping ipv6 11 Â ping ipv6 11 ~ 1 16
 Ю ~ Ю ~ ^ ñ 2 ~ ~ 5 ñ 100Byte
 IP ~ ~ '1' ~ ~ 'C' ð Â ping ipv6 11 ~ 1
 б Ю ~ ping ~ 1 16 à ~ ping
 ipv6 11 ~ ð ≠ Â = 11 ~ = L ~ é ping
 DNS Â

ô Ô 1' ping ipv6 '

```
Ruijie# ping ipv6 2000::1
Sending 5, 100-byte ICMP Echoes to 2000::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 ipv6 2000::1 length 1500 ntimes 100 timeout 3 data ffff source 2000::2
```



```
Sending 100, 1500-byte ICMP Echoes to 2000::1, 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
```

ð 3 Ô

| | |
|---|--|
| 3 | |
| | |

й Э ^ 1 6 ~ ^ *
2 a 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
```

й Э ^ 1 6 ~ ^ *
1C#40B4D04B01B3/383-1P7357502C2aPTU500PVHFPVHFC>RG0eCPKCP88CP8hA!P!#55(pPVH F

| | | | |
|---|-----|---|---|
| 0 | 3 0 | 3 | |
| | | - | - |

9.4 traceroute ipv6

| | | |
|---|------------------------|--------------------|
| ð | Ô | |
| | <i>Ip-address</i> | IPv6 " Â |
| | <i>number</i> | |
| | <i>seconds</i> | |
| | <i>minimum maximum</i> | TTL |

Traceroute ipv6 DNS

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

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10 TCP

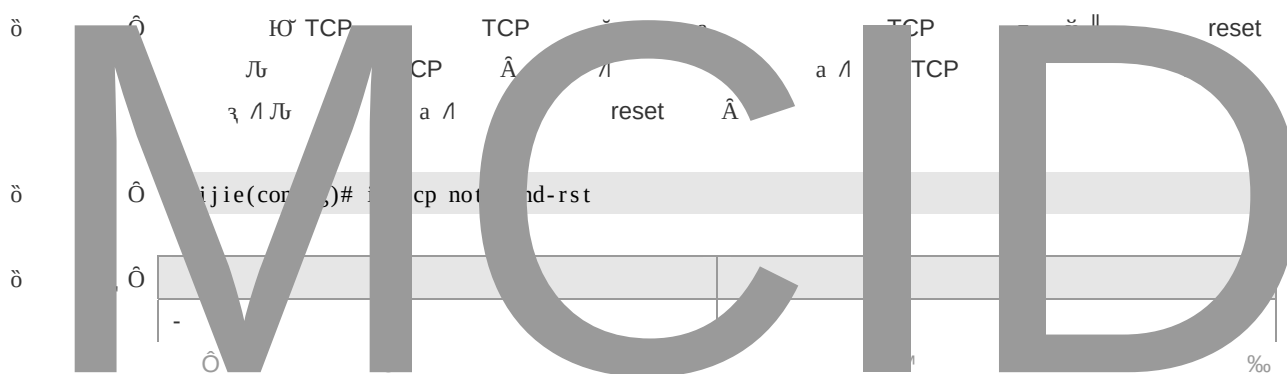
10.1 ip tcp mss

TCP MSS 3 4
 10 ip tcp mss 68-10000
 ip tcp mss max-segment-size
 no ip tcp mss

0

0

| max-segment-size | MSS 3 4
68-10000 |
|------------------|---------------------|



10.4 ip tcp syntime-out

SYN ^ SYN Б П ~ ~
 Ю ip tcp syntime-out Â 3 no Â
 ip tcp syntime-out seconds
 no ip tcp syntime-out

| | | | |
|---|---|---------|-----------------------------|
| ö | Ô | | |
| | | seconds | SYN Â
Æ Æ ~ 4 5-300 20 Â |

ö Ô Æ 20s

ö 3 Ô

ö Ô SYN ~ SYN 4 4 ~ SYN a
 Â ÿ || 6 ~ SYN 4 4 ~ telnet Â
 # 4 4 4 Â

ö Ô Ruijie(config)# ip tcp syntime-out 10

| | | | |
|---|-----|---|---|
| ö | 3 Ô | 3 | |
| | | - | - |

ö 4 Ô -

10.5 ip tcp window-size

TCP 3 3 Ю ip tcp window-size Â 3 no
 Â
 ip tcp window-size size
 no ip tcp window-size

| | | | |
|---|---|------|-----------------------------|
| ö | Ô | | |
| | | size | 3 3 Â
Æ ~ 4 0-65535 4096 |

ö Ô 3 3 Æ 4096

ö 3 Ô

ö Ô TCP 3 3 ÿ ~ 4 Â Ю TCP
 4 3 Â ä ~

| State | TCP | 11 | 1 | |
|-------------|-----|-----|-----|-----|
| CLOSED | | | | |
| LISTEN | | | | |
| SYNSENT | SYN | | 1 | |
| SYNRCVD | SYN | | 1 | |
| ESTABLISHED | | | | |
| FINWAIT1 | | FIN | | |
| FINWAIT2 | | FIN | | |
| CLOSEWAIT | | | FIN | |
| LASTACK | | | FIN | 1 |
| CLOSING | | FIN | | FIN |
| | FIN | | | ACK |
| | | | | |
| TIMEWAIT | | FIN | | 3 |
| | | | | 4 |
| | | | | |
| | | | | FIN |

| | | | |
|------------|------------------------|----------------|--|
| $\ddot{O}$ | $\mathfrak{z} \hat{O}$ | $\mathfrak{z}$ | |
|------------|------------------------|----------------|--|



-IP

Итого IP-адресов в сети

- 1.
2. RIP
3. RIPng
- 4.
5. VRF

1

1.1 accept-lifetime

3 accept-lifetime $\hat{A}$ 3 no

$\hat{A}$

accept-lifetime *start-time* { **infinite** | *end-time* | **duration seconds** }

no accept-lifetime

ö

Ô

| <i>start-time</i> | <p>Ю'</p> <p><i>hh:mm:ss month date year</i></p> <p><i>hh:mm:ss date month year</i></p> <p><i>hh—</i></p> <p><i>mm—</i></p> <p><i>ss—</i></p> <p><i>month—</i></p> <p><i>date—</i></p> <p><i>year—</i></p> <p>л и Jun 1 1993</p> |
|-------------------------|--|
| infinite | ÿ $\hat{A}$ |
| <i>end-time</i> | <i>start-time</i> |
| duration seconds | ÿ <i>start-time</i> л ' 1-2147483646 |

ö

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```

лЮЮ 1 ÿ 2000 9 9 2011 10 12  $\hat{A}$ 
Ruijie(config)# key chain ripkeys

Ruijie(config-keychain)# key 1

Ruijie(config-keychain-key)#accept-lifetime 00:00:00 Sep 9 2000 00:00:00 Dec 12 2011

```

| | | | | |
|---|---|---|---|---|
| д | з | О | з | |
| | | | - | - |

д / О -

1.2 ip default-network

з **ip default-network** $\hat{A}$ з no / Л

ip default-network *network*

no ip default-network *network*

| | | | |
|---|---|----------------|-----------|
| д | О | | |
| | | <i>network</i> | $\hat{A}$ |

д О и 0.0.0.0/0 $\hat{A}$

д з О $\hat{A}$

д О и **default-network** ЛЮ " "

a / $\hat{A}$

ЛЮ "*" $\hat{A}$ connected Ю

$\hat{A}$

д О 1' ЛЮ 192.168.100.0 и Л

$\hat{A}$

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

```
Ruijie(config)# ip default-network 192.168.100.0
```

2' ЛЮ 200.200.200.0 и 200.200.200.0

и $\hat{A}$

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

| | | | | |
|---|---|---|---|--|
| д | з | О | з | |
|---|---|---|---|--|

length][*le maximum-prefix- length*]

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1.4 ip prefix-list description

Используется команда **ip prefix-list description** для добавления описания к списку. Синтаксис:

ip prefix-list *prefix-list-name* **description** *descripton-text*

| | |
|-------------------------|--|
| Имя списка | |
| <i>prefix-list-name</i> | |
| <i>descripton-text</i> | |

Пример:

Ввод:

Выход:

Результат: Deny routes from Net-A'

```
Ruijie# configure terminal
```

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

| | |
|------------|---|
| Имя списка | |
| - | - |

Результат: -

1.5 ip prefix-list sequence-number

Используется команда **ip prefix-list sequence-number** для добавления номера к списку. Синтаксис:

ip prefix-list *prefix-list-name* **sequence-number**

| | |
|------------|---|
| Имя списка | |
| - | - |

Пример:

Ввод:

Выход:

Результат: Deny routes from Net-A'

```
Ruijie# configure terminal
```

```
Ruijie(config)# ip prefix-list pre sequence-number 1
```


Ồ 1 Ô -

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

$$\ddot{O} \qquad \hat{O} \qquad \hat{A}$$
$$\ddot{O} \quad \{ \quad \hat{O} \quad \hat{A}$$

1-5

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| | | |
|-------|---------------|------|
| õ 3 Ô | 3 | |
| | show ip route | IP Â |

õ / Ô -

1.7 ip routing

RGOS " IP П Ю 3 Â 3 no / Л Ô IP П Â

ip routing

no ip routing

| | | |
|-----|---|---|
| õ Ô | | |
| | - | - |

õ Ô IP Â

õ 3 Ô

õ Ô и и VOIP / Л a RGOS " IP П

â Б Ô RGOS " IP П Â

д 3 О А

д О Э и **ip static route-limit** Э
 ı Ю а Э А **show running-config** 1 Л

д О ЛЮ Э и 900 ı А
 Ruijie(config)# ip static route-limit 900
 Ruijie(config)# no ip static route-limit

| | | |
|-------|---|---|
| д 3 О | 3 | |
| | - | - |

д 1 О -

1.9 ipv6 prefix-list

IPv6 71 А **ipv6 prefix-list** 3 А 3 **no**

ipv6 prefix-list *prefix-list-name* [**seq** *seq-number*] { **deny** | **permit** } *ipv6-prefix* [**ge** *minimum-prefix-length*][**le** *maximum-prefix-length*]
no ipv6 prefix-list *prefix-list-name* [**seq** *seq-number*] { **deny** | **permit** } *ipv6-prefix* [**ge** *minimum-prefix-length*][**le** *maximum-prefix-length*]

| | | |
|-----|-------------------------|-------|
| д О | | |
| | <i>prefix-list-name</i> | “ А |
| | | Л А ı |
| | <i>seq-number</i> | |


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

| | | | |
|---|-----|---|---|
| ð | 3 Ô | 3 | |
| | | - | - |

ð 1 Ô -

1.11 ipv6 prefix-list sequence-number

Ï IPv6 ð ipv6 prefix-list sequence-number 3 Â 3 no
 1 ð Â
 ipv6 prefix-list sequence-number

| | | | |
|---|---|---|---|
| ð | Ô | | |
| | | - | - |

ð Ô ð

ð 3 Ô

ð -

â ð Ô IPv6 ð Ï

| | |
|---------------|---|
| <i>number</i> | (1)
' 1-128
'
↓
'
a
Â |
|---------------|---|

ö Ô ipv6

ö 3 Ô

ö Ô ñ 1 1 Л
a Â Л
ñ Â OSPF ñ 110 Л
ñ 125 OSPF 110 'C¥ 5 2

| | | | |
|---|---|--------|-------------------|
| ð | Ô | | |
| | | key-id | ID ¼ 0-2147483647 |

ð Ô

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ð Ô 3 ½ Â

ð Ô

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1.17 key-string

key-string [0 | 7] text
no key-string

key-string Â no Â

ö

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

Ö Ô Â

Ö 3 Ô Â

Ö Ô **match interface** 3 ± 1 16 Â[†]
[†] ^ route maps~[†]
[†] Â[†]
1 16 1 **match** 3 1 **set** 3 Â **match**
3 , **set** 3 a Â

Ö Ô[†] 1 16[†] 3 a[†] Â[†] 3 a[†] Â[†]
3 ≠ a[†] Â[†]
1610 OSPF[†] 3 RIP[†] 3 10 3 fastethernet 0/0 RIP[†]
Â[†]

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

Ö 3 Ô

| 3 | |
|------------------------------|----|
| match ip address | |
| match ip next-hop | 10 |
| match ip route-source | |
| match metric | |
| match route-type | |
| match tag | |
| set metric | 3 |
| set metric-type | 3 |
| set tag | 3 |

Ö 1 Ô -

1.19 match ip address

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

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

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

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Ruijie(crnetsjie

" Â

↑

ch 3 1 **set** 3 Â **match**

Â

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↑ ∃ a[°]

↑ 10 RIP

ù 40 Â

f

s route-map redrip

0.0.255 area 0

| | |
|------------------------|---|
| set metric | ↑ |
| set metric-type | ↑ |
| set tag | ↑ |

ö 1 Ô -

1.20 match ip next-hop

↑ IO IP 3 match ip
next-hop ^ 3 **no** ^
match ip next-hop {*access-list-number* [*access-list-number...* | *access-list-name...*] | *access-list-name* [*access-list-number...* | *access-list-name*] | **prefix-list** *prefix-list-name* [*prefix-list-name...*] }
no match ip next-hop [*access-list-number* [*access-list-number...* | *access-list-name...*] | *access-list-name* [*access-list-number...* | *access-list-name*] | **prefix-list** *prefix-list-name* [*prefix-list-name...*]]

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

ö Ô ^

ö 3 Ô ^

ö Ô **match ip next-hop** 3 ± 1 16 " ^
↑ ^ route maps~ ↑
^ ^
1 16 1 **match** 3 1 **set** 3 ^ **match**
3 ' **set** 3 a ^

ö Ô 16 IO OSPF ↑ RIP ^ RIP IO "

3 0

| access-list | 10 |
|------------------------------|----|
| match ip address | |
| match interface | 10 |
| match ip route-source | |
| match metric | |
| match route-type | |
| match tag | |
| set metric | 1 |
| set metric-type | 1 |
| set tag | 1 |

0 1 0 -

1.21 match ip route-source

1 IP 3 match

route-source 1 3 **no** 1

match ip route-source {*access-list-number* [*access-list-number...* | *access-list-name...*]
 [*access-list-name* [*access-list-number...*] *access-list-name*] | **prefix-list** *prefix-list-name*
 [*prefix-list-name...*]}

no match ip route-source [*access-list-number* [*access-list-number...* | *access-list-name...*] |
access-list-name [*access-list-number...*] *access-list-name*] | **prefix-list** *prefix-list-name*
 [*prefix-list-name...*]]

0 0

| <i>access-list-number</i> | |
|--|---|
| <i>access-list-name</i> | " |
| prefix-list <i>prefix-list-name</i> | " |

0 0 1

0 3 0 1

0 0 **match ip route-source** 3 1 10 1

1 ^ route maps~ 1

1 1 1 **match** 3 1 **set** 3 1 **match**

3 **set** 3 a 1

0 0 OSPF 1 RIP 1 RIP IP 5 OSPF 1

1

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

```

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

```

Table 1-10

| Command | Configuration |
|--------------------------|---------------|
| access-list | IP |
| match ip address | |
| match interface | IO |
| match ip next-hop | IO |
| match metric | |
| match route-type | |
| match tag | |
| set metric | ↑ |
| set metric-type | ↑ |
| set tag | ↑ |

Table 1-11

1.22 match ipv6 address

IPv6 PBR IPv6 ACL IPv6

IPv6

match ipv6 address *access-list-name* | **prefix-list** *prefix-list-name*

no match ipv6 address

Table 1-12

| Command | Configuration |
|--|---------------|
| access-list-name | |
| prefix-list <i>prefix-list-name</i> | IPv6 |

Table 1-13

Table 1-14

Table 1-15

route map sequence IPv6 ACL

Route map sequence 10

IPv6 PBR a b prefix-list a

↑ ^ route maps~

↑

↑

| | |
|-----------------|---|
| set metric | ↑ |
| set metric-type | ↑ |
| set tag | ↑ |

ö 1 Ô -

1.24 match ipv6 route-source

↑ IPv6 match ipv6
 route-source $\hat{A}$ 3 no $\hat{A}$
 match ipv6 route-source { access-list-name | prefix-list prefix-list-name }
 no match ipv6 route-source

ö Ô

| | |
|------------------------------|--------|
| | |
| access-list-name | " |
| prefix-list prefix-list-name | IPv6 " |

ö Ô $\hat{A}$

ö 3 Ô $\hat{A}$

ö Ô ↑ ^ route maps~ ↑
 " $\hat{A}$
 1 1 match 3 1 set 3 $\hat{A}$ match
 3 ' set 3 a $\hat{A}$

ö Ô ↑ 1 1 ↑ 3 $\hat{A}$ a é
 3 a* $\hat{A}$ * ↑ 3 a*
 é 3 ≠ a * $\hat{A}$
 1 1 OSPF ↑ RIP ↑ v6acl RIP
 OSPF 50 $\hat{A}$

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

ö 3 Ô

| | |
|------------------|--------|
| 3 | |
| ipv6 access-list | 1 IPv6 |

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

ö / Ô -

1.27 match tag

3 match tag Â 3 no Â

match tag tag [...tag]

no match tag [tag [...tag]]

ö

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IJtagt<2R

match ip route-source

$\hat{O}$

route-map-name

permit

| | |
|--------------|---|
| Redistribute | ↑ |
|--------------|---|

ö / Ô -

1.30 send-lifetime

3 send-lifetime Â 3 no

Â

send-lifetime *start-time* { **infinite** | *end-time* | **duration seconds** }

no send-lifetime

ö

Ô

| <i>start-time</i> | <p>HO</p> <p><i>hh:mm:ss month date year</i></p> <p><i>hh:mm:ss date month year</i></p> <p><i>hh—</i></p> <p><i>mm—</i></p> <p><i>ss—</i></p> <p><i>month—</i></p> <p><i>date—</i></p> <p><i>year—</i></p> <p>1 1 Jun 1 1993</p> |
|-------------------------|--|
| infinite | ÿ Â |
| <i>end-time</i> | <i>start-time</i> |
| duration seconds | ÿ <i>start-time</i> 1 1-2147483646 |

ö Ô

ö 3 Ô

ö Ô 3 HX Â

ö Ô 1 2000 9 9 2011 10 12 Â

```
Ruijie(config)# key chain ripkeys
```

```
Ruijie(config-keychain)# key 1
```

```
Ruijie(config-keychain-key)# send-lifetime 00:00:00 Sep 9 2000 00:00:00 Dec 12 2011
```

ö / Ô -

1.32 set ip dscp

match DSCP { set ip dscp *Â* } no

Â

set ip dscp *dscp_value*

no set ip dscp

| | | | |
|---|---|-------------------|------------|
| ö | Ô | | |
| | | <i>dscp_value</i> | IP IP DSCP |

ö Ô *Â*

ö { Ô *Â*

ö Ô -

ö Ô -

| | | | |
|---|-----|------------------|-------|
| ö | { Ô | | |
| | | route-map | Ï |
| | | match ip address | |
| | | set ip next-hop | IO IP |

ö / Ô -

1.33 set ip next-hop

match IO IP { set ip next-hop *Â* }

no *Â* { *Â*

set ip next-hop *ip-address* [*weight*] [...*ip-address* [*weight*]]

no set ip next-hop [*ip-address* [*weight*] [...*ip-address* [*weight*]]]

| | | | |
|---|---|-------------------|-------|
| ö | Ô | | |
| | | <i>ip-address</i> | IO IP |
| | | <i>weight</i> | IO |

ö

IO
set ip next-hop

weight

WCMP

$\hat{A}$

| | | | |
|---|---|----------------------|------|
| ö | Ô | | |
| | | <i>ip-address</i> | Ю IP |
| | | <i>track-obj-num</i> | |

ö Ô Â

ö 3 Ô Â

ö Ô -

ö Ô ью Ю 192.168.1.2 л ñ 1'

```
Ruijie(config)#route-map rmap permit 10
```

```
Ruijie(config-route-map)#set ip next-hop verify-availability 192.168.1.2 track 1
```

| | | | |
|---|-----|-------------------------|------|
| ö | 3 Ô | 3 | |
| | | route-map | лх |
| | | match ip address | |
| | | set ip next-hop | Ю IP |

ö л Ô -

1.35 set ip tos

match IP TOS, 3 **set ip tos** Â 3 **no**
 tos Â
set ip tos {<0-15> |

```
Ruijie(config)#interface FastEthernet 0/0
Ruijie(config-if)#ip policy route-map name
```

ð 3 Ô

| 3 | |
|-----------------------|----|
| match interface | IO |
| match ip address | |
| match ip next-hop | IO |
| match ip route-source | |
| match metric | |
| match route-type | |
| match tag | |
| set metric-type | ↑ |
| set tag | ↑ |

ð 1 Ô -

1.36 set ipv6 next-hop

match IPv6 IO IPv6 3 set ipv6 next-hop Â

3 no Â 3 Â

set ipv6 next-hop *global-ipv6-address* [*weight*] [*global-ipv6-address* [*weight*]...]

no set ipv6 next-hop *global-ipv6-address* [*weight*] [*global-ipv6-address* [*weight*]...]

ð Ô

| <i>global-ipv6-address</i> | IO IPv6 Â IO Â |
|----------------------------|----------------|
| <i>weight</i> | IO 1` 8. |

ð Ô Â

ð 3 Ô Â

ð Ô set 3 WCMP WCMP Â

IO weight WCMP Â

set ipv6 next-hop 3 ± 1 16 IP a 32 Â

IO 1 16 4 IO Â

| weight | set | WCMP |
|-------------------------------|--------|----------|
| weight | weight | next-hop |
| weight 1 | | |
| set ipv6 next-hop > | | |
| > | | |

ð Ô 16IO 3 fastEthernet 0/0 1 2001:0db8:2001:1760::/64 IO

й 2002:0db8:2003:1::95 Æ

```
Ruijie(config)# ipv6 access-list acl_for_pbr
Ruijie(config -ipv6-acl)#permit ipv6 any 2001:0db8:2001:1760::/64
Ruijie(config)#route-map rm_if_0_0
Ruijie(config-route-map)#match ip address acl_for_pbr
Ruijie(config-route-map)# set ipv6 next-hop 2002:0db8:2003:1::95
Ruijie(config)#interface FastEthernet 0/0
Ruijie(config-if)#ipv6 policy route-map rm_if_0_0
```

ö з Ô

| з | |
|-----------------------|---|
| match ipv6 address | Æ |
| ipv6 policy route-map | Э |

ö л Ô -

1.37 set metric

match з set metric Æ з no Æ

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

no set metric

ö Ô

| + | ¶ ^ metric Э ¶ ~ |
|--------------|------------------|
| - | ^ metric Э ~ |
| metric-value | † |

ö Ô a* † a Æ

ö з Ô Æ

ö Ô

Æ | + E | - E metric Э Ю Æ RIP † è set metric ä

metric ‡ й 1-16 Æ

л Лб ÿ † ¶ Æ л Лб OSPF

† ‡ RIP ≠ л Лб RIP † ‡ OSPF Æ

† л Лб IP Æ

† ^ route maps~ †

Æ

л Лб 1 match з 1 set з Æ match

з set з a Æ

ö Ô ЛбЮ RIP † † й 40 Æ

```
Ruijie(config)# router rip
```



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

ö / Ô -

1.39 set tag

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

| | | |
|-----|-----|---|
| ö Ô | | |
| | tag | ↑ |

ö Ô a 4 Â

ö 3 Ô Â

ö Ô 3 ↑ Â 3 Â

ö Ô Ю OSPF ↑ RIP ↑ ÿ 100 Â

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

| | | |
|-------|-----------------------|---|
| ö 3 Ô | 3 | |
| | match interface | Ю |
| | match ip address | |
| | match ip next-hop | Ю |
| | match ip route-source | |
| | match metric | |
| | match route-type | |
| | match tag | |

| | |
|-----------------|---|
| set metric | ↑ |
| set metric-type | ↑ |

ö 1 Ô -

1.40 show ip prefix-list

show ip prefix-list 3 Â

show ip prefix-list [*prefix-name*]

| | | | |
|---|---|--------------------|---|
| ö | Ô | | |
| | | <i>prefix-name</i> | " |

ö Ô Â

ö 3 Ô ä ä ä ä Â

ö Ô " Â

ö Ô Ruijie# show ip prefix-list
ip prefix-list pre: 2 entries
seq 5 permit 192.168.64.0/24
seq 10 permit 192.2.2.0/24

| | | | |
|---|-----|---|---|
| ö | 3 Ô | 3 | |
| | | - | - |

ö 1 Ô -

1.41 show ip route

IP show ip route 3 Â

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

| | | | |
|---|----------------------------|-------|---|
| ö | Ô | | |
| | vrf <i>vrf_name</i> | ^ 1 ~ | VRF |
| | <i>network</i> | ^ 1 ~ | |
| | <i>mask</i> | ^ 1 ~ | |
| | count | ^ 1 ~ | ECMP/WCMP |
| | <i>protocol</i> | ^ 1 ~ | ' connected, static'
IO ' bgp, isis, ospf, rip |
| | <i>process-id</i> | ^ 1 ~ | |

weight

^ 1 ~

ö Ô Â

ö 3 Ô ä ä ä ä Â

ö Ô 3 1 2 Â

ö Ô 1' 2 Юй show ip route 3 '

Ruijie# show ip route

Codes: C - connected, S - static, R - RIP, B - BGP

O - OSPF, IA - OSPF inter area

N1-OSPF NSSA external type 1,N2 - OSPF NSSA external type 2

E1 - OSPF external type 1, E2 - OSPF external type 2

i - IS-IS,su - IS-IS summary,L1 - IS-IS level-1,L2 - IS-IS level-2

ia - IS-IS inter area, * - candidate default

Gateway of last resort is no set

S 20.0.0.0/8 is directly connected, VLAN 1

S 22.0.0.0/8 [1/0] via 20.0.0.1

O E2 30.0.0.0/8 [110/20] via 192.1.1.1, 00:00:06, VLAN 1

R 40.0.0.0/8 [120/20] via 192.1.1.2, 00:00:23, VLAN 1

B 50.0.0.0/8 [120/0] via 192.1.1.3, 00:00:41

C 192.1.1.0/24 is directly connected, VLAN 1

C 192.1.1.254/32 is local host.

show ip route 3

Ю'

| | Â 1 2 3' |
|------------|--|
| O | C',
S',
R' RIP',
B' BGP',
O' OSPF',
i' IS-IS Â |
| E2 | Â 1 2 3'
E1' OSPF " ',
E2' OSPF ~ ',
N1' OSPF NSSA 1',
N2' OSPF NSSA 2',
IA' OSPF',
su' IS-IS',
L1' IS-IS 1',
L2' IS-IS 2',
ia' IS-IS Â |
| 20.0.0.0/8 | |

| | |
|--------------|------|
| [1/0] | |
| Via 20.0.0.1 | Ю IP |
| 00:00:06 | |
| VLAN 1 | Ю |

2. Лю и **show ip route network** 3

```
Ruijie# show ip route 30.0.0.0
Routing entry for 30.0.0.0/8
Distance 110, metric 20
Routing Descriptor Blocks:
*192.1.1.1, 00:01:11 ago, via VLAN 1, generated by OSPF, extern 2
```

| | |
|------------------------------|-------------------------|
| | |
| Routing Descriptor
Blocks | Ю IP ă ă ă
ă ă ă BGP |

3. Лю и **show ip route count** 3

```
Ruijie# show ip route count
----- route info -----
the num of active route: 5
```

4. Лю и **show ip route weight** 3

```
Ruijie# show ip route weight
-----[distance/metric/weight]-----
S    23.0.0.0/8 [1/0/2] via 192.1.1.20
S    172.0.0.0/16 [1/0/4] via 192.0.0.1
```

| | | |
|-------|---|---|
| ö 3 Ô | 3 | |
| | - | - |

ö 1 Ô -

1.42 show ip route summary

Ю 3
show ip route [vrf vrf_name] summary
 Ю 3
show ip route summary all

| | | |
|-----|----------|------|
| ö Ô | | |
| | vrf_name | VRF" |

ö Ô -

ö 3 Ô


```

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

```

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

0 1 0 -

1.44 show ipv6 route

IPv6 **show ipv6 route** *network/prefix-length* | **summary** | *protocol* | **weight**

| | | | |
|------------------------------|-------|------|------------------------|
| | | | |
| <i>network/prefix-length</i> | ^ 1 ~ | | |
| summary | ^ 1 ~ | ipv6 | ↑ |
| <i>protocol</i> | ^ 1 ~ | | 'connected, static' |
| | | IO | 'bgp, isis, ospf, rip' |
| weight | ^ 1 ~ | | |

0 0

0 3 0 ä ä ä ä

0 0 3 1 7

```

Ruijie(config)# show ipv6 route
IPv6 routing table - Default - 7 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary
O - OSPF intra area, OI - OSPF inter area, OE1 - OSPF external type 1, OE2 - OSPF external
type 2
ON1 - OSPF NSSA external type 1, ON2 - OSPF NSSA external type 2
L    ::1/128 via Loopback, local host
C    10::/64 via Loopback 1, directly connected
L    10::1/128 via Loopback 1, local host
S    20::/64 [20/0] via 10::4, VLAN 1
L    FE80::/10 via ::1, Null0
C    FE80::/64 via Loopback 1, directly connected
L    FE80::2D0:F8FF:FE22:33AB/128 via Loopback 1, local host

```

| O | <p> $\hat{A}$ $\wedge$ ∇ $\dot{H}$ </p> <p> C , </p> <p> L $\ddot{y}$, </p> <p> S , </p> <p> R RIP , </p> <p> B BGP , </p> <p> O OSPF , </p> <p> $\tilde{I}$ IS-IS $\hat{A}$ </p> |
|----|--|
| E2 | <p> $\hat{A}$ $\wedge$ ∇ $\dot{H}$ </p> <p> $E1$ OSPF " , </p> <p> $E2$ OSPF $\sim$, </p> <p> $N1$ OSPF NSSA $1'$ </p> <p> $N2$ OSPF NSSA $2'$ </p> <p> IA OSPF , </p> <p> su IS-IS , </p> |

```
Ruijie# sh key chain
```

```
key chain ripkeys
```

```
key 1 -- text "abc"
```

```
accept-lifetime (00:00:00 Sep 09 2000) - (00:00:00 Dec 12 2011)
```

```
send-lifetime (00:00:00 Sep 09 2000) - (00:00:00 Dec 12 2011)
```

| key chain | " |
|-----------------|----|
| key | ID |
| text | |
| accept-lifetime | |
| send-lifetime | |

| | |
|---|---|
| 3 | |
| - | - |

```
1 Ô -
```

1.46 show route-map

```
3 show route-map Â
```

```
show route-map route-map-name
```

| | |
|----------------|-------|
| Ô | |
| route-map-name | ^ 1 ~ |

```
Ô Â
```

```
Ô ä ä ä ä Â
```

```
Ô " Â
```

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

metric 10

| | |
|---------------|--|
| | |
| route-map | # |
| Permit | permit |
| sequence 10 | |
| Match clauses | ! <div> ^ permit deny </div> set |
| Set clauses | ! match ! |

0 3 0

| | |
|---|---|
| 3 | |
| - | - |

0 1 0 -

2 RIP

11 $\hat{A}$
 auto-summary
 no auto-summary

| | | | |
|---|---|---|---|
| ð | Ô | | |
| | | - | - |

ð Ô 11 $\hat{A}$

ð 3 Ô $\hat{A}$

ð Ô RIP $\hat{A}$ RIPv1 RIPv2

Ю $\hat{A}$

RIP 11 $\hat{A}$ a

11 Ю $\hat{A}$

Ÿ ЮЮ ‘

‘ RIP

Y ‘ RIP

Б ‘ 1 é a ‡

11 $\hat{A}$ RIPv2 11 Ю 11 RIPv1 $\hat{A}$

Ю 3 $\hat{A}$

ð Ô ЮЮ RIPv2 $\hat{A}$

```

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

ð 3 Ô

RIP

Ö Ö ЮЮ RIP

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

Ö Ö

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

Ö / Ö -

2.5 default-metric

Ю RIP

Ö **default-metric** 16 **no**

default-metric *metric-value*

no default-metric

Ö Ö

| | |
|---------------------|-------------------------------|
| | |
| <i>metric-value</i> | è 1 16 <i>metric-value</i> 16 |

Ö Ö è 1

Ö Ö

Ö Ö Ö **redistribute** 16

RIP a RIP

RIP default-metric 16

Ö a Ö default-metric è 1

Ö Ö ЮЮ RIP 3

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

Ö Ö

| | |
|---------------------|-----|
| | |
| redistribute | ÿ 3 |

Ö / Ö -

2.6 distance

RIP 3 distance 1 3 no 1

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

no distance [*distance ip-address wildcard*]

| | | | |
|---|-------------------|-----|---------|
| 0 | 0 | | |
| | <i>distance</i> | RIP | <1-255> |
| | <i>ip-address</i> | IP | |
| | <i>wildcard</i> | IP | " a 1 |

0 0 120 1

0 3 0 1

0 0 3 RIP 1
1 1 3 RIP 1

0 0 160, 192.168.12.1 123

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

| | | | |
|---|-----|---|--|
| 0 | 3 0 | | |
| | - | - | |

0 1 0 -

2.7 distribute-list in

16 3 distribute-list in 1 3 no

16 1

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

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

| | | | |
|---|---|--------|--|
| 0 | 0 | | |
| | <i>access-list-number</i> <i>name</i> | 1 16 1 | |
| | prefix <i>prefix-list-name</i> | 1 | |
| | gateway <i>prefix-list-name</i> | 1 | |

$$\ddot{O} \quad \quad \quad \{ \hat{O}$$

| | | | |
|---------------|---------|-----|---|
| rip | (/) ↑ | rip | Â |
| static | (/) ↑ | ÿ | Â |

ö Ô Â

ö 3 Ô Â

ö Ô 3 a / , è Â

ö Ô ¼Ю RIP 192.168.12.0/24 Â

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

ö 3 Ô

| | |
|---------------------|-----|
| 3 | |
| access-list | И Â |
| prefix-list | И Â |
| redistribute | ↑ Â |

ö / Ô -

2.9 exit-address-family

Ю **exit-address-family** 3 Â

exit-address-family

| | | |
|-----|---|---|
| ö Ô | | |
| | - | - |

ö Ô 3 ½

ö 3 Ô Â

ö Ô Ю 3 Â
3 / ¼ ½ **exit** Â

ö Ô ¼Ю

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

ð

3 Ô

GR Helper

VSU

GR Restarter GR Helper

2.11 ip rip authentication key-chain

RIP

RIP

ip rip authentication key-chain

no

ip rip authentication key-chain *name-of-keychain*

no ip rip authentication key-chain

| | | | |
|-------------------------|---|-----|--|
| <i>name-of-keychain</i> | " | RIP | |
|-------------------------|---|-----|--|

key chain

RIP

RIPv1 a

RIP

RIPv2

fastEthernet 0/1

RIP

ip ripchain'

no ip rip authentication mode

| | | | |
|---|-------------|-----|---------|
| ö | Ô | | |
| | text | RIP | ÿ Â |
| | md5 | RIP | ÿ MD5 Â |

ö Ô ÿ Â

ö ÿ Ô Â

ö Ô RIP RIP RIP
 RIP Â
 ~ MD5 ≠ a ÿ Â
 RIPv1 a RIP RIPv2 Â

ö Ô ьЮ fastEthernet 0/1 RIP ÿ MD5 Â

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

```
Ruijie(config-if-FastEthernet 0/1)# ip rip authentication mode md5
```

| | | | |
|---|--|-----------------|---------|
| ö | ÿ Ô | ÿ | |
| | ip rip authentication key-chain | RIP RIPv2 RIP Â | Â |
| | ip rip authentication text-password | RIP RIP Â | Â RIPv2 |
| | key chain | | Â |

ö / Ô -

2.13 ip rip authentication text password

3 0

0 0 3 IO 0

RIP 1 1 3

RIPv1 a RIP RIPv2 0

0 0 1 fastEthernet 0/1 RIP 0 hello 0

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# ip rip authentication text-password hello
```

| | |
|---------------------------------|--------------------------|
| 3 0 | 3 |
| ip rip authentication mode | 0 RIP 0 |
| ip rip authentication key-chain | RIP RIP 0
RIPv2 RIP 0 |

0 1 0 -

2.14 ip rip bfd

RIP BFD 3 ip rip bfd

[disable] 0 3 no 0 ip rip bfd 0

ip rip bfd [disable]

no ip rip bfd

| | |
|---------|-----------|
| 0 0 | |
| disable | RIP BFD 0 |

0 0 1 RIP IO BFD 0 0

0 3 0 0

0 0 IO bfd all-interfaces 3 0

1 1 ip rip bfd 3 BFD 0 1 1 RIP

IO 3 bfd all-interfaces 6 RIP BFD ip rip

bfd disable BFD 1 0

0 0 -

| | |
|--------------------|-----------|
| 3 0 | 3 |
| router rip | RIP 0 |
| bfd all-interfaces | RIP BFD 0 |

0 1 0 -

RIP

```
ip rip default-information announce
```

$$\mathcal{N} \quad \hat{A}$$

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

```
no ip rip default-information
```

$$\hat{O} = \hat{A} metric \quad \text{и} \quad 1 \hat{A}$$
$$\ddot{O} \quad \mathfrak{z} \quad \hat{O} \quad \hat{A}$$

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

```
ip rip default-information RIP a "A" ^ ^
```

0 0 0 ethernet0/1 0 0 0

```
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if-Ethernet 0/1)# ip rip default-information only
```

$$\ddot{\theta} \quad \wedge \quad \hat{O} \quad -$$

RIP

Э

RIP

```

3 ip rip receive enable^      3 no

```

RIP

Ε

RIP

 $\hat{A}$

```
ip rip receive enable
```

no ip rip receive enable

Ồ Ô RIP

$$\ddot{O} \quad \mathfrak{Z} \quad \hat{O} \quad \hat{A}$$

Ö Ö RIP Ю 3 **no** Â 3
3 Â 1 3 **default** RIP Â

Ö Ö ЮЮ fastEthernet 0/1 RIP Â
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# no ip rip receive enable

| | | |
|-------|---------------------------|-----|
| Ö 3 Ö | 3 | |
| | ip rip send enable | RIP |
| | passive-interface | RIP |

Ö 1 Ö -

2.17 ip rip receive version

Ï RIP 3 RIP 3 **ip rip receive version** Â
3 **no** Â
ip rip receive version [1] [2]
no ip rip receive version

| | | |
|----------|-------|---------|
| Ö Ö | | |
| 1 | ^ 1 ~ | RIPv1 Â |
| 2 | ^ 1 ~ | RIPv2 Â |

Ö Ö 3 4 **version** 3 Â

Ö 3 Ö Â

Ö Ö 3 1 Ю **vesion** 3 Â 3 RIP 3 4
Ю ~ RIPv1 RIPv2 Â 3 a 3 4 version
Â

Ö Ö ЮЮ fastEthernet 0/1 1 Ю RIPv1 RIPv2 Â
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# ip rip receive version 1 2

| | | |
|-------|----------------|---------|
| Ö 3 Ö | 3 | |
| | version | Ï RIP Â |

Ö 1 Ö -

| RIP | $\exists$ | RIP | $\exists$ | ip rip send enable $\hat{A}$ | $\exists$ | no |
|-----------------------|-----------|-----|-----------|------------------------------|-----------|----|
| RIP | $\exists$ | RIP | $\hat{A}$ | | | |
| ip rip send enable | | | | | | |
| no ip rip send enable | | | | | | |

| | | |
|---|---|---|
| đ | Ô | |
| | - | - |

$\hat{O}$ RIP IO $\hat{A}$ **no** $\hat{A}$ **default** RIP $\hat{A}$

```

Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# no ip rip send enable

```

| | | | |
|---|-----|-----------------------|-----|
| ð | ₃ Ô | ₃ | |
| | | ip rip receive enable | RIP |
| | | passive-interface | RIP |

| | | | | | |
|---------------------------------------|-----|-----------|-----|-----------|--|
| | RIP | $\exists$ | RIP | $\exists$ | $\exists$ ip rip send supernet-routes $\hat{A}$ |
| $\exists$ no | RIP | $\exists$ | RIP | $\hat{A}$ | |
| ip rip send supernet-routes | | | | | |
| no ip rip send supernet-routes | | | | | |

| | | |
|---|---|---|
| đ | Ô | |
| | - | - |

$\ddot{O}$ $\hat{O}$ RIPv1 RIPv2 RIPv1
 $\ddot{y}$ $\hat{A}$ $\mathbb{L}$ $\mathbb{H}$ RIPv2 3

no
RIPv2

Õ fastEthernet 0/1 RIP

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if-FastEthernet 0/1)# no ip rip send supernet-routes
```

Õ

| | |
|--------------------|-----|
| | |
| ip rip send enable | RIP |
| version | RIP |

Õ -

2.20 ip rip send version

RIP Ò RIP ip rip receive version

no
ip rip send version [1] [2]
no ip rip send version

Õ

| | |
|-------|-------|
| | |
| ^ 1 ~ | RIPv1 |
| ^ 1 ~ | RIPv2 |

À

vesion
Pv1 RIPv2 À a RIP version

tEthernet 0/1 1 16 RIPv1 RIPv2

2.21

| | | | |
|---|---|------------------------|------|
| ð | Ô | | |
| | | <i>ip-address</i> | IP |
| | | <i>ip-network-mask</i> | й IP |

ð Ô RIP

ð 3 Ô Â

ð Ô 3 **ip rip summary-address** Ю ÂRIP
 Â Â
 3 a a Â

ð Ô Ю RIPv2 Â fastEthernet 0/1 ð
 172.16.0.0/16 Â

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

| | | | |
|---|-----|---------------------|-----|
| ð | 3 Ô | 3 | |
| | | auto-summary | RIP |

ð / Ô -

2.23 ip rip triggered

RIP т Ю 3 **ip rip triggered** Â 3 **no**
 RIP т Â
ip rip triggered
ip rip triggered retransmit-timer *timer*
ip rip triggered retransmit-count *count*
no ip rip triggered
no ip rip triggered retransmit-timer
no ip rip triggered retransmit-count

| | | | |
|---|---|--------------------------------------|---|
| ð | Ô | | |
| | | retransmit-timer <i>timer</i> | Update Request à Update Response
й 5 ¼ ' 1-3600 |
| | | retransmit-count <i>count</i> | Update Request à Update Response
й 36 ¼ ' 1-3600 |

ð Ô RIP П

ð ð Ô Â

ð Ô RIP П ^ TRIP Triggered RIP~ RIP ^ WAN Wide Area Network~ Э

ÿ Â

RIP П

RIP a "A

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RIP

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RIP

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4 Â

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RIP

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4 Л

retransmit-timer

retransmit-count

Â

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П ' A.

' B.

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|---|---|---|---|
| ð | Ô | | |
| | | - | - |

ð Ô ÿ ¼ **version** 3 Â

ð 3 Ô Â

ð Ô 3 ¼ ¼ **vesion** 3 Â 3 RIP ÿ ¼
 ¼ * RIPv1 RIPv2 Â 3 a ÿ ¼ version
 Â

ð Ô ¼Ю fastEthernet 0/1 ¼ RIPv2 Â

Ruijie(config)# interface fastEthernet 0/1

Ruijie(config-if-FastEthernet 0/1)# ip rip v2-broadcast

| | | |
|-------|---|--|
| ð 3 Ô | 3 | |
|-------|---|--|

| | |
|-------------------|-----------|
| passive-interface | и passive |
|-------------------|-----------|

ö / Ô -

2.26 network

и RIP

з network Ô з no

и Ô

network *network-number* [*wildcard*]

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

ö Ô

| <i>network-number</i> | Ô и IP |
|-----------------------|----------------|
| <i>wildcard</i> | и IP æ 0 1 a Ô |

ö Ô -

ö з Ô Ô

ö Ô / ю network-number wildcard б RIP Ô
wildcard RGOS
б RIP Ô
RIP и / ю RIP RIP
Ô

ö Ô ю и б RIP 192.168.12.0/24 172.16.0.0/24
б RIP '

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

ö з Ô

| з | |
|---|---|
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ö / Ô -

2.27 offset-list

и

RIP

metric

/ ю

з offset-list

з no

offset

offset-list {*access-list-number* | *name*} {**in** | **out**} *offset* [*interface-type* *interface-number*]

no offset-list {*access-list-number* | *name*} {**in** | **out**} *offset* [*interface-type* *interface-number*]

| | | | |
|---|-------------------------|----------------------------------|--------|
| ö | Ô | | |
| | | <i>access-list-number name</i> | |
| | in | acl | metric |
| | out | acl | metric |
| | <i>offset</i> | metric 1 1 0-16 | |
| | <i>interface-type</i> | acl | |
| | <i>interface-number</i> | | |

ö Ô offset Å

ö 3 Ô Å

ö Ô RIP offset-list 7 offset-list RIP
7 offset-list metric Å

ö Ô 7 acl 7 RIP metric 7 Å
Ruijie(config-router)# offset-list 7 out 7
7 fastethernet0/1 7 acl 8 RIP metric 7 Å
Ruijie(config-router)# offset-list 8 in 7 fastethernet 0/1

| | | | |
|---|-----|---|---|
| ö | 3 Ô | 3 | |
| | | - | - |

ö 1 Ô -

2.28 output-delay

1 RIP 3 **output-delay** 3 **no** 1
Å

output-delay delay

no output-delay

| | | | |
|---|---|--------------|------------|
| ö | Ô | | |
| | | <i>delay</i> | Æ Ñ <8-50> |

ö Ô ñ Å

ö 3 Ô Å

ö Ô IO RIP ñ 512 1 7 25 25
IO 1 Å
æ æ 1 a

Â output-delay 3 7 æ

Â

ö Ô Ю RIP 5 30

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

ö 3 Ô

| | |
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| 3 | |
| - | - |

ö 1 Ô -

2.29 passive-interface

4 Э 7 3 **passive-interface** 3 Â 3 **no**

7 Â

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

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

ö Ô

| | |
|-------------------------------------|-----------|
| | |
| default | 5 passive |
| <i>interface-type interface-num</i> | б |

ö Ô Ю 5 passive Â

ö 3 Ô Â

ö Ô **passive-interface default** 3 5 passive 1 4® Ž Î Ъ ass^a ve-inter d

2.30 redistribute

ИО redistribute 3 Â 4 ↑
3 no Â

redistribute { connected | static} [metric *metric-value*] [route-map *route-map-name*]

no redistribute { connected | static} [metric *metric-value*] [route-map *route-map-name*]

| | | | |
|---|--|---------------------------------------|---|
| ô | Ô | | |
| | connected | ÿ | ↑ |
| | static | ÿ | ↑ |
| | metric <i>metric-value</i> | ↑ metric <i>metric-value</i> metric 4 | |
| | route-map <i>route-map-name</i> | ↑ | |

ô Ô ↑
↑ ± metric ÿ 1'
a route-map Â

ô 3 Ô Â

ô Ô 3 ↑ RIP Â
↑ ÿ a° Â ↑
↑ Â
redistribute 3 no ИО
1~ **no** 3
2~ **no** 3 a 3 Â

ô Ô ЛЮ 3 ↑ RIP
Ruijie(config-router)# redistribute static

| | | | |
|---|--------------------------------------|-----|--|
| ô | 3 Ô | | |
| | default-metric <i>metric</i> | ↑ | |
| | default-information originate | RIP | |

ô 1 Ô -

2.31 router rip

RIP 3 router rip Â 3 no
RIP Â
router rip
no router rip

| | | | |
|---|---|---|---|
| ð | Ô | | |
| | | - | - |

ð Ô RIP Â

ð 3 Ô Â

3 0 ä ä Â

0 0 RIP Â
1 4 5 Â

0 0 1' 000 RIP Â

```
Ruijie# show ip rip database
192.168.1.0/24    auto-summary
192.168.1.0/30    directly connected, Loopback 3
192.168.1.8/30    directly connected, FastEthernet 0/1
192.168.121.0/24  auto-summary
192.168.121.0/24  redistributed
[1] via 192.168.2.22, FastEthernet 0/2
192.168.122.0/24  auto-summary
192.168.122.0/24
[1] via 192.168.4.22, Serial 0/1 00:28 permanent
```

2' 000 RIP 192.168.121.0/24 Â

```
Ruijie# show ip rip database 192.168.121.0 255.255.255.0
192.168.121.0/24    redistributed
[1] via 192.168.2.22, FastEthernet 0/1
```

3' 000 RIP

```
Ruijie# show ip rip database count
          All    Valid  Invalid
database    5      5      0
auto-summary 5      5      0

connected    1      1      0
rip          4      4      0
```

0 3 0

| | |
|-------------|---|
| 3 | |
| show ip rip | Â |

0 1 0 -

2.34 show ip rip external

RIP ↑ show ip rip external 3 Â

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

0 0

| | |
|---|---------|
| bgp connected isis ospf
 static | ^ 1 ~ ↑ |
|---|---------|

| | |
|----------------------------|---------------|
| vrf <i>vrf-name</i> | ^ / ~ VRF RIP |
| <i>process-name</i> | ISIS " |
| <1-65535> | OSPF |

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ö Ô -

ö Ô ¾ÏO RIP † Â

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

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| show ip rip | Â |

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2.35 show ip rip interface

RIP

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8 Ô 76HO RIP Â

```
Ruijie# show ip rip interface
FastEthernet 0/1 is up, line protocol is up
Routing Protocol: RIP
Receive RIPv2 packets only
Send RIPv2 packets only
Passive interface: Disabled
Split Horizon with Poisoned Reverse: Enabled
Triggered RIP Enabled:
Retransmit-timer: 5, Retransmit-count: 36
V2 Broadcast: Disabled
Multicast registe: Registered
Interface Summary Rip:
Not Configured
Authentication mode: Text
Authentication key-chain: ripk1
Authentication text-password: ruijie
Default-information: only, metric 5
IP interface address:
192.168.64.100/24, next update due in 14 seconds
2.2.1.1/24, next update due in 24 seconds
    neighbor 2.2.1.6, next update due in 3 seconds
    neighbor 2.2.1.77, next update due in 13 seconds
2.2.2.57/24, next update due in 16 seconds
```

RIP 6 BFD

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2.2.2.111/24, next update due in 14 seconds

ð 3 Ô

| | |
|-------------|--|
| 3 | |
| show ip rip | |

ð 1 Ô -

2.36 show ip rip peer

RIP ð " RIP (RIP) Л
 ð RIP RIP show ip rip peer Â
 show ip rip peer [ip-address] [vrf vrf-name]

ð Ô

| | |
|--------------|---------------|
| | |
| ip-address | ^ 1 ~ RIP |
| vrf vrf-name | ^ 1 ~ VRF RIP |

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ð 3 Ô ä ä Â

ð Ô 3 RIP a RIP

| | | | |
|---|----------------|--------|--|
| ð | Ô | | |
| | <i>update</i> | Л | Å update Б
invalid flush æ Å 30
Å |
| | <i>invalid</i> | Б
й | Л ÿ Å invalid
1 й Å
invalid ' invalid
æ Å Invalid й 180 Å |
| | <i>flush</i> | 120 Å | Л ÿ RIP invalid Å flush
invalid Å Flush й |

ö Ô Ю ÿ 30 ÿ 180 ÿ 120 Å

ö 3 Ô Å

ö Ô Л Э Л Å * Э RIP
Å a RIP Å
RIP Л Л **show ip rip** 3 Å

2Mbps

ö Ô ЛЮ RIP 10 Å 30
Л ÿ invalid ' invalid 90 Å

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

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|---|-----|---|---|
| ö | 3 Ô | 3 | |
| | | - | - |

ö Л Ô

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

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ö 3 Ô Â

ö Ô 1 2 RIP Â ñ RIP
 * IP Â
 3 3 RIP a
 3 **validate-update-source** Â
 ip unnumbered RIP a a
 3 **validate-update-source** Â

ö Ô 2 3 Â

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

| | | |
|-------|-----------------------------|------------|
| ö 3 Ô | 3 | |
| | ip rip split-horizon | RIP 3 Â |
| | ip unnumbered | 3 IP Â |
| | neighbor (RIP) | 3 RIP IP Â |

ö 1 Ô -

2.39 version

3 RIP 3 **version** Â 3 **no** Â
version {1 | 2}
no version

| | | |
|-----|----------|-------------|
| ö Ô | | |
| | 1 | 3 RIP ñ 1 Â |
| | 2 | 3 RIP ñ 2 Â |

ö Ô 1 2 RIPv1 RIPv2 RIPv1 Â

ö 3 Ô Â

ö Ô 3 RIP Â 1 2 **ip rip receive version** ã **ip rip send version** 3
 RIP 3 Â

ö Ô 2 3 RIP ñ 2 Â

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

ö 3 Ô

| 3 | |
|-------------------------------|---------------|
| ip rip receive version | ℔ RIP 3 RIP Â |
| ip rip send version | ℔ RIP 3 RIP Â |
| show ip rip | rip Â |

ö 1 Ô -

3 RIPNG

3.1 default-metric

✎ ↑ RIPng
↓

✎ **default-metric** *Â* ✎ **no**

default-metric *metric*
no default-metric

| | | | |
|---|---|-------------------------|--|
| ð | Ô | | |
| | | ↓ 1 16 Â metric 16 RGOS | |
| | | ↓ a 1 Â | |

ð Ô ↓ 1

ð ✎ Ô

ð Ô ✎ 6 ✎ **redistribute** Â ↑ RIP a
 ↓ a Â ↓
 RIP Â ✎ RIPng **default-metric** ✎
 ✎ **default-metric** ✎ Â a ✎ **default-metric**
 ↓ 1 Â

ð Ô ↑ RIP ↓ 3 Â

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

| | | | |
|---|-----|---------------------|---|
| ð | ✎ Ô | ✎ | |
| | | redistribute | ↑ |

ð 1 Ô -

3.2 distance

RIPng

✎ **distance** *Â* ✎ **no** Â

distance *distance*
no distance

| | | | |
|---|---|------------------------|--|
| ð | Ô | | |
| | | distance RIPng <1-254> | |

õ Ô ì 120

õ 3 Ô

õ Ô ì RIPng 3 Â

õ Ô RIPng ì 160

3.4 ipv6 rip default-information

IPv6 RIPng

default-information $\hat{A}$ no

$\hat{A}$

ipv6 rip default-information { only | originate } [metric metric-value]

no ipv6 rip default-information

| | | | |
|---|---|---------------------|------------------------------|
| ð | Ô | | |
| | | only | ipv6 a è |
| | | originate | ipv6 ≠ è |
| | | metric metric-value | 1-15 $\hat{A}$ ñ 1 $\hat{A}$ |

ð Ô

ð ð Ô

ð Ô ð ð ð IPv6 a ð
RIPng $\hat{A}$
ñ ð RIPng $\hat{A}$

ð Ô ethernet0/0 ð RIPng $\hat{A}$

```
Ruijie(config)# interface ethernet 0/0
Ruijie(config-if)# ipv6 rip default-information only
```

| | | | |
|---|-----|------------------------|---------|
| ð | ð Ô | | |
| | | show ipv6 rip | RIPng б |
| | | show ipv6 rip database | RIPng |

ð / Ô -

3.5 ipv6 rip enable

ð RIPng

ipv6 rip enable $\hat{A}$ no ð

RIPng $\hat{A}$

ipv6 rip enable

no ipv6 rip enable

| | | | |
|---|---|---|---|
| ð | Ô | | |
| | | - | - |

ð Ô -

ð ð Ô $\hat{A}$

④ ① ③ ⑥ RIPng ② ③ RIPng
 RIPng ②

④ ① ethernet 0/0 ⑦ RIPng ②

```
Ruijie(config)# interface ethernet 0/0
Ruijie(config-if)# ipv6 rip enable
```

④ ③ ① ③

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

④ ① ① -

3.6 ipv6 rip metric-offset

③ ③ ③ **ipv6 rip metric-offset value ②** ③ **no**
 ②
ipv6 rip metric-offset value
no ipv6 rip metric-offset

④ ①

ipv6 router rip

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ö Ô Ruijie# show ipv6 rip
 Routing Protocol is "RIPng"
 Sending updates every 10 seconds with +/-50%, next due in 8 seconds

Outgoing update filter list for all interface is:

' ' aa o9

h prd l

ö 3 Ô

| 3 | |
|-------------------------------|---------|
| show ipv6 rip | RIPng 6 |
| show ipv6 rip database | RIPng |

ö / Ô -

4

4.1 ip local policy route-map

3 ip local policy route-map $\hat{A}$ 3 no

$\hat{A}$

ip local policy route-map *route-map*

no ip local policy route-map

| | | | |
|---|---|------------------|-------------|
| ð | Ô | | |
| | | <i>route-map</i> | = $\hat{A}$ |

ð Ô $\hat{A}$

ð 3 Ô $\hat{A}$

ð Ô 3 IP

ö / Ô -

4.2 ip policy

```

set ip [ default ] nexthop
    IO ip policy      Â 3 no
ip policy { load-balance | redundance }
no ip policy

```

ö

Ô


```
Ruijie(config-route-map)#set ip next-hop 196.168.5.6
Ruijie(config-route-map)#exit
```

```
3      3
```

```
Ruijie(config)#interface FastEthernet 0/0
Ruijie(config-if)#ip policy route-map lab1
Ruijie(config-if)#exit
```

ð 3 Ô

| 3 | |
|------------------|---------|
| access-list | ℥ |
| route-map | ℥ |
| set ip next-hop | ℥ IO |
| set ip tos | IP TOS |
| set ip dscp | IP DSCP |
| match ip address | |

ð 1 Ô -

4.4 ipv6 local policy route-map

3 Â 1 ⅃ 3 no

⅃ Â

ipv6 local policy route-map *route-map-name*

no ipv6 local policy route-map

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| <i>route-map-name</i> | route-map 3 Â |
|-----------------------|---------------|

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⅃ Â

ð 3 Ô

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3 IPv6 ^ ping ~
 IPv6 a ⅃ 3 Â
 Â
 ℥ 1 Â
 a
 ℥ Â

ð Ô

```

  Âÿ 2003:1000::10/80 2001:100::/64 aaa ACL6
2003:1001::2 Â
1 ACL6
Ruijie(config)#ipv6 access-list aaa
Ruijie(config-ipv6-acl)#permit ipv6 2003:1000::10/80 2001:100::/64
2 route-map
```

```
Ruijie(config)#route-map pbr-aaa permit 10
Ruijie(config-route-map)#match ipv6 address aaa
Ruijie(config-route-map)#set ipv6 next-hop 2003:1001::2
```

```
3      3
```

```
Ruijie(config)#ipv6 local policy route-map pbr-aaa
```

ö 3 Ô

| 3 | |
|--------------------|-----------------|
| match ipv6 address | IPv6 PBR ACL6 Â |
| route-map | Â |
| set ipv6 next-hop | Ю Â |
| show ipv6 policy | Â |
| show route-map | Â |

ö 1 Ô -

4.5 ipv6 policy

```
set ipv6 [ default ] nexthop Ю
Ю ipv6 policy Â 3 no Â
ipv6 policy { load-balance | redundance }
no ipv6 policy
```

ö Ô

| load-balance | |
|--------------|--|
| redundance | |

ö Ô Â

ö 3 Ô Â

```
ö Ô 11 set Ю и Â
set ipv6 next-hop 1 ЛЮ Ю
1 ЛЮ Ю Â Ю Ю Ю Ю
Ю Â
Ю Â
WCMP 1 ЛЮ 8 Ю ECMP 1 ЛЮ 32 Ю Â
```

MAC

ö Ô nexthop и Â

```
1 IP ACL
```

```
Ruijie(config)# ipv6 access-list 1
Ruijie(config-ipv6-acl )# permit ipv6 1000::1 any
```

```
Ruijie(config)# ipv6 access-list 2
Ruijie(config-ipv6-acl)# permit ipv6 2000::1 any
2    ㄣ
Ruijie(config)# route-map lab1 permit 10
Ruijie(config-route-map)# match ipv6 address 1
Ruijie(config-route-map)# set ipv6 next-hop 2002::1
```

Шаг 1. Настройка базовой конфигурации маршрутизатора.

Этапы:

- Настройка интерфейса FastEthernet 0/0.
- Настройка IPv6-адреса на интерфейсе FastEthernet 0/0.
- Настройка IPv6-адреса на интерфейсе Serial 0/0/1.

2000::2

1 IP ACL

```
Ruijie(config)# ipv6 access-list acl_for_pbr1
Ruijie (config-ipv6-acl)# permit ipv6 10::/64 any
Ruijie(config)# ipv6 access-list acl_for_pbr2
Ruijie (config-ipv6-acl)# permit ipv6 20::/64 any
```

2 Шаг

```
Ruijie(config)# route-map rm_pbr permit 10
Ruijie (config-route-map)# match ipv6 address acl_for_pbr1
Ruijie(config-route-map)# set ipv6 next-hop 2000::1
Ruijie(config-route-map)# exit
Ruijie(config)# route-map rm_pbr permit 20
Ruijie(config-route-map)# match ipv6 address acl_for_pbr2
Ruijie(config-route-map)# set ipv6 next-hop 2000::2
Ruijie(config-route-map)# exit
```

3 Этап

```
Ruijie(config)# interface FastEthernet 0/0
Ruijie(config-if)# no switchport
Ruijie(config-if)# ipv6 policy route-map rm_pbr
Ruijie(config-if)# exit
```

Шаг 4

| Команда | Настройка |
|---------------------------|-------------------------|
| route-map | Настройка маршрутизации |
| match ipv6 address | IPv6 PBR IPv6 ACL |
| set ipv6 next-hop | IPv6 PBR |
| show ipv6 policy | Настройка маршрутизации |
| show route-map | Настройка маршрутизации |

Решение задачи

Шаг 1

Шаг 2

| | | | |
|---|---|-----------------------|-----------------------------|
| ð | Ô | | |
| | | <i>route-map-name</i> | " ð <i>route-map-name</i> Э |

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```
Ruijie# show ip policy
Banlance Mode: redundance
Interface      Route map
local          test
FastEthernet 0/0 test
```

| | | | |
|---|-----|----------------------------------|-----|
| ð | ð Ô | ð | |
| | | ip policy route-map | Э Â |
| | | ip local policy route-map | Э Â |

ð 1 Ô -

4.8 show ipv6 policy

IPv6 Э " Â

show ipv6 policy [*route-map-name*]

| | | | |
|---|---|-----------------------|-----------------------------|
| ð | Ô | | |
| | | <i>route-map-name</i> | " ð <i>route-map-name</i> Э |

ð Ô -

ð ð Ô Â

ð Ô ð Б IPv6 1 2 ð

ð Ô Э Â

```
Ruijie#show ipv6 policy
Banlance Mode: redundance
Interface      Route map
VLAN 1         RM_for_Vlan_1
VLAN 2         RM_for_Vlan_2
```

3

| Banlance Mode | |
|---------------|-----|
| Interface | " |
| Route map | 3 " |

8 3 Ô

| 3 | |
|-----------------------|---|
| show route-map | Â |

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5 VRF

5.1 ip vrf

VRF' è no VRF Â

```
ip vrf vrf-name
no ip vrf vrf-name
```

| | | | |
|---|---|----------|--------------|
| ð | Ô | | |
| | | vrf-name | VRF " Â 31 Â |

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ð 3 Ô

ð Ô VRF IPv4

ð Ô VRF

```
Ruijie(config)# ip vrf redvrf
Ruijie(config-vrf)#
```

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

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5.2 ip vrf forwarding

VRF Â no Â

```
ip vrf forwarding vrf-name
no ip vrf forwarding vrf-name
```

| | | | |
|---|---|----------|-------|
| ð | Ô | | |
| | | vrf-name | VRF " |

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ð 3 Ô

ð Ô VRF 3 VRF " IPv6

3 IPv6 Â

ð Ô ¶ VRF

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

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| | |
|---|---|
| ¶ | |
| - | - |

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5.3 show ip vrf

VRF

show ip vrf [brief | detail | interfaces] [vrf-name]

ð Ô

| | |
|-------------------|-------|
| | |
| brief | VRF ð |
| detail | VRF ð |
| interfaces | VRF ð |
| <i>vrf-name</i> | VRF " |

ð Ô

VRF

ð ¶ Ô

ð Ô

¶ VRF ' ,

brief

detail

interfaces VRF

ð Ô -

ð ¶ Ô

| | |
|---|---|
| ¶ | |
| - | - |

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1.1 clear ip igmp snooping gda-table

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1.2 debug igmp-snp

$$\ddot{\theta} \quad \hat{O} \quad -$$

0 w R Ô Ruijie# debug igmp-snp

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|-----------------------------|-----------|-----------|--|
| $\partial_{\Omega} \varphi$ | $\hat{O}$ | φ | |
| - | - | - | |

1.3 deny

| | | |
|---|---|--|
| đ | đ | |
| | | |



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ö G

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IVGL IÖ J VLAN т Â ы /l б ы* Y э VLAN
 J ' H i . i Y э VLAN ~ /l * VLAN 3
 J J Â

SVGL IÖ J VLAN ы "Ω м* Y ~ ы /l J VLAN Â Y э
 shared VLAN ы VLAN1~ ~ Θ shared VLAN ~ /l J J
 J~ Ç J /l ы J э VLAN Â profile ,i Y э SVGL~ Θ
 3 /l J VLAN J~ x Â

IVGL-SVGL IÖ IVGL äSVGL ч Â Profile ,i Y э SVGL~
 3 SVGL ~ IVGL Â

SVGL IVGL-SVGL IP

PIM Snooping
snooping

IGMP Snooping
 IGMP Snooping

IVGL IVGL-SVGL
 PIM Snooping

no ip igmp

| | | | | | | | | | | | | |
|----------------|--|---|---|---|---|---|---|---|---|---|--------|-------|
| <i>seconds</i> | | ✓ | □ | ˘ | ` | Æ | Ï | ˘ | ✓ | h | 1-3600 | h 300 |
|----------------|--|---|---|---|---|---|---|---|---|---|--------|-------|

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1.8 ip igmp snooping filter

IGMP 过滤功能通过配置 **no** 命令来启用或禁用。
ip igmp snooping filter profile-number
no ip igmp snooping filter profile-number

| | | |
|----|-----------------------|------------------------|
| 命令 | 配置 | 说明 |
| | profile-number | profile 编号，取值范围 1-1024 |

命令格式如下：

命令在系统视图下执行。

命令中 **profile** 是指 IGMP 过滤的 profile 名称。配置 **ip igmp snooping filter** 命令后，系统会根据 profile 名称来查找对应的 IGMP 过滤规则。如果配置了 **Report** 命令，则系统会根据该规则来过滤 IGMP 报文。如果配置了 **no ip igmp snooping filter** 命令，则系统会根据默认规则来过滤 IGMP 报文。

命令示例如下：

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

| | | |
|----|------------------------|-------------------|
| 命令 | 配置 | 说明 |
| | ip igmp profile | ... 是指 profile 名称 |

命令在系统视图下执行。

1.9 ip igmp snooping host-aging-time

IGMP 主机老化时间通过配置 **no** 命令来启用或禁用。
ip igmp snooping host-aging-time seconds
no ip igmp snooping host-aging-time

| | | |
|----|----------------|---------------------|
| 命令 | 配置 | 说明 |
| | seconds | 主机老化时间，取值范围 1-65535 |

命令格式如下：

命令在系统视图下执行。

命令中 **seconds** 是指 IGMP 主机老化时间。配置 **ip igmp snooping host-aging-time** 命令后，系统会根据该时间来老化 IGMP 主机。如果配置了 **no ip igmp snooping host-aging-time** 命令，则系统会根据默认时间来老化 IGMP 主机。

Snooping

1.11 ip igmp snooping max-groups

8 4 || 7 0 Â 3 no 4 8 Â

ip igmp snooping max-groups *number*

no ip igmp snooping max-groups

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4

| | | | |
|-----|---|-----------------|------|
| Ö 4 | Ö | 4 | |
| | | vlan vid | vlan |

Ruijie(config)# ip igmp snooping vlan 2 querier

Table 1-10

| Field | Description |
|-------|-------------|
| | |

Table 1-10

1.16 ip igmp snooping querier address

IGMP Snooping querier address configuration command:
ip igmp snooping [vlan vid] querier address a.b.c.d
no ip igmp snooping [vlan vid] querier address

Table 1-11

| Field | Description |
|-----------------|-------------|
| vlan vid | vlan |
| a.b.c.d | IP |

Table 1-11

Table 1-11

Table 1-11

Table 1-11

Ruijie(config)# ip igmp snooping querier address 1.1.1.1

Ruijie(config)# ip igmp snooping vlan 3 querier address 1.1.1.1

Table 1-12

| Field | Description |
|-------|-------------|
| | |

Table 1-12

1.17 ip igmp snooping querier max-response-time

IGMP Snooping querier max-response-time configuration command:
ip igmp snooping [vlan vid] querier max-response-time seconds
no ip igmp snooping [vlan vid] querier max-response-time

Table 1-13

| Field | Description |
|-------|-------------|
|-------|-------------|

| | |
|----------|-----------------|
| vlan vid | vlan |
| seconds | À`ÆÏ`Àh1-25`h10 |

ö Ô 4 h

ö 3 Ô ō

ö G Ô VLAN 3 6 "I G VLAN 3 Â

ö w R Ô R

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```

IGMP Snooping      1  3  no  1  1
ip igmp snooping [ vlan vid ] querier timer expiry seconds
no ip igmp snooping [ vlan vid ] querier timer expiry

```

$$\ddot{o} \quad \hat{O} \quad \gamma \quad \dot{h}$$

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 11 ~ ‡ ñ m ~ 11 ЮУ w Â
 VLAN 3 6 ~ "I G VLAN 3 h Â

$$\ddot{0} \quad w^R \hat{O}^R \mathbf{1}'$$

```
Ruijie(config)# ip igmp snooping querier timer expiry 60
```

Р 2' и' э VLAN

```
Ruijie(config)# ip igmp snooping vlan 3 querier timer expiry 60
```

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```

IGMP Snooping          IGMP      1      3      no      1 1
ip igmp snooping [ vlan vid ] querier version { 1 | 2 }
no ip igmp snooping [ vlan vid ] querier version

```

1-13

The diagram illustrates the interaction between a host and a network device (switch) during the IGMP Snooping process. The host sends an IGMP query, and the switch responds with an IGMP response. The switch also sends an IGMP response to the host. The diagram shows the flow of traffic and the state of the switch's IGMP table.

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

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1.22 ip igmp snooping source-check default-server

í IP 7 ~ IP Â 3 no 7 7 Â
ip igmp snooping source-check default-server *source-address*
no ip igmp sooping souce-check

| | |
|----------------|----|
| 4 | 4 |
| source-address | IP |

7 7 7 7

3 7

6 7 IP 7 8 Â 7 í 7 ~ x Â
 IP 7 6 IP 7 3 Â
 IP 7
 1 í IP 7 IP Â
 2 ^ 1 ~ 7 VLAN/ IP Â

7 w R 7 í IP ~ IP 7 192.168.4.243 7 vlan1 224.0.0.1 IP 7 192.168.4.241
 Ruijie(config)# ip igmp snooping source-check default-server 192.168.4.243
 Ruijie(config)# ip igmp snooping limit-ipmc vlan 1 address 224.0.0.1 server 192.168.4.241

| | |
|-----------------------------|--------------|
| 3 | |
| ip igmp snooping limit-ipmc | 7 VLAN/ IP Â |

1 -

1.23 ip igmp snooping suppression enable

í Report 8 7 Â 3 no 7 7 Â
ip igmp snooping suppression enable
no ip igmp snooping suppression enable

| | |
|---|---|
| 4 | 4 |
| - | - |

7 7 7 7

no ip igmp snooping svgl subvlan [vid-range]

ð 4 Ô

| | |
|-----------|----------------------|
| 4 | |
| vid-range | VLAN ID VLAN ID |

ð Ô “Ω M VLAN È ËI VLAN VLAN Â

ð 3 Ô ð

ð G Ô IGMP Snooping ì SVGL IVGL-SVGL ~ / Лr 3 Â

ð w R Ô “Ω M VLAN ì VLAN3” VLAN ì VLAN 2 à 5 à 6 à 7

```
Ruijie(config)# ip igmp snooping svgl vlan 3
Ruijie(config)# ip igmp snooping svgl subvlan 2,5-7
```

ö 1 Ô -

1.27 ip igmp snooping tunnel

í QinQ · IGMP 11 Â 3 no 12 11 Â

ip igmp snooping tunnel

no ip igmp snooping tunnel

| | | | |
|-----|---|---|---|
| ö 4 | Ô | 4 | |
| | | - | - |

ö Ô 12 11

ö 3 Ô 5

ö G Ô í 6 IGMP Snooping 6 dot1q-tunnel 4 2 1 5 1 dot1q-tunnel 4 1 IGMP
 5 IGMP Snooping 1 10 10 4
 5' QinQ · IGMP Â IGMP VLAN 3 IGMP
 VLAN 4 IGMP Â
 5' í IGMP Snooping 4 A 11 dot1q-tunnel 4 4 A VLAN 11 VLAN
 1' 3 4 A 11 VLAN 1 VLAN 10 Â 4 4 A 11 VLAN 10 IGMP report 5
 IGMP Snooping VLAN 10 5 IGMP report 4 11 VLAN 10 4 3 Â
 5' dot1q-tunnel 4 VLAN 3 Â 11 IGMP 11 5 dot1q-tunnel
 4 VLAN VLAN Tag 2 1 11 4 11 dot1q-tunnel 4 VLAN 4 4 Â
 5' í IGMP Snooping 4 A 11 dot1q-tunnel 4 4 A VLAN 11 VLAN
 1' 3 4 A 11 VLAN 1 VLAN 10 Â 4 4 A 11 VLAN 10 IGMP report 5
 IGMP Snooping VLAN 1 5 11 IGMP report 11 5 VLAN 1 VLAN Tag 2
 1 11 4 11 VLAN 1 4 3 Â
 4 10 3 5 5 Â

ö w R Ô í QinQ · IGMP 11 5

Ruijie(config)# ip igmp snooping tunnel

| | | |
|----------|---|---|
| ö 12 3 Ô | 3 | |
| | - | - |

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no ip igmp snooping vlan vid

ö 4

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| | |
|-----|-------------------|
| 4 | |
| vid | VLAN 4 4 h 1-4094 |

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

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| | |
|---|------------|
| ¼ | |
| ip igmp snooping mrouter learn pim-dvmrp | í ¸ ¼ ¶ |

ö ¼ Ô -

1.30 ip igmp snooping vlan static interface

¼ Â ¼ **no** ¶ ¼ Â

ip igmp snooping vlan *vid* **static** *group-address* **interface** *interface-type* *interface-number*

no ip igmp snooping vlan *vid* **static** *group-address* **interface** *interface-type* *interface-number*

ö ¼

Ô

| | |
|--|--------------------|
| ¼ | |
| <i>vid</i> | VLAN ¼~ ¼ ñ 1-4094 |
| <i>group-address</i> | |
| <i>interface-type</i>
<i>interface-number</i> | ¼" |

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ö ¼ Ô ¼

ö G

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IGMP Snooping ¼ è ¼ ð' VLAN ¼ ä ä ¼ ä ¼ Â
 VLAN ¼ Y ¼ Y ¼ Â
 Y ¼ è ¼ ¶ ¼ ð ¼^ ¼ || ¼ ¼~ Â
 ¼ a, □ Â
 Y ¼ è ¼ ¶ ¼ ð ¼^ ¼ || ¼ ¼~ Â ¼ a, □ Â G
clear ip igmp snooping gda-table ¼ a ¶ ¼ Â

ö w R Ô GigabitEthernet 0/1 ñ vlan 1 225.1.1.1 ¼'

```
Ruijie(config)# ip igmp snooping vlan 1 static 225.1.1.1 interface GigabitEthernet 0/1
```

ö ¼ ¼ Ô

| | |
|---|---|
| ¼ | |
| clear ip igmp snooping gda-table | ¼ |

ö ¼ Ô -

1.31 permit

¼ Â

permit

| | | | |
|-----|---|---|---|
| õ 4 | Ô | 4 | |
| | | - | - |

õ Ô profile deny

õ 3 Ô profile G H p i

Configure profile 1 for 224.2.2.2 to 224.2.2.244

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

Verify configuration

| Command | Output |
|------------------------|-----------------|
| ip igmp profile | ... Y 3 profile |
| permit | 1 |
| deny | |

End of configuration

1.33 show ip igmp profile

profile number
show ip igmp profile [profile-number]

Verify

| Command | Output |
|-----------------------|----------------------|
| profile-number | profile 1 1 1 1-1024 |

End of configuration

Verify configuration

Configure profile 1 for 224.2.2.2 to 224.2.2.244

End of configuration

Verify configuration

| Command | Output |
|----------|--------|
| - | - |

End of configuration

1.34 show ip igmp snooping

IGMP Snooping configuration
show ip igmp snooping [gda-table | interfaces | mrouter | statistics [vlan vid] | vlan vid]

Verify

| Command | Output |
|-------------------|---------------------|
| gda-table | IGMP Snooping 1 1 1 |
| interfaces | IGMP Snooping 1 1 1 |
| mrouter | IGMP Snooping 1 1 1 |

| | |
|------------------------|---------------------------|
| statistics | IGMP Snooping a Â |
| vlan <i>vid</i> | VLAN |

2 MLD Snooping

2.1 clear ipv6 mld snooping gda-table

```
|| 4  
clear ipv6 mld snooping gda-table
```

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ö 3 Ô

ö G Ô -

ö w R Ô Ruijie# debug mld-snp

| | | |
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| | - | - |

ö / Ô -

2.3 deny

deny

| | | |
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| ö 4 Ô | 4 | |
| | - | - |

ö Ô profile deny

ö 3 Ô profile

ö G Ô profile Y l' L~ k è 71 Â ' 1' G **ipv6 mld profile** 3... Y 3 profile' ó profile 2' G **range** 3 HX Y 3 3' G **permit** 3 3' 3' 3' G **deny** 3 3' 3' Â

ö w R Ô profile 1' FF77::1 FF77::100 Â

```
Ruijie(config)# ipv6 mld profile 1
Ruijie(config-profile)# range FF77::1 FF77::100
Ruijie(config-profile)# deny
```

| | | |
|---------|-------------------------|-----------------|
| ö Ω 3 Ô | 3 | |
| | ipv6 mld profile | ... Y 3 profile |
| | range | HX |
| | permit | 3' |

ö / Ô -

| | | ... Y ə profileʹ ó profile Â G ɜ no ˘ ǐ profile Â | | | | | | | | |
|-----------------------|---------------------------|---|---|--|-----------------------|---------------------------|---------------|---|-------------|--|
| | | ipv6 mld profile <i>profile-number</i> | | | | | | | | |
| | | no ipv6 mld profile <i>profile-number</i> | | | | | | | | |
| ð ɹ | Ô | <table border="1"> <tr> <th>ɹ</th><th></th></tr> <tr> <td><i>profile-number</i></td><td>profile ɹ˘ 1-1024</td></tr> </table> | ɹ | | <i>profile-number</i> | profile ɹ˘ 1-1024 | | | | |
| ɹ | | | | | | | | | | |
| <i>profile-number</i> | profile ɹ˘ 1-1024 | | | | | | | | | |
| ð | Ô - | | | | | | | | | |
| ð ɜ | Ô ǒ | | | | | | | | | |
| ð G | Ô | profile Y I˘ E˘ k è ȷ Â ‘
1˘ G ipv6 mld profile ɜ ... Y ə profileʹ ó profile
2˘ G range ɜ ɪŋY ə
3˘ G permit ɜ ɿ ǽ ä G deny ɜ ǽ Â deny Â | | | | | | | | |
| ð w R Ô | | profile 1˘ ɿ FF77::1˘ FF77::100 Â
<div>Ruijie(config)# ipv6 mld profile 1</div> <div>Ruijie(config-profile)# range FF77::1 FF77::100</div> <div>Ruijie(config-profile)# permit</div> | | | | | | | | |
| ð ʒ Ô ɜ Ô | | <table border="1"> <tr> <th>ɜ</th><th></th></tr> <tr> <td>range</td><td>ɪŋ</td></tr> <tr> <td>permit</td><td>ɿ</td></tr> <tr> <td>deny</td><td></td></tr> </table> | ɜ | | range | ɪŋ | permit | ɿ | deny | |
| ɜ | | | | | | | | | | |
| range | ɪŋ | | | | | | | | | |
| permit | ɿ | | | | | | | | | |
| deny | | | | | | | | | | |
| ð ɹ Ô - | | | | | | | | | | |

| MLD Snooping | |
|---|--|
| ipv6 mld snooping { ivgl svgl ivgl-svgl } | |
| no ipv6 mld snooping | |

3.4.1 MLD Snooping

3.4.1.1 MLD Snooping Configuration

1. Enable MLD Snooping on the interface.

```
Ruijie(config)# interface interface-name
Ruijie(config-if)# ipv6 mld snooping
```

2. Configure MLD Snooping on the interface.

```
Ruijie(config-if)# ipv6 mld snooping mode
Ruijie(config-if)# ipv6 mld snooping profile profile-name
```

3. Configure MLD Snooping on the interface.

```
Ruijie(config-if)# ipv6 mld snooping mode
Ruijie(config-if)# ipv6 mld snooping profile profile-name
```

3.4.1.2 MLD Snooping Configuration

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

3.4.1.3 MLD Snooping Configuration

```
Ruijie(config)# ipv6 mld snooping
Ruijie(config)# ipv6 mld snooping profile 1
```

3.4.1.4 MLD Snooping Configuration

```
Ruijie(config)# ipv6 mld snooping
Ruijie(config)# ipv6 mld snooping profile 1
```

| 3.4.1.5 MLD Snooping Configuration | |
|------------------------------------|----------------------|
| ipv6 mld snooping svgl vlan | Y 3 Shared VLAN A |
| ipv6 mld snooping svgl profile | Y 3 SVGL 3 profile A |

3.4.1.6 MLD Snooping Configuration

2.6 ipv6 mld snooping dyn-mr-aging-time

3.4.1.7 MLD Snooping Configuration

```
ipv6 mld snooping dyn-mr-aging-time seconds
no ipv6 mld snooping dyn-mr-aging-time
```

| 3.4.1.8 MLD Snooping Configuration | |
|------------------------------------|------------|
| seconds | 1-3600 300 |

3.4.1.9 MLD Snooping Configuration

3.4.1.10 MLD Snooping Configuration

3.4.1.11 MLD Snooping Configuration

```
ipv6 mld snooping
no ipv6 mld snooping
```


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ö w^R Ô || J □ ñ 100sÂ

0 0 i 4 .

0 3 0 4

0 G 0 "I... profile" ipv6 mld snooping filter 3 è profile A
8 4 1 Report 4 3 4 4 4
ü profile i 2 x A 4 i 4 4 A ü 4 a i 4 4 A

0 w R 0 profile 1 8 4 A
Ruijie(config)# interface Ethernet 0/1
Ruijie(config-if)# ipv6 mld snooping filter 1

| | | |
|-------|---|--|
| 0 3 0 | 3 | |
|-------|---|--|

2.10 ipv6 mld snooping query-max-response-time

MLDv1 Report MLDv2 Report

Report

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

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ö ¼ Ô ¼

ö ¼ Ô MLD Snooping ħ SVGL IVGL-SVGL ¼ ¼ ¼ ¼ ¼ ¼

ö ¼ Ô ¼ VLAN ħ VLAN3

```
Ruijie(config)# ipv6 mld snooping svgl vlan 3
```

ö ¼ ¼ Ô

| | |
|--------------------------|---------------------|
| ¼ | |
| ipv6 mld snooping | ¼ í ¼ IGMP Snooping |

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2.14 ipv6 mld snooping vlan

VLAN ¼ í ¼ MLD Snooping IVGL ¼ ¼ **no** VLAN ¼ ¼ MLD Snooping ¼
ipv6 mld snooping vlan vid
no ipv6 mld snooping vlan vid

ö ¼

| | |
|-----|-------------------|
| ¼ | |
| vid | VLAN ¼ ¼ ħ 1-4094 |

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ö ¼ Ô ¼

ö ¼ Ô ¼ í ¼ MLD Snooping IVGL ¼ ¼ ¼ ¼ **no ipv6 mld snooping vlan vid** ¼ ¼ ¼ ¼
VLAN ¼ ¼ VLAN ¼ í ¼ MLD Snooping IVGL ¼ ¼ ¼

ö ¼ Ô ¼ í ¼ MLD Snooping IVGL ¼ ¼ ¼ ¼ vlan 2 ¼ ¼ MLD Snooping IVGL ¼ ¼

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

```
Ruijie(config)# ipv6 mld snooping vlan 2
```

ö ¼ ¼ Ô

| | |
|--------------------------|--------------------------|
| ¼ | |
| ipv6 mld snooping | ¼ í ¼ MLD Snooping ¼ ¼ ¼ |

ö ¼ Ô -

2.15 ipv6 mld snooping vlan mrouter interface

1. 配置命令

ipv6 mld snooping vlan *vid* mrouter interface *interface-type* *interface-number*

no ipv6 mld snooping vlan *vid* mrouter interface *interface-type* *interface-number*

| | | |
|--|-------------|--------|
| 配置命令 | 配置命令 | 配置命令 |
| <i>vid</i> | VLAN 1~4094 | 1-4094 |
| <i>interface-type</i>
<i>interface-number</i> | 接口类型 | 接口编号 |

配置命令

配置命令

配置命令

配置命令

Ruijie(config)# ipv6 mld snooping vlan 1 mrouter interface fastEthernet 0/1

| | | |
|---|------|------|
| 配置命令 | 配置命令 | 配置命令 |
| ipv6 mld snooping vlan mrouter learn | 配置命令 | 配置命令 |

配置命令

2.16 ipv6 mld snooping vlan mrouter learn

配置命令

ipv6 mld snooping vlan *vid* mrouter learn pim-dvmrp

no ipv6 mld snooping vlan *vid* mrouter learn pim-dvmrp

| | | |
|------------|-------------|--------|
| 配置命令 | 配置命令 | 配置命令 |
| <i>vid</i> | VLAN 1~4094 | 1-4094 |

配置命令

配置命令

配置命令

W R O VLAN1 3 2 1 0

$$\ddot{0} \quad \tilde{\Omega} \quad \{ \hat{O}$$
$$\ddot{O} \quad \wedge \quad \hat{O} \quad -$$
$$\mathcal{N} \quad \hat{A} \quad \{ \quad \text{no} \quad \} \quad \hat{A}$$

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$$\ddot{O} \quad \hat{O} \quad N$$

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$$\ddot{O} \quad W^R \quad \hat{O} \quad \wedge \quad ' \quad ,$$
 $\bar{0} \quad \bar{\omega} \quad \bar{\omega}$
$$\ddot{\theta} \quad \Delta \quad \hat{\theta} \quad -$$
$$\hat{l} \quad \hat{A}$$

permit

| | | | |
|---|---|----------------|--|
| Ö | Ö | 1 | |
| | | low-ip-address | |

配置 IPv6 MLD Snooping 的 profile 1 的 FF77::1 FF77::100

```
Ruijie(config)# ipv6 mld profile 1
Ruijie(config-profile)# range FF77::1 FF77::100
Ruijie(config-profile)# permit
```

配置 IPv6 MLD Snooping 的 profile 1 的 FF77::1 FF77::100

| | |
|------------------|---------------|
| | |
| ipv6 mld profile | ... 在 profile |
| permit | 1 |
| deny | |

配置 IPv6 MLD Snooping 的 profile 1 的 FF77::1 FF77::100

2.20 show ipv6 mld profile

profile 1 的 FF77::1 FF77::100

show ipv6 mld profile [profile-number]

配置 IPv6 MLD Snooping 的 profile 1 的 FF77::1 FF77::100

| | |
|----------------|-----------|
| profile-number | - profile |
|----------------|-----------|

| | |
|-------------------|--------------------------|
| gda-table | MLD Snooping 1 1 |
| interfaces | MLD Snooping filtering 1 |
| mrouter | MLD Snooping 1 1 |
| statistics | MLD Snooping 1 1 |
| vlan vid | VLAN |

3.4.1 MLD Snooping

3.4.1.1 MLD Snooping

3.4.1.1.1 MLD Snooping 1 1

3.4.1.1.1.1 MLD Snooping 1 1

```
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)
```

3.4.1.1.1.2 MLD Snooping 1 1

```
Ruijie# show ipv6 mld snooping statistics
GROUP      Interface    Last report    Last leave    Last
              time              time              reporter
-----
FF88::1    VL1:Gi4/2    0d:0h:0m:7s    ----          2003::1111
              Report pkts: 1          Leave pkts: 0
```

3.4.1.1.1.3 MLD Snooping 1 1

```
Ruijie# show ipv6 mld snooping mrouter
Vlan      Interface      State      MLD profile number
-----
1         GigabitEthernet 0/7    static      1
1         GigabitEthernet 0/12   dynamic     0
```

3.4.1.1.1.4 MLD Snooping 1 1

```
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)
```

R 5 MLD Snooping filtering

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

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

0 3 0

| | |
|---|---|
| 3 | |
| - | - |

0 1 0 -



-

1. AAA

2. RADIUS

3. TACACS+

4. 802.1x

5. Web

6. SSH

7. URPF

8. GSH

9.

10. CPU

11. DoS

12. DHCP Snooping

13. DAI

14. IP Source Guard

15. ND Snooping

16. DHCPv6 Snooping

17. ARP

18. NFPP

19.

11

1 AAA

1.1 aaa accounting commands

accounting commands *level* {**default** | *list-name*} **start-stop** *method1* [*method2...*]
no aaa accounting commands *level* {**default** | *list-name*}

ø

ô

| <i>level</i> | 0~15 <i>level</i> |
|------------------|-------------------|
| default | <i>list-name</i> |
| <i>list-name</i> | none |

```

NAS
aaa accounting
exec {default | list-name} start-stop method1 [method2...]
no aaa accounting exec {default | list-name}

```

| default | Exec |
|------------------|----------------|
| <i>list-name</i> | Exec |
| <i>method</i> | none to group |
| none | |
| group | RADIUS TACACS+ |

0 0

0 0

```

RGOS
aaa accounting exec {default | list-name} start-stop method1 [method2...]
no aaa accounting exec {default | list-name}

```

```

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

```

| aaa new-model | AAA |
|----------------------------|------|
| aaa authentication | AAA |
| accounting commands | Exec |

0 1 0 -

1.3aaa accounting network

```

aaa accounting network {default | list-name} start-stop method1 [method2...]
no aaa accounting network {default | list-name}

```

| default | Network |
|------------------|---------|
| <i>list-name</i> | |

| | |
|------------|----------------------|
| start-stop | π ∘ Â |
| method | Ю ∘ 4 |
| none | a |
| group | ℓ ∘ RADIUS TACACS+ ℓ |

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```
Ruijie(config)# aaa accounting update
```

| | | | |
|---|---|------------------------|----------|
| ð | Ô | 3 | |
| | | aaa new-model | AAA ¤ |
| | | aaa accounting network | Æ |

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1.5aaa accounting update periodic

Ï ÿ 3 aaa accounting update periodic 3 3
Â 3 no Â
aaa accounting update periodic *interval*
no aaa accounting update periodic

| | | | |
|---|---|-----------------|-------------------------|
| ð | Ô | | |
| | | <i>interval</i> | ÿ ¤ ÿ ÿ 1 Â |

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

| group | | RADIUS | | TACACS+ | |
|-------|--------------------|------------|------------|---------|-----|
| | - | | | | |
| | | | | | |
| | | AAA Enable | AAA Enable | | aaa |
| | authentication en_ | | n | | |

```

authentication login list-1 group radius local
!
Login
!
Login
!

```

AAA Login RADIUS

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

| aaa new-model | AAA |
|----------------------|--------------------|
| username | list-1 |
| login authentication | group radius local |

AAA

1.9 aaa authentication ppp

```

aaa authentication ppp list-1 group radius local
!
aaa authentication ppp list-1 group radius local
!

```

| default | list-1 |
|-----------|--------|
| list-name | list-1 |
| method | list-1 |
| local | list-1 |
| none | list-1 |
| group | list-1 |

AAA

AAA

```

aaa authentication ppp list-1 group radius local
!
aaa authentication ppp list-1 group radius local
!

```

AAA PPP RADIUS

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

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```

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

```

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```

0      Ô Ю          " и cmd   }        ~    15     }        ~    TACACS+ и
      Е ~          Е         none   Â   ±    VTY 0-4   Э'

```

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


1.12.1. Ruijie(config)# aaa authorization console

| aaa new-model | AAA |
|----------------------------|-----|
| aaa authorization commands | AAA |
| authorization commands | |

1.13.1. aaa authorization exec

1.13.1.1. AAA NAS CLI Exec

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

no aaa authorization exec {default | list-name}

| default | |
|-----------|--|
| list-name | |
| method | |

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1.14 aaa authorization network

AAA L ^ PPP à SLIP ~ ~ 3 aaa

authorization network Â 3 no AAA π Â

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

no aaa authorization network {default | list-name}

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| | | |
|---------|---|------------------|
| default | · ~ ‡ ‡ E | ñ Network Â |
| | l' none à group L ~ n k& | |

| | | | |
|---|---|--------------------|---|
| ö | Ô | | |
| | | default | ~ |
| | | <i>domain-name</i> | " |

ö Ô Â

ö 3 Ô Â

ö Ô " AAA ¼ Âdefault ñ ~ # " ~ ‡
 Â domain-name ñ " ~ " ~ ‡
 Â 32 Â

ö Ô Ю " ,
 Ruijie(config)# aaa domain ruijie.com
 Ruijie(config-aaa-domain)#

| | | | |
|---|-----|--------------------------|---------|
| ö | 3 Ô | 3 | |
| | | aaa new-model | AAA ¼ |
| | | aaa domain enable | " AAA ¼ |
| | | show aaa domain | |

ö 1 Ô -

1.16 aaa domain enable

" AAA ¼ ~ Ю ñ Â ~ " AAA
 ¼ Â 3 **no** Â
aaa domain enable
no aaa domain enable

| | | | |
|---|---|---|---|
| ö | Ô | | |
| | | - | - |

ö Ô " AAA ¼ Â

ö 3 Ô Â

ö Ô " AAA ¼ ~ Â

ö Ô " AAA ¼ ,
 Ruijie(config)# aaa domain enable

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```

AAA      E      A      3      no      E      A
aaa group server {radius | tacacs+} name
no aaa group server {radius | tacacs+} name

```

 $\ddot{O} \quad \hat{O} \quad -$
$$\ddot{O} \quad \{ \quad \hat{O} \quad \hat{A}$$

0 0 3 AAA 4 5 RADIUS TACACS+ 6 A

$$\ddot{O} \qquad \hat{O} \quad \text{Ю} \qquad \hat{A}$$

```
Ruijie(config)# aaa group server radius ss
Ruijie(config-gs-radius)# end
Ruijie# show aaa group
Group Name:  ss
Group Type:  radius
Referred:    1 D p e  φ T M
```

 $\ddot{O}$

| | | | |
|---|---|---------------------|--------------|
| ö | Ô | | |
| | | <i>max-attempts</i> | 1~2147483647 |

ö Ô 3

ö 3 Ô

ö Ô 3 Login

ö Ô Ю

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

| | | | |
|---|-----|----------------------------|-------|
| ö | 3 Ô | | |
| | | show running-config | |
| | | show aaa logout | login |

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1.19 aaa local authentication logout-time

login

aaa local authentication logout-time *logout-time*

| | | | |
|---|---|--------------------|--------------|
| ö | Ô | | |
| | | <i>logout-time</i> | 1~2147483647 |

ö Ô 15

ö 3 Ô

ö Ô login

ö Ô Ю

```
Ruijie# configure terminal
Ruijie(config)# aaa local authentication logout-time 5
```

| | | | |
|---|-----|----------------------------|-------|
| ö | 3 Ô | | |
| | | show running-config | |
| | | show aaa logout | login |

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1.20

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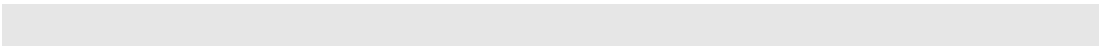
Ô

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"

й ruijie.com

й 20



| | |
|------------------|----|
| default | 0 |
| <i>list-name</i> | 11 |

ö Ô ÿ ÿ default Â

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| | |
|-------------------|---------|
| aaa domain enable | " AAA " |
| show aaa domain | |

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1.26 aaa authorization commands

NAS CLI

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

ö 3 Ô

| | |
|-------------------|---------|
| 3 | |
| aaa new-model | AAA ƚ |
| aaa domain enable | " AAA ƚ |
| show aaa domain | |

ö / Ô -

1.29 clear aaa local user logout

```
clear aaa local user logout {all | user-name word }
```

ö Ô

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1.32 login authentication

Login authentication configuration example:
 Login authentication {default | list-name}
 no login authentication

ö

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| | |
|-------|----------------|
| port2 | ⌋ ^ RADIUS ⌋ ~ |
|-------|----------------|

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ö Ô ⌋ ¶ ⌋ ~ a Â

```

ö Ô Ruijie(config)# aaa group server radius ss
Ruijie(config-gs-radius)# server 192.168.4.12 acct-port 5 auth-port 6
Ruijie(config-gs-radius)# end
Ruijie# show aaa group
Type      Reference  Name
-----
radius    1          radius
tacacs+   1          tacacs+
radius    1          ss

```

| | | |
|------------------|-----|---|
| ö 3 Ô | 3 | |
| aaa group server | aaa | ⌋ |
| show aaa group | aaa | ⌋ |

ö / Ô -

1.34 show aaa domain

Â

show aaa domain [default | domain-name]

| | | |
|-------------|--|---|
| ö Ô | | |
| default | | ~ |
| domain-name | | " |

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ö Ô a " ~ ‡ Â

ö Ô Ю " ñ domain.com Â

```

Ruijie# show aaa domain domain.com

=====Domain domain.com=====
State: Active

```

```

Username format: Without-domain
Access limit: No limit
802.1X Access statistic: 0

Selected method list:
authentication dot1x default

```

| | |
|-------------------|-----|
| 3 | |
| aaa new-model | AAA |
| aaa domain enable | AAA |

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1.35 show aaa group

```

AAA
show aaa group

```

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

-

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3 AAA

```

Ruijie# show aaa group
Type      Reference  Name
-----
radius    1          radius
tacacs+   1          tacacs+
radius    1          dot1x_group
radius    1          login_group
radius    1          enable_group

```

| | |
|------------------|-----|
| 3 | |
| aaa group server | AAA |

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1.36 show aaa method-list

AAA Â
show aaa method-list

| | | | |
|---|---|---|---|
| ð | Ô | | |
| | | - | - |

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ð Ô 3 AAA Â

ð Ô IO AAA Â

```
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
```

| | | | |
|---|-----|---------------------------|---|
| ð | 3 Ô | 3 | |
| | | aaa authentication | ℌ |
| | | aaa authorization | ℌ |
| | | aaa accounting | ℌ |

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1.37 show aaa user logout

Â
show aaa user logout

| | | | |
|---|---|---|--|
| ð | Ô | | |
| | | - | |
| | | | |

1.39 username-format

IO NAS 6 4 " ~ 3 no Â

username-format {without-domain | with-domain}

no username-format

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

2 RADIUS

2.1 debug radius

RADIUS Â 3 no RADIUS Â

debug radius [event | detail]

no debug radius [event | detail]

| | | | |
|---|---|---|---|
| ð | Ô | | |
| | | - | - |

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ð 3 Ô EXEC Â

ð Ô -

ð Ô -

| | | | |
|---|-----|---|---|
| ð | 3 Ô | 3 | |
| | | - | - |

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2.2 ip radius source-interface

RADIUS ~ 3 ip radius source-interface Â 3 no

RADIUS Â

ip radius source-interface *interface*

no radius source-interface

| | | | |
|---|---|------------------|--------|
| ð | Ô | | |
| | | <i>interface</i> | radius |

ð Ô radius Â

ð 3 Ô Â

ð Ô ì radius ¼ ð nas ~ 1 ¼ 3 radius Â

3 ip ì radius ~ 3 ¼ Â

ö

Ô Ю

ra

3 Ô Â

Ô 3 Â

Ô Ю max up-rate Ъ ѡ 211

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

Ô 3 Ô

| | |
|---------------------------|--------------------|
| 3 | |
| radius set qos cos | radius Ю qos ѡ cos |

Ô / Ô -

2.4 radius set qos cos

radius Ю qos ѡ cos

radius set qos cos

no radius set qos cos

Ô Ô

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

Ô qos ѡ dscp

Ô 3 Ô Â

Ô 3 ѡ / ѡ Ю qos ѡ cos ѡ ѡ dscp

Ô Ю

```
Ruijie(config)# radius set qos cos
```

Ô 3 Ô

| | |
|---|--|
| 3 | |
|---|--|

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

ö Ô Ì id

ö Ì Ô Â

ö Ô Ì id Â

ö Ô IO
Ruijie(config)# radius vendor-specific extend

| | | |
|--------------------|-----|-----|
| ö Ì Ô | Ì | |
| radius attribute | Ì | |
| radius set qos cos | qos | cos |

ö Ì Ô -

2.6 radius-server attribute 31

RADIUS Calling-Station-ID ^ MAC~
attribute 31 Â Ì no Ì Â
radius r ħ ō te 31 Ì radius-server

-

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ö / Ô -

2.7 radius-server dead-criteria

RADIUS

| | | | | |
|---|---------|-------|-----------|----------|
| Ö | Ö | | | |
| | minutes | a 1 | RADIUS | £ |
| | | ÿ Æ 1 | ÿ 1-1440† | ^ 24 ~ Å |

0 minutes 0.1 ^ RADIUS 1.0 ~ RADIUS 1.0 ~

ò 3 Ô Â

radius-server timeout 30
radius-server deadtime 120
radius-server restart 3600
radius-server log /var/log/radius/rad.log
radius-server accounting on

```
Ruijie(config)# radius-server deadtime 1
```

| | | | |
|---|-----------------------------|----------|-------|
| ð | ŕ Ô | | |
| | ŕ | | |
| | radius-server dead-criteria | ℔ RADIUS | ℔ a 1 |
| | radius-server host | ℔ RADIUS | ℔ ŕ |

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2.9 radius-server host

RADIUS U ũ ħ GLXV V HUYHU₃ kaRmsUpererÂ } no



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Ô 3 RADIUS ¼ Â ñ RADIUS ¼
RADIUS ¼ 3 Â

Ô Ô ¼ RADIUS ¼ 3 ñ aaa

```
Ruijie(config)# radius-server key aaa
```

| | | |
|--------------------------|------------|---|
| 3 Ô | 3 | |
| radius-server host | ¼ RADIUS ¼ | ÿ |
| radius-server retransmit | ¼ RADIUS | |
| radius-server timeout | ¼ RADIUS | |

Ô / Ruijie(confi

2.12 radius-server timeout

radius-server
timeout *seconds*
no radius-server timeout

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

5

Ruijie(config)# radius-server timeout 10

| | |
|--------------------|--------|
| radius-server host | RADIUS |
| ra | RADIUS |

```

Server Retries: 3
Server Dead Criteria:
Time:          10 Seconds
Tries:         10

```

| 3 | |
|-----------------------------|-------------|
| radius-server host | 192.168.1.1 |
| radius-server retransmit | 10 |
| radius-server key | 1234567890 |
| radius-server timeout | 30 |
| radius-server dead-criteria | 10 10 |
| radius-server deadtime | 10 |

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2.14 show radius server

```

RADIUS 1
show radius server

```

| 1 | |
|---|---|
| - | - |

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3 1

1 3 radius 1

```

Ruijie# show radius server
Server IP: 192.168.4.12
Accounting Port: 23
Authen Port: 77
Test Username: viven
Test Idle Time: 10 Minutes
Test Ports: Authen
Server State: Active
Current duration 765s, previous duration 0s
Dead: total time 0s, count 0
Statistics:
Authen: request 15, timeouts 1
Author: request 0, timeouts 0

```

```

Account: request 0, timeouts 0

Server IP:    192.168.4.13
Accounting Port: 45
Authen Port:  74
Test Username: <Not Configured>
Test Idle Time: 60 Minutes
Test Ports:    Authen and Accounting
Server State:  Active
Current duration 765s, previous duration 0s
Dead: total time 0s, count 0
Statistics:
Authen: request 0, timeouts 0
Author: request 0, timeouts 0
Account: request 20, timeouts 0

```

| | |
|--------------------------|----------------------|
| 3 | |
| radius-server host | 192.168.4.13 |
| radius-server retransmit | 10 |
| radius-server key | 12345678901234567890 |
| radius-server timeout | 30 |

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2.15 show radius vendor-specific

```

RUIJIE# show radius vendor-specific

```

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

-

3

radius

```

Ruijie# show radius vendor-specific
Ruijie#show radius vendor-specific
id      vendor-specific      type-value
-----

```

| | | |
|----|-----------------------------|----|
| 1 | max-down-rate | 1 |
| 2 | port-priority | 2 |
| 3 | user-ip | 3 |
| 4 | vlan-id | 4 |
| 5 | last-supPLICant-vers ion | 5 |
| 6 | net-ip | 6 |
| 7 | user-name | 7 |
| 8 | password | 8 |
| 9 | file-directory | 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 | current-supPLICant-v ersion | 17 |
| 18 | flux-max-high32 | 18 |
| 19 | flux-max-low32 | 19 |
| 20 | proxy-avoid | 20 |
| 21 | dialup-avoid | 21 |
| 22 | ip-privilege | 22 |
| 23 | login-privilege | 42 |
| 26 | ipv6-multicast-addre ss | 79 |
| 27 | ipv4-multicast-addre ss | 87 |

ö 3 Ô

| 3 | |
|--------------------------|--------------|
| radius-server host | ℥ RADIUS ℥ Ÿ |
| radius-server retransmit | ℥ RADIUS |
| radius-server key | ℥ RADIUS 3 |
| radius-server timeout | ℥ RADIUS |

ö 1 Ô -

3 TACACS+

3.1 aaa group server tacacs+

3 TACACS+ 4 5 a 6 TACACS+ 4 7 a 8
aaa group server tacacs+ group-name
no aaa group server tacacs+ group-name

| | | | |
|---|---|------------|-------------|
| 9 | 0 | | |
| | | group-name | TACACS+ 4 " |

9 0 TACACS+ 4 8

9 3 0 8

9 0 TACACS+ 4 7 5 ä ä 1 2 a 4 8

9 0 10 " 11 tac1 TACACS+ 4 5 3 1.1.1.1 TACACS+ 4

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

| | | | |
|---|-----|-------------------|------------------|
| 9 | 3 0 | 3 | |
| | | server | TACACS+ 4 server |
| | | ip vrf forwarding | TACACS+ 4 VRF" |

9 1 0 -

3.2 debug tacacs+

TACACS+ 8 3 no TACACS+ 8
debug tacacs+
no debug tacacs+

| | | | |
|---|---|---|---|
| 9 | 0 | | |
| | | - | - |

9 0 -

9 3 0 8

3 0 -

3 0 -

| | | |
|-----|---|--|
| 3 0 | 3 | |
| - | - | |

3 1 0 -

3.3ip tacacs source-interface

3 TACACS+ 0
ip 0 0

| | | | |
|---|---|-----------------|-------------------------|
| ö | Ô | | |
| | | <i>vrf-name</i> | <i>vrf</i> ² |

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ö 3 Ô TACACS+ Ǝ Â

ö Ô ñ TACACS+ Ǝ *vrf*² Â

ö Ô Ю ñ TACACS+ Ǝ VRF² ñ *vpn1*¹

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

| | | | |
|---|-----|---------------------------------|------------------|
| ö | 3 Ô | 3 | |
| | | aaa group server tacacs+ | TACACS+ Ǝ |
| | | server | TACACS+ Ǝ server |

ö 1 Ô -

3.5 server(TACACS+)

3 TACACS+ Ǝ Ǝ Â

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

no server {*ip-address* | *ipv6-address*}

| | | | |
|---|---|---------------------|------------------|
| ö | Ô | | |
| | | <i>ip-address</i> | TACACS+ Ǝ Ǝ IP |
| | | <i>ipv6-address</i> | TACACS+ Ǝ Ǝ IPV6 |

ö Ô -

ö 3 Ô TACACS+ Ǝ Â

ö Ô 3 ~ 3 **aaa group server tacacs+** TACACS+ Â

TACACS+ Ǝ Ǝ ~ Ю **tacacs-server host** 3

Ǝ Â

Ǝ TACACS+ Ǝ ~ Ǝ ~ Ю Ǝ Â

ö Ô Ю " ñ tac1 TACACS+ Ǝ ~ 3 1.1.1.1 TACACS+

Ǝ

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


| | | | |
|---|-----|--------------------------|----------------|
| ð | 3 Ô | | |
| | | aaa group server tacacs+ | TACACS+ 𐀀 |
| | | ip vrf forwarding | TACACS+ 𐀀 VRF" |

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3.6 show tacacs

TACACS+ 𐀀 Â

show tacacs

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ð Ô 3 TACACS+ 𐀀 Â

ð Ô 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

| | | | |
|---|-----|--------------------|---------------|
| ð | 3 Ô | | |
| | | tacacs-server host | 𐀀 TACACS+ 𐀀 𐀀 |

ð / 1 Ô -

3.7 tacacs-server host

3 TACACS+ 𐀀 𐀀 IP Â

tacacs-server host {ip-address | ipv6-address} [port integer] [timeout integer] [key string]
no tacacs-server host {ip-address | ipv6-address}

| ö | Ô | | |
|---|---|-------------------------------|--------------------------------|
| | | <i>ip-address</i> | TACACS+ ℓ Ÿ IP Â |
| | | <i>ipv6-address</i> | TACACS+ ℓ Ÿ IPV6 Â |
| | | port <i>integer</i> | TACACS+ TCP |
| | | timeout <i>integer</i> | TACACS+ Ÿ Â |
| | | key string . | TACACS+ client 6 ℓ Â |

ö Ô TACACS+ Ÿ Â

ö 3 Ô Â

ö Ô ì TACACS+ AAA ℓ TACACS+

key

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key A

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TACACS+

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3 ì aaa'

4 802.1X

4.1 dot1x auth-address-table

配置 802.1X 认证地址表时，使用以下命令。

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

| | |
|------------------|--------|
| 命令格式 | |
| <i>mac-addr</i> | MAC 地址 |
| <i>interface</i> | 接口名称 |

缺省情况下，设备不配置地址表。

配置地址表时，使用以下命令。

在用户视图下，使用以下命令查看配置结果：

show dot1x auth-address table

配置示例：

```
Ruijie# configure terminal
Ruijie(config)# dot1x auth-address-table address 00d0f8000000 interface ethernet 1/1
Ruijie(config)# end
Ruijie#
```

| | |
|--------------------------------------|--------|
| 命令格式 | |
| show dot1x auth-address-table | 显示配置结果 |

命令说明：

4.2 dot1x authentication

配置 802.1X 认证时，使用以下命令。

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

| | |
|------------------|--------|
| 命令格式 | |
| default | 默认配置 |
| <i>list-name</i> | 认证列表名称 |

ö Ô AAA ~ ‡ AAA £ Â

ö 3 Ô Â

ö Ô AAA £ ‡ 3 dot1x Â

ö Ô Ю ☹ group radius Â

```
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
```

| | | |
|-----------------|---------------------------------|------------|
| ö 3 Ô | 3 | |
| | aaa new-model | AAA £ |
| | aaa authentication dot1x | |

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4.3dot1x auth-fail max-attempt

VLAN Â

dot1x auth-fail max-attempt *num*

no dot1x auth-fail max-attempt

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

ö Ô 3

ö 3 Ô Â

ö Ô 1 2 **show dot1x** 3 Â

ö Ô Ю VLAN ,

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

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ö 1 Ô -

4.4 dot1x auth-fail vlan

802.1x vlan

dot1x auth-fail vlan vid

no dot1x auth-fail vlan

| | | | |
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| ö | Ô | | |
| | | vid | vlan vid |

ö Ô vlan

ö 3 Ô Â

ö Ô 1 2 **show dot1x interface** 3 Â

ö Ô Ю 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
```

| | | | |
|---|-----|-----------------------------|----------|
| ö | 3 Ô | 3 | |
| | | show dot1x interface | 802.1x Â |

ö 1 Ô -

4.5 dot1x auth-mode

802.1x Â

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

no dot1x auth-mode

| | | | |
|---|----------------|----------------|---|
| ö | Ô | | |
| | eap-md5 | 802.1x EAP-MD5 | Â |
| | chap | 802.1x CHAP | Â |
| | pap | 802.1x PAP | Â |

ö Ô EAP-MD5

ö 3 Ô

Ö Ö 1.7 **show dot1x** 3 802.1x Â

Ö Ö Ю 802.1x ,

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

| | | |
|-------|-------------------|----------|
| Ö 3 Ö | 3 | |
| | show dot1x | 802.1x Â |

Ö 1 Ö -

4.6 dot1x auto-req

802.1X 3 1.7 3 **dot1x auto-req** Â 3 **no** 1 3

1 Â

dot1x auto-req

no dot1x auto-req

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Ö 3 Ö Â

Ö Ö 3 802.1x 1.7 **show dot1x auto-req** 3 1 Â

Ö Ö Ю 3 802.1x ,

```
Ruijie# configure terminal
Ruijie(config)# dot1x auto-req
Ruijie(config)# end
Ruijie# show dot1x auto-req
Ruijie(config)# dot1x auto-req
Auto-Req: Enabled
User-Detect : Enabled
Packet-Num : 0
Req-Interval: 30 Second
```

| | | |
|-------|----------------------------|-----|
| Ö 3 Ö | 3 | |
| | show dot1x auto-req | 3 Â |

đ 1 Ô

3 Ô Â

Ô Ô Ÿ ~ 1 2 **show dot1x auto-req** 3 11 Â

Ô Ô Ю 802.1x 5 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
```

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|----------------------------|-----|
| 3 | |
| show dot1x auto-req | Ÿ Â |

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4.9 dot1x auto-req user-detect

3 a 2 Ÿ ~ **no** 5 Â

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

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Ô 3 Ô Â

Ô Ô 3 ~ a 2 Ÿ ~ 1 2 **show dot1x auto-req**
 3 11 Â

Ô Ô Ю 3 3 4 Ÿ Ÿ .

```
Ruijie# configure terminal
Ruijie(config)# dot1x auto-req user-detect
Ruijie(config)# end
Ruijie# show dot1x auto-req
Auto-Req: Enabled
User-Detect : Enabled
Packet-Num : 0
Req-Interval: 60 Second
```

| | | | |
|---|-----|---|-----------------------------------|
| ö | 3 Ô | 3 | |
| | | | show dot1x auto-req ý Â |

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4.10 dot1x client-probe enable

π

dot1x client-probe enable

no dot1x client-probe enable

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ö 3 Ô Â

ö Ô π Â

ö Ô π

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

| | | | |
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| ö | 3 Ô | 3 | |
| | | | show dot1x dot1x Â |

ö 1 Ô -

4.11 dot1x critical

RADIUS 802.1x
 IAB Inaccessible Authentication Bypass
 no 1 3
dot1x critical
no dot1x critical

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ö Ô

ö 3 Ô

ö Ô 3 IAB 802.1x RADIUS 3
 RADIUS IAB
 EAPOL-SUCCESS
 802.1x RADIUS 3
aaa authentication dot1x default group radius none RADIUS
 none
 IAB
 AAA 802.1x a
 802.1x RADIUS IAB
 AAA 3

ö Ô Ruijie# configure terminal
 Enter configuration commands, one per line. End with CNTL/Z.
 Ruijie(config)# interface fa 0/10
 Ruijie(config-if)# dot1x port-control auto
 Ruijie(config-if)# dot1x critical
 Ruijie(config-if)# end

| | | |
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| | - | - |

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4.12 dot1x critical recovery action reinitialize

RADIUS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

dot1x critical recovery action reinitialize
no dot1x critical recovery action reinitialize

| | | | |
|---|---|---|--|
| 0 | 0 | | |
| | | - | |

0 0 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

0 3 0

0 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

0 0 Ruijie# configure terminal
 Enter configuration commands, one per line. End with CNTL/Z.
 Ruijie(config)# interface fa 0/10
 Ruijie(config-if)# dot1x port-control auto
 Ruijie(config-if)# dot1x critical recovery action reinitialize
 Ruijie(config-if)# end

| | | | |
|---|-----|---|---|
| 0 | 3 0 | 3 | |
| | | - | - |

0 1 0 -

4.13 dot1x critical vlan

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

dot1x critical vlan *vlan-id*
no dot1x critical vlan

| | | | |
|---|---|----------------|------|
| 0 | 0 | | |
| | | <i>vlan-id</i> | VLAN |

0 0 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

0 3 0

1. Ruijie# configure terminal
 2. Enter configuration commands, one per line. End with CNTL/Z.
 3. Ruijie(config)# interface fa 0/10
 4. Ruijie(config-if)# dot1x port-control auto
 5. Ruijie(config-if)# dot1x critical vlan 100
 6. Ruijie(config-if)# end

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# interface fa 0/10
Ruijie(config-if)# dot1x port-control auto
Ruijie(config-if)# dot1x critical vlan 100
Ruijie(config-if)# end
```

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1. -

4.15 dot1x dynamic-vlan enable

vlan $\hat{A}$ $\mathfrak{z}$ **no** $\wedge \mathcal{L}$ $\hat{A}$

dot1x dynamic-vlan enable

no dot1x dynamic-vlan enable

| | | | |
|------------|-----------|---|---|
| $\ddot{o}$ | $\hat{O}$ | | |
| | | - | - |

$\ddot{o}$ $\hat{O}$ $\mathfrak{H}$

$\ddot{o}$ $\mathfrak{z}$ $\hat{O}$

$\ddot{o}$ $\hat{O}$ $\wedge \mathcal{L}$ **show dot1x dynamic-vlan** $\mathfrak{z}$ 802.1x $\hat{A}$

$\ddot{o}$ $\hat{O}$ $\mathcal{Y}$ 802.1x vlan $\cdot$

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

| | | | |
|------------|--------------------------|----------------|------------------|
| $\ddot{o}$ | $\mathfrak{z}$ $\hat{O}$ | $\mathfrak{z}$ | |
| | | show dot1x | 802.1x $\hat{A}$ |

$\ddot{o}$ $\wedge$ $\hat{O}$ -

4.16 dot1x eapol-tag

EAPOL TAG $\mathcal{T}$ $\hat{A}$

dot1x eapol-tag

no dot1x eapol-tag

| | | | |
|------------|-----------|---|---|
| $\ddot{o}$ | $\hat{O}$ | | |
| | | - | - |

$\ddot{o}$ $\hat{O}$ $\mathfrak{H}$

$\ddot{o}$ $\mathfrak{z}$ $\hat{O}$ $\hat{A}$

$\ddot{o}$ $\hat{O}$ $\wedge \mathcal{L}$ **show dot1x** $\mathfrak{z}$ 802.1x

$\ddot{o}$ $\hat{O}$ $\mathcal{Y}$ 802.1X tag $\cdot$

```
Ruijie# configure terminal
```

no dot1x mac-auth-bypass

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

ö Ô a MAC

ö 3 Ô Â

ö Ô 1 2 **show dot1x port-control interface** 3 Â

ö Ô Ю 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
```

| | | | |
|---|-----|--|----------|
| ö | 3 Ô | 3 | |
| | | show dot1x port-control interface | 802.1x Â |

ö 1 Ô -

4.19 dot1x mac-auth-bypass multi-user

MAB Â

dot1x mac-auth-bypass multi-user

no dot1x mac-auth-bypass multi-user

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| | | - | - |

ö Ô a MAB

ö 3 Ô Â

ö Ô 1 2 **show running-config** 3 Â

ö Ô Ю MAB

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


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| 3 | Ô | 3 | |
| | | show running-config | Â |

Ô 1 Ô -

4.20 dot1x mac-auth-bypass timeout-activity

802.1x MAC

Â

dot1x mac-auth-bypass timeout-activity *value*

no dot1x mac-auth-bypass timeout-activity

| | | | |
|---|---|-------|------------------|
| Ô | Ô | | |
| | | value | ~ Лб й , 1-65535 |

Ô Ô ~ a

Ô 3 Ô Â

Ô Ô 1 Лб **show run** 3 802.1x Â

Ô Ô Ю 802.1x MAC

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

| | | | |
|---|-----|-----------------------------------|----------|
| Ô | 3 Ô | 3 | |
| | | show dot1x port-control interface | 802.1x Â |

Ô 1 Ô -

4.21 dot1x mac-auth-bypass violation

802.1x MAC

Â

dot1x mac-auth-bypass violation

no dot1x mac-auth-bypass violation

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|---|---|---|---|
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Ö Ö

Ö Ö Ä

Ö Ö 1 2 **show run** Ö 802.1x Ä

Ö Ö Ю 802.1x MAC

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

show dot1x port-control interface

802.1x Ä

Ö 1 Ö -

4.22 dot1x mac-move permit

802.1x 1 2 Ä Ю Ä
no 1 2 Ö Ä

do 1 O -

4.23 dot1x max-req

DOT1X E ~ DOT1X E ~ DOT1X A
E A 3 E A 3 no
A

dot1x max-req count
no dot1x max-req

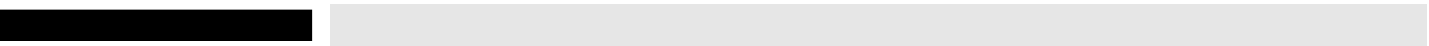
| | | | |
|----|---|-------|---|
| do | O | | |
| | | count | A |

do O и 3 A

do 3 O

do O 1 7 show dot1x 3 802.1x A

do O Ю 802.1x 7 ,



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ö Ô Ю 1f '
 Ruijie# configure terminal
 Ruijie(config)# dot1x multi-account enable
 Ruijie(config)# end

ö 3 Ô

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|------------|----------|
| 3 | |
| show dot1x | 802.1x Â |

ö 1 Ô -

4.25 dot1x multi-mab quiet-period

3 mab ± ^ ~ Â 3 no
 ñ Â
 dot1x multi-mab quiet-period *seconds*
 no dot1x multi-mab quiet-period

ö Ô

| | |
|----------------|------------------------|
| | |
| <i>seconds</i> | mab ± Â 0
65535 Â s |

ö Ô 30 Â

ö 3 Ô Â

ö Ô mab ± a ~ Â Л show running-config
 3 Â

ö Ô Ю ñ 100s
 Ruijie# configure terminal
 Ruijie(config)# dot1x timeout quiet-period 100
 Ruijie(config)# end

ö 3 Ô

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| 3 | |
| show running-config | Â |

ö 1 Ô -

4.26 dot1x port-control auto

~ 7 Â 3 no Â

dot1x port-control auto
no dot1x port-control

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ð Ô a ¶ 802.1x Â

ð ¶ Ô

ð Ô 1 ¶ **show dot1x** ¶ 802.1x Â

ð Ô Ю 802.1x б ‘

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

| | | | |
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| | | show dot1x | 802.1x Â |

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4.27 dot1x port-control-mode

802.1x Ю MAC ~

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Ю 1 ~ è ~ ÷ Ю

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dot1x port-control-mode {mac-based | {port-based [single-host]}}
no dot1x port-control-mode

| | | | |
|---|---|--------------------|------------|
| ð | Ô | | |
| | | mac-based | mac 802.1X |
| | | port-based | 802.1X |
| | | single-host | 802.1x |

ð Ô ÷ mac-based

ð ¶ Ô Â

Ö Ô ~ 1 2 show dot1x 3 802.1x Â

Ö Ô hello 30 , 120 '

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

| | | |
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| Ö 3 Ô | 3 | |
| | Show dot1x probe-timer | Â |

Ö 1 Ô -

4.29 dot1x pseudo source-mac

mac 802.1x mac 1 no 3 4
 mac 802.1x mac Â
dot1x pseudo source-mac
no dot1x pseudo source-mac

| | | |
|-----|---|---|
| Ö Ô | | |
| | - | - |

Ö Ô 1 2

Ö 3 Ô Â

Ö Ô 001a.a917.ffff 802.1x mac 1 2 show running-config 3
 802.1x Â

Ö Ô mac 802.1x mac :

```
Ruijie# configure terminal
Ruijie(config)# no dot1x pseudo source-mac
Ruijie(config)# end
Ruijie#
```

| | | |
|-------|---|---|
| Ö 3 Ô | 3 | |
| | - | - |
| | | |

Ö 1 Ô -

4.30 dot1x re-authentication

Ruijie# **dot1x re-authentication**
 Ruijie# **no dot1x re-authentication**

| | | | |
|---|---|---|---|
| õ | Ô | | |
| | | - | - |

õ Ô a Â

õ 3 Ô Â

õ Ô 3 802.1x Â 802.1X Status: Enabled

õ Ô

```

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
  
```

| | | | |
|---|-----|------------|----------|
| õ | 3 Ô | | |
| | | show dot1x | 802.1x Â |

õ 1 Ô -

4.31 dot1x reauth-max

配置命令如下：
`dot1x reauth-max count`
`no dot1x reauth-max`

| | |
|--------------------|--------------------|
| 配置命令 | 配置命令 |
| <code>count</code> | <code>count</code> |

配置命令如下：

配置命令如下：

配置命令如下：
`show dot1x`

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

```
Authed User Number: 0
Re-authen Enabled: Enabled
Re-authen Period: 1000 sec
Quiet Time Period: 1000 sec
```

4.32 dot1x stationarity enable

802.1x Ю Ю Л Л Ю Ю й
a ÿ 802.1X é ~ Л Л ЛЮ э Â
dot1x stationarity enable
no dot1x stationarity enable

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Ö Ô Ì a ~ Å 1 Л show dot1x Ì Å

Ö Ô Ю Ì 1000s

```
Ruijie# configure terminal
Ruijie(config)# dot1x timeout quiet-period 1000
Ruijie(config)# end
Ruijie# show dot1x
802.1X Status:      Enabled
Authentication Mode: EAP-MD5
Authed User Number: 0
Re-authen Enabled:  Disabled
Re-authen Period:   3600 sec
Quiet Timer Period:  1000 sec
Tx Timer Period:     3 sec
Supplicant Timeout:  3 sec
Server Timeout:      5 sec
Re-authen Max:       3 times
Maximum Request:     3 times
Filter Non-RG Supp:  Disabled
Client Oline Probe:  Disabled
Eapol Tag Enable:    Disabled
Authorization Mode:   Group Server
```

Ö Ì Ô

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ö Ô Ю ÿ 1000s

```
Ruijie(config)# dot1x timeout re-authperiod 1000
```

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

```
Ruijie# show dot1x
```

```
802.1X Status:      Enabled
```

```
Authed User Number: 0
```

```
Ruijie(config)# end  
Ruijie# show dot1x
```

```

Authentication Mode: EAP-MD5
Authed User Number: 0
Re-authen Enabled: Disabled
Re-authen Period: 1000 sec
Quiet Timer Period: 1000 sec
Tx Timer Period: 3 sec
Supplicant Timeout: 10 sec
Server Timeout: 10 sec
Re-authen Max: 3 times
Maximum Request: 3 times
Filter Non-RG Supp: Disabled
Client Oline Probe: Disabled
Eapol Tag Enable: Disabled
Authorization Mode: Group Server

```

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| 3 | |
| show dot1x | 802.1x Â |

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4.37 dot1x timeout tx-period

1. 802.1X Status: Enabled
 2. Authentication Mode: EAP-MD5
 3. Authed User Number: 0
 4. Re-authen Enabled: Disabled
 5. Re-authen Period: 1000 sec
 6. Quiet Timer Period: 1000 sec
 7. Tx Timer Period: 3 sec
 8. Supplicant Timeout: 10 sec
 9. Server Timeout: 10 sec
 10. Re-authen Max: 3 times
 11. Maximum Request: 3 times
 12. Filter Non-RG Supp: Disabled
 13. Client Oline Probe: Disabled
 14. Eapol Tag Enable: Disabled
 15. Authorization Mode: Group Server

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

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| | |
| <i>seconds</i> | Â 0 65535 Â |

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ö Ô 1 2 **show dot1x** 3 802.1x Â

ö Ô Ю 10s

```

Ruijie# configure terminal
Ruijie(config)# dot1x timeout tx-period 10
Ruijie(config)# end
Ruijie# show dot1x
802.1X Status: Enabled
Authentication Mode: EAP-MD5
Authed User Number: 0

```

```

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

```

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| show dot1x | | 802.1x | Â |

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4.38 mac-auth-bypass direct-site

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mac-auth-bypass direct-site *ip-address* [*ip-mask*][*dport* *port-num*] [*arp*]

no mac-auth-bypass direct-site *ip-address* [*ip-mask*][*dport* *port-num*]

| | | | |
|-------------------|-------|-------------|---|
| ô | Ô | | |
| <i>ip-address</i> | | IPv4 | Â |
| <i>ip-mask</i> | ^ 1 ~ | IPv4 | Â |
| <i>port-num</i> | ^ 1 ~ | 1 Â | |
| <i>arp</i> | ^ 1 ~ | ARP CHECK 7 | 1 |
| | 7 ~ 7 | ARP ~ | |
| | arp | Â | |

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ô Ô MAB 7 3 1 7 ~ MAB Â 1 76

~ http ~

ô Ô 1' IP 7 172.18.1.0 7

```

Ruijie# configure terminal
Ruijie(config)# mac-auth-bypass direct-site 172.18.1.0 255.255.255.0
Ruijie(config)# end
2 IP 7 172.18.1.1 7

```

```
Ruijie# configure terminal
Ruijie(config)# mac-auth-bypass direct-site 172.18.1.1
Ruijie(config)# end
```

3 IP и 172.18.1.2 э л и 80 и

```
Ruijie# configure terminal
Ruijie(config)# mac-auth-bypass direct-site 172.18.1.2 dport 80
Ruijie(config)# end
```

4 IP и 172.18.1.3 и target ip и arp

```
Ruijie# configure terminal
Ruijie(config)# mac-auth-bypass direct-site 172.18.1.3 arp
Ruijie(config)# end
```

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| show mac-auth-bypass direct-site | MAB Â |

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4.39 show dot1x

802.1x Â

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 |
| MAC Move Permit: | Enabled |

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|--------------------------------|---------------|
| dot1x auth-mode | 802.1x Â |
| dot1x max-req | Â |
| dot1x port-control auto | 71 Â |

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|------------------------------|--------|---|---|
| 3 | 3 | 3 | 3 |
| dot1x auth-mode | 802.1x | Â | |
| dot1x max-req | | Â | |
| dot1x port-control auto | 71 | Â | |
| dot1x reauth-max | | | |
| dot1x re-authentication | | Â | |
| dot1x timeout quiet-period | ± | | Â |
| dot1x timeout re-authperiod | | Â | |
| dot1x timeout server-timeout | £ | | Â |
| dot1x timeout supp-timeout | | | Â |
| dot1x timeout tx-period | ~ | | Â |

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4.41 show dot1x auto-req

3 802.1x
show dot1x auto-req

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```

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

```

| | | | |
|----------------------------|--------|---|---|
| 3 | 3 | 3 | 3 |
| dot1x auth-mode | 802.1x | Â | |
| dot1x max-req | | Â | |
| dot1x port-control auto | 71 | Â | |
| dot1x reauth-max | | | |
| dot1x re-authentication | | Â | |
| dot1x timeout quiet-period | ± | | Â |

| | |
|------------------------------|-----|
| dot1x timeout re-authperiod | Â |
| dot1x timeout server-timeout | £ Â |
| dot1x timeout supp-timeout | Â |
| dot1x timeout tx-period | ˘ Â |

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4.42 show dot1x max-req

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show dot1x max-req

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

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| | dot1x auth-mode | 802.1x Â |
| | dot1x max-req | Â |
| | dot1x port-control auto | ¶ Â |
| | dot1x reauth-max | |
| | dot1x re-authentication | Â |
| | dot1x timeout quiet-period | ‡ Â |
| | dot1x timeout re-authperiod | Â |
| | dot1x timeout server-timeout | £ Â |
| | dot1x timeout supp-timeout | Â |
| | dot1x timeout tx-period | ˘ Â |

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4.43 show dot1x port-control

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show dot1x port-control [interface *interface*]

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| | | <i>interface</i> | |

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Ruijie# show dot1x port-control

| Interface | Mode | Dynamic-User | Static-User | Max-User | Authened | Mab |
|-----------|------|--------------|-------------|----------|----------|-----|
|-----------|------|--------------|-------------|----------|----------|-----|

| | | | | | | |
|-------|-----------|---|---|------|-----|--|
| Fa0/5 | mac-based | 0 | 1 | 6000 | yes | |
|-------|-----------|---|---|------|-----|--|

disable

| | | | |
|---|-----|-------------------------------------|---------------|
| ö | 3 Ô | 3 | |
| | | dot1x auth-mode | 802.1x Â |
| | | dot1x max-req | Â |
| | | dot1x port-control auto | ¶ Â |
| | | dot1x reauth-max | |
| | | dot1x re-authentication | Â |
| | | dot1x timeout quiet-period | ± Â |
| | | dot1x timeout re-authperiod | Â |
| | | dot1x timeout server-timeout | £ Â |
| | | dot1x timeout supp-timeout | Â |
| | | dot1x timeout tx-period | ˘ Â |

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

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|------------------------------|----------|
| dot1x auth-mode | 802.1x Â |
| dot1x max-req | Â |
| dot1x port-control auto | ¶ Â |
| dot1x reauth-max | |
| dot1x re-authentication | Â |
| dot1x timeout quiet-period | ± Â |
| dot1x timeout re-authperiod | Â |
| dot1x timeout server-timeout | £ Â |
| dot1x timeout supp-timeout | Â |
| dot1x timeout tx-period | ˘ Â |

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4.45 show dot1x re-authentication

show dot1x re-authentication

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

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| dot1x auth-mode | 802.1x Â |

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4.47 show dot1x summary

```

 Ruijie# 802.1X
show dot1x summary

```

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0 0 IO

```

Ruijie# show dot1x summary

```

| ID | User | MAC | Interface | VLAN | Auth-State |
|---------------|-------------|----------------|----------------|------|---------------|
| Backend-State | Port-Status | User-Type | Time | | |
| ----- | | | | | |
| 2 | ts-user | 0023.aeea.4286 | Fa0/5 | 1 | Authenticated |
| Idle | Authed | static | 0days 0h 8m 8s | | |

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| | |
|------------------------------|-------------|
| 3 | |
| dot1x auth-mode | 802.1x ^ |
| dot1x max-req | ^ |
| dot1x port-control auto | 71 ^ |
| dot1x reauth-max | |
| dot1x re-authentication | ^ |
| dot1x timeout quiet-period | 1 ^ |
| dot1x timeout re-authperiod | ^ |
| dot1x timeout server-timeout | 1 ^ |
| dot1x timeout supp-timeout | ^ |
| dot1x timeout tx-period | ~ ^ |

0 1 0 -

4.48 show dot1x timeout

```

 Ruijie# 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

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

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| | | dot1x auth-mode | 802.1x Â |
| | | dot1x max-req | Â |
| | | dot1x port-control auto | ¶ Â |
| | | dot1x reauth-max | |
| | | dot1x re-authentication | Â |
| | | dot1x timeout quiet-period | ± Â |
| | | dot1x timeout re-authperiod | Â |
| | | dot1x timeout server-timeout | £ Â |
| | | dot1x timeout supp-timeout | Â |
| | | dot1x timeout tx-period | ˘ Â |

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3 802.1X
show dot1x user id <id>

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| ø | | | |
| | <i>id</i> | show summary | <i>id</i> |

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

3 MAB

show mac-auth-bypass direct-site

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ö Ô 1' MAB

Ruijie# show mac-auth-bypass direct-site

Mac-auth-bypass direct-site:

| Address | MASK | DPORT | ARP Binding |
|------------|-----------------|-------|-------------|
| ----- | ----- | ----- | ----- |
| 172.18.1.0 | 255.255.255.0 | | Off |
| 172.18.1.1 | 255.255.255.255 | | Off |
| 172.18.1.2 | 255.255.255.255 | 80 | Off |
| 172.18.1.3 | 255.255.255.255 | | On |

| | |
|-------------|-------|
| | |
| MAB | |
| Address | IP Â |
| MASK | IP Â |
| DPORT | Â |
| ARP Binding | ARP Â |

| | | | |
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| | | mac-auth-bypass direct-site | MAB Â |

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5 Web

5.1 dot1x redirect

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dot1x redirect
no dot1x redirect

3 dot1x redirect ^ 3 no

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

[illegible]

```
Ruijie(config)# no http redirect port 80
```

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| | | show http redirect | HTTP Â |

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5.6 http redirect session-limit

| | no | yes | no | yes |
|------------------|----|-----|----|-----|
| URL | no | yes | no | yes |
| IP | no | yes | no | yes |
| Host | no | yes | no | yes |
| Port | no | yes | no | yes |
| Path | no | yes | no | yes |
| Query | no | yes | no | yes |
| Fragment | no | yes | no | yes |
| Header | no | yes | no | yes |
| Body | no | yes | no | yes |
| Method | no | yes | no | yes |
| Status | no | yes | no | yes |
| Reason | no | yes | no | yes |
| Version | no | yes | no | yes |
| Protocol | no | yes | no | yes |
| Content-Type | no | yes | no | yes |
| Content-Length | no | yes | no | yes |
| Cache-Control | no | yes | no | yes |
| Expires | no | yes | no | yes |
| Pragma | no | yes | no | yes |
| Accept | no | yes | no | yes |
| Accept-Encoding | no | yes | no | yes |
| Accept-Language | no | yes | no | yes |
| Referer | no | yes | no | yes |
| User-Agent | no | yes | no | yes |
| Cookie | no | yes | no | yes |
| Set-Cookie | no | yes | no | yes |
| Location | no | yes | no | yes |
| Refresh | no | yes | no | yes |
| Retry-After | no | yes | no | yes |
| Warning | no | yes | no | yes |
| Server | no | yes | no | yes |
| Server-Timestamp | no | yes | no | yes |
| Server-Protocol | no | yes | no | yes |
| Server-Version | no | yes | no | yes |
| Server-Engine | no | yes | no | yes |
| Server-Software | no | yes | no | yes |
| Server-Name | no | yes | no | yes |
| Server-IP | no | yes | no | yes |
| Server-Port | no | yes | no | yes |
| Server-URL | no | yes | no | yes |
| Server-Path | no | yes | no | yes |
| Server-Query | no | yes | no | yes |
| Server-Fragment | no | yes | no | yes |
| Server-Header | no | yes | no | yes |
| Server-Body | no | yes | no | yes |
| Server-Method | no | yes | no | yes |
| Server-Status | no | yes | no | yes |
| Server-Reason | no | yes | no | yes |
| Server-Version | no | yes | no | yes |
| Server-Protocol | no | yes | no | yes |
| Server-Engine | no | yes | no | yes |
| Server-Software | no | yes | no | yes |
| Server-Name | no | yes | no | yes |
| Server-IP | no | yes | no | yes |
| Server-Port | no | yes | no | yes |
| Server-URL | no | yes | no | yes |
| Server-Path | no | yes | no | yes |
| Server-Query | no | yes | no | yes |
| Server-Fragment | no | yes | no | yes |
| Server-Header | no | yes | no | yes |
| Server-Body | no | yes | no | yes |
| Server-Method | no | yes | no | yes |
| Server-Status | no | yes | no | yes |
| Server-Reason | no | yes | no | yes |
| Server-Version | no | yes | no | yes |
| Server-Protocol | no | yes | no | yes |
| Server-Engine | no | yes | no | yes |
| Server-Software | no | yes | no | yes |
| Server-Name | no | yes | no | yes |
| Server-IP | no | yes | no | yes |
| Server-Port | no | yes | no | yes |
| Server-URL | no | yes | no | yes |
| Server-Path | no | yes | no | yes |
| Server-Query | no | yes | no | yes |
| Server-Fragment | no | yes | no | yes |
| Server-Header | no | yes | no | yes |
| Server-Body | no | yes | no | yes |
| Server-Method | no | yes | no | yes |
| Server-Status | no | yes | no | yes |
| Server-Reason | no | yes | no | yes |
| Server-Version | no | yes | no | yes |
| Server-Protocol | no | yes | no | yes |
| Server-Engine | no | yes | no | yes |
| Server-Software | no | yes | no | yes |
| Server-Name | no | yes | no | yes |
| Server-IP | no | yes | no | yes |
| Server-Port | no | yes | no | yes |
| Server-URL | no | yes | no | yes |
| Server-Path | no | yes | no | yes |
| Server-Query | no | yes | no | yes |
| Server-Fragment | no | yes | no | yes |
| Server-Header | no | yes | no | yes |
| Server-Body | no | yes | no | yes |
| | | | | |

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 HTTP Â
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 HTTP ì 1Â

0 Ô 1' HTTP ì 4Â
Ruijie(config)# http redirect session-limit 4

5.8 show http redirect

HTTP Â
show http redirect

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| | |
|---------------|----------|
| homepage | Ÿ Â |
| session-limit | ° HTTP Â |
| timeout | Â |
| | |
| Address | IP Â |
| Mask | IP Â |
| ARP Binding | ARP Â |
| | |
| Address | IP Â |
| Mask | IP Â |
| Port | 6 IP Â |
| ARP Binding | ARP Â |

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| 3 | |
| http redirect | Ł IP Â |
| http redirect direct-site | Â |
| http redirect homepage | Ÿ Â |
| http redirect port | Â 1 HTTP WEB |
| http redirect session-limit | ° HTTP Â |
| http redirect timeout | Â |

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5.9 show web-auth allow-vlan

VLAN Web VLAN Â

show web-auth allow-vlan

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ö Ô 1' VLAN Web VLAN Â

Ruijie# show web-auth allow-vlan

Allow-vlan list : 1-3,5

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5.11 show web-auth port-control

show web-auth port-control

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Ruijie# show web-auth port-control

| Port | Control |
|------|---------|
|------|---------|

| | |
|------------------|----|
| FastEthernet 0/1 | On |
|------------------|----|

| | |
|------------------|----|
| FastEthernet 0/2 | On |
|------------------|----|

| | |
|------------------|-----|
| FastEthernet 0/3 | Off |
|------------------|-----|

.....

| Port | Control |
|------------------|---------|
| FastEthernet 0/1 | On |
| FastEthernet 0/2 | On |
| FastEthernet 0/3 | Off |

| | |
|-----------------------|-------|
| 3 | |
| web-auth port-control | 3 Web |

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5.12 show web-auth user

show web-auth user [ip-address | ipv6-address]

| | |
|--------------|------|
| | |
| ip-address | IPv4 |
| ipv6-address | IPv6 |

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3. 1. 2.

3. 1. 3.

3. 1. 4. 1. web 1.

```
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 | Port | Online | Time Limit | Time Used | Time Start | Status |
|---------|----|-----|------|--------|------------|-----------|------------|---------|
| | | | | | 0 | | | Active |
| | | | | | | | | Create |
| | | | | | | | | Destroy |

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5.13 web-auth allow-vlan

VLAN Web π VLAN Æ / π 3 **no** 4 Æ

web-auth allow-vlan list

no web-auth allow-vlan [list]

| | | | |
|---|---|-------------|-------------------------------|
| ö | Ô | | |
| | | <i>list</i> | VLAN web VLAN ÿ <i>list</i> Æ |

ö Ô VLAN Web π ~ ≠ VLAN Æ

ö 3 Ô Æ

ö Ô VLAN ~ VLAN π Æ VLAN ^

a VLAN~ ~ ‡ VLAN π Æ

VLAN π ~ ~ IO Æ Web π ' è ~ IO

TRUNK Æ

ö Ô 1' VLAN ÿ VLAN1 à 2 à 3 à 5 Æ

```
Ruijie(config)# web-auth allow-vlan 1-3,5
```

ö 3 Ô

| | |
|-----|--|
| arp | ^ 1 ~ ARP CHECK 11 ~ ж IP ARP ~ arp ^ IPv4 |
|-----|--|

õ Ô ~ Web ~ 11 ^

õ 3 Ô ^

õ Ô 50 ж a Web ~ ≠ 1 16 11 ^

õ Ô 1' IP ж 172.16.0.1 ж ^

Ruijie(config)# web-auth direct-host 172.16.0.1

| | | |
|-------|---------------------------|-------|
| õ 3 Ô | 3 | |
| | show web-auth direct-host | web ^ |

õ 1 Ô -

5.15 web-auth offline-detect flow

ГЭЮ Ю ^ 1 16 3 no

Ю ^

web-auth offline-detect flow

no web-auth offline-detect flow

| | | |
|-----|---|---|
| õ Ô | | |
| | - | - |

δ Ô 1' Ю Â

```
Ruijie(config)# web-auth offline-detect flow
```

δ 3 Ô

δ Ô 1' ñ 30 Â

Ruijie(config)# web-auth update-interval 30

δ 3 Ô

| | |
|---|---|
| 3 | |
| - | - |

δ 1 Ô -

6 SSH

6.1 crypto key generate

配置 SSH 服务器密钥

crypto key generate {rsa | dsa}

| | | |
|----|------------|-----|
| 配置 | 密钥 | |
| | rsa | RSA |
| | dsa | DSA |

配置 SSH 服务器密钥

配置

配置 SSH 服务器密钥

ssh-server 配置 SSH 服务器密钥

SSH 1 RSA SSH 2 RSA DSA

RSA SSH1 6 SSH2 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

DSA RSA

DSA RSA

RSA DSA 512 2048 SSH2 768

RSA DSA 768 768

no crypto key generate **crypto key zeroize**

Ruijie# configure terminal

Ruijie(config)# crypto key generate rsa

| | | |
|----|--------------------|---------------|
| 配置 | 配置 | |
| | show ip ssh | SSH Server 配置 |

6.2 crypto key zeroize

SSH 的 公 钥 密 钥 对 进 行 清 零 操 作 的 命 令 是 `crypto key zeroize {rsa | dsa}`

| | | | |
|---|---|------------|-----|
| 0 | 0 | | |
| | | rsa | RSA |
| | | dsa | DSA |

0 0 -

0 3 0

0 0 3 0 1 SSH Server 的 服 务 是 否 已 禁 用 操 作 的 命 令 是 `no enable service ssh-server` 3 1

0 0 Ruijie# configure terminal
Ruijie(config)# crypto key zeroize rsa

| | | | |
|---|-----|--------------------|------------|
| 0 | 3 0 | | |
| | | show ip ssh | SSH Server |

| | | | |
|---|-----|-----------------------------------|-----|
| ð | ÿ Ô | ÿ | |
| | | show ssh | SSH |
| | | clear line vty <i>line-number</i> | VTY |

ð / Ô -

6.4 ip scp server enable

ð SCP Æ ¶ ~ / ¶ ð Æ ~ ¶ ð
~ ~ ¶ ~ é Â

ip scp server enable
no ip scp server enable

| | | | |
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| ð | Ô | | |
|---|---|--|--|

-

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

| | | | |
|---|---|------|--------|
| ö | Ô | | |
| | | time | 1~120s |

ö Ô Ю 120s Â ð **no ip ssh time-out** ð ð

ö ð Ô

ö Ô ð SSH Server Â ð 120s
 ð ð ð Â **show ip ssh** ð SSH server Â

ö Ô ð 100s
 Ruijie# configure terminal
 Ruijie(config)# ip ssh time-out 100

| | | | |
|---|-----|-------------|------------|
| ö | ð Ô | | |
| | | show ip ssh | ssh-server |

ö ð Ô -

6.8 ip ssh version

SSH server Â ð no ð Â
ip ssh version {1 | 2}
no ip ssh version

| | | | |
|---|---|---|-----------------|
| ö | Ô | | |
| | | 1 | SSH Server SSH1 |
| | | 2 | SSH Server SSH2 |

ö Ô Ю SSH 1 2 Â ð ð SSH Â
no ip ssh version ð ð ð Â

ö ð Ô

ö Ô ð SSH Server SSH Â Ю SSH Server
 SSH1 6 SSH2 SSH 1 SSH2 ð ð Â 1 2
 SSH Â **show ip ssh** ð SSH Server Â

ö Ô 2
 Ruijie# configure terminal

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

ð 3 Ô

| | |
|-------------|------------|
| 3 | |
| show ip ssh | SSH Server |

ð /l Ô -

‘ ă ¢ ă `Ω

| SSH | SSH |
|-----|-----|
|-----|-----|

Ö Ô Ruijie# show ip ssh

| Ö 3 Ô | 3 | |
|-------|-------------------------------|------------|
| | ip ssh version {1 2} | SSH Server |
| | ip ssh time-out time | SSH Server |
| | ip ssh authentication-retries | SSH Server |

Ö 1 Ô -

6.11 show ssh

SSH Â

show ssh

| Ö Ô | | |
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| | - | - |

Ö Ô -

Ö 3 Ô

Ö Ô SSH Â VTY 1 à SSH à ¶ à

Ö Ô Ruijie# show ssh

| Ö 3 Ô | 3 | |
|-------|---|---|
| | - | - |

Ö 1 Ô -

7 URPF

7.1 clear ip urpf

URPF $\hat{A}$
clear ip urpf [**interface** *interface-name*]

| | | | |
|----------|-----------|--|-----------|
| δ | $\hat{O}$ | | |
| | | interface <i>interface-name</i> | $\hat{A}$ |

δ $\hat{O}$ -

δ $\mathfrak{z}$ $\hat{O}$ $\hat{A}$

δ $\hat{O}$ ~ $\hat{A}$

δ $\hat{O}$ 1' GigabitEthernet 0/21 $\ni$ URPF $\hat{A}$

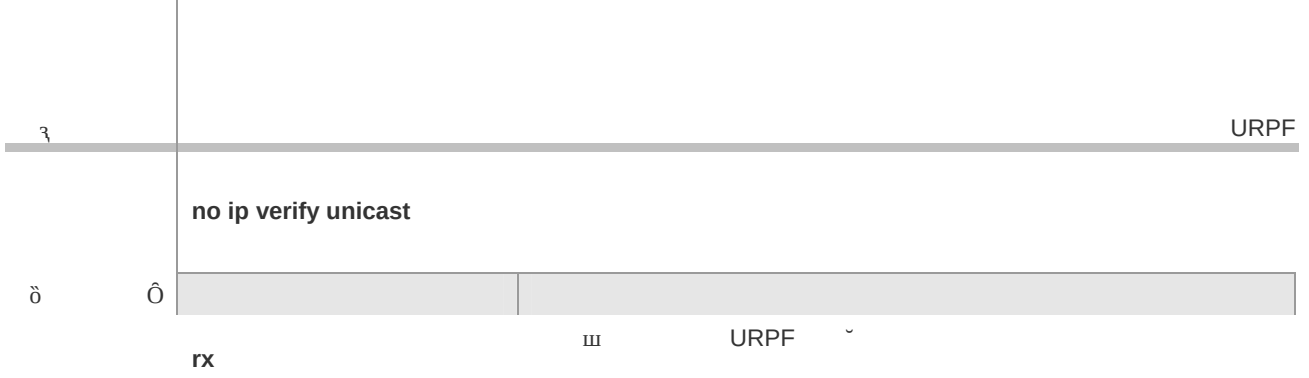
```
Ruijie# show ip urpf interface gigabitEthernet0/21
IP verify source reachable-via RX
IP verify URPF drop-rate notify disabled
IP verify URPF notification threshold is 1000pps
Number of drop packets in this interface is 124
Number of drop-rate notification counts in this interface is 0
Ruijie# clear ip urpf interface gigabitEthernet0/21
Ruijie# show ip urpf interface gigabitEthernet0/21
IP verify source reachable-via RX
IP verify URPF drop-rate notify disabled
IP verify URPF notification threshold is 1000pps
Number of drop packets in this interface is 0
Number of drop-rate notification counts in this interface is 0
```

| | | | |
|----------|--------------------------|---------------------|----------------|
| δ | $\mathfrak{z}$ $\hat{O}$ | $\mathfrak{z}$ | |
| | | show ip urpf | URPF $\hat{A}$ |

δ 1' $\hat{O}$ -

7.2 ip verify unicast source reachable-via ()

IO' URPF $\hat{A}$ 1' $\mathfrak{L}$ $\mathfrak{z}$ **no** URPF 1' URPF
 1' $\hat{A}$
ip verify unicast source reachable-via rx



IP verify URPF notification threshold is 1000pps
 Number of drop packets in this interface is 124
 Number of drop-rate notification counts in this interface is 0

δ 3 Ô

| 3 | |
|--|-------------|
| ip verify unicast source reachable-via | URPF Â |
| ip verify urpf drop-rate compute interval | URPF Â |
| ip verify urpf drop-rate notify hold-down | URPF Â |
| ip verify urpf notification threshold | URPF Â |

c "URPF"

$\hat{A}$

no security address-bind enable

$$\ddot{O} \quad \hat{O} \quad -$$

ö 3 Ô ~ Y ^ a AP AP

Step 1: v1 community

```
Ruijie(config)# security v1 community public
```

Step 2: v3 user start

```
Ruijie(config)# security v3 user start
```

| | |
|------------|---|
| Step 3: v1 | |
| - | - |

Step 4: v1 -

8.3 security event interval

Step 1: security event interval interval
no security event interval

| | |
|------------|---|
| Step 2: v1 | |
| interval | Y |

Step 3: v1 5

Step 4: v1

Step 5: v1 show security event interval

Step 6: v1 Y
Ruijie(config)# security event interval 10

| | |
|------------------------------|---|
| Step 7: v1 | |
| show security event interval | Y |

Step 8: v1 -

8.4 w& wnl %

Ö Ö

Ö 3 Ö

Ö Ö GSN ~ 3 GSN Â

Ö Ö Ruijie# configure terminal
Ruijie(config)# security gsn enable

| | | |
|-------|---|---|
| Ö 3 Ö | 3 | |
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Ö 1 Ö -

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ð Ô -

ð 3 Ô

ð Ô smp server IP Â

ð Ô B 04800(E2.005

9

9.1 arp-check

3 arp-check 71 ~ arp Â

Ö Ô Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# errdisable recovery

Ö 3 Ô 3

ö 3 Ô

ö Ô ñ ı 1 2 3 ı a
3 Â **show running-config** 3 Â

ö Ô Ruijie(config)# protected-ports route-deny

ö 3 Ô

| | |
|----------------------------|-----------|
| 3 | |
| show running-config | 3 1 2 3 Â |

ö 1 Ô -

9.5 show interfaces arp-check list

arp-check
show interfaces arp-check list

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| 3 | |
| arp-check | arp-check 1 Â |

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9.6 show nac-author-user

IP IP
show nac-author-user

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ö 3 Ô 3

9.8 show storm-control

show storm-control [*interface-id*]

| | | | |
|---|---|---------------------|---|
| ð | Ô | | |
| | | <i>interface-id</i> | Â |

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ð Ô Ruijie# show storm-control gigabitethernet 1/1
Interface Broadcast Control Multicast Control Unicast Control

Gi1/1 Disabled Disabled Disabled

| | | | |
|---|-----|----------------------|---|
| ð | ã Ô | ã | |
| | | storm-control | Â |

ð 1 Ô -

9.9 strom-control

Â ã **no** ¶ Â

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

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

| | | | | |
|------------------|---|-------|----|-----|
| | | | | |
| broadcast | | ¶ Â | | |
| multicast | | " ¶ Â | | |
| unicast | | " ¶ Â | | |
| <i>percent</i> | № | † | 20 | 20% |

ö

3

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Â

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

ð 3 Ô A

| | |
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| | |
| | TRUNK |
| | vlan-id |

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ö 3 Ô

ö Ô -

ö Ô 1' TRUNK 10 00d0.f800.5555 VID=2'

```
Ruijie(config)#inter g0/10
```

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

ö 3 Ô

| | |
|---|----|
| 3 | |
| switchport port-security | |
| switchport port-security binding | |
| switchport port-security mac-address
interface | IO |
| switchport port-security aging | |
| show port-security | |

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|--------------------------|------|
| 3 | |
| switchport port-security | |
| sÈ9tch0o | sw9t |

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

a Sticky MAC **no** Sticky MAC

Ö Ô

Ö 3 Ô

Ö Ô й ı Ю а у 1 2 3 4
 б 1 2 3 4 show interfaces 3 4

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

| | | |
|-------|-----------------|---|
| Ö 3 Ô | 3 | |
| | show interfaces | 3 |

Ö 1 Ô -

10 CPU

10.1 cpu-protect cpu bandwidth *bandwidth_value*

CPU

cpu-protect cpu bandwidth *bandwidth_value*

ö

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bandwidth_value

д О 2000 А

д 3 О А

д О -

д О CPU и 2000 kbps

```
Ruijie#configure terminal
Ruijie(config)# cpu-protect mac-address storm-control enable 3000
Ruijie(config)#end
Ruijie# show cpu-protect mac-address storm-control
%MAC address storm control state: enable
%MAC address storm control rate: 3000(address/second)
```

| | | |
|-------|---|---|
| д 3 О | 3 | |
| | - | - |

д 1 О

10.3 cpu-protect traffic-class all bandwidth *bandwidth_value*

А

cpu-protect traffic-class id *id_num* **bandwidth** *bandwidth_value*

| | | |
|-----|------------------------|-------------------|
| д О | | |
| | <i>bandwidth_value</i> | и 32 131072(kbps) |

д О -

д 3 О

д О -

д О Ю и 312(kbps)

```
Ruijie#configure terminal
Ruijie(config)# cpu-protect traffic-class all bandwidth 312
Ruijie(config)#end
```

| | | |
|-------|---|-----|
| д 3 О | 3 | |
| | cpu-protect type packet-type traffic-class
<i>traffic-class-num</i> | |
| | cpu-protect traffic-class id <i>id_num</i>
andwidth <i>bandwidth_value</i> | |
| | cpu-protect cpu bandwidth | CPU |

| | |
|------------------------|--|
| <i>bandwidth_value</i> | |
|------------------------|--|

ö / Ô -

10.4 cpu-protect traffic-class id *id_num* bandwidth *bandwidth_value*

Â

cpu-protect traffic-class id *id_num* bandwidth *bandwidth_value*

| | | | |
|---|---|------------------------|-----------------------|
| ö | Ô | | |
| | | <i>id_num</i> | ID' ¼ ñ 0' 7 |
| | | <i>bandwidth_value</i> | ¼ ¼ ñ 32 131072(kbps) |

ö Ô -

ö ¼ Ô

ö Ô -

ö Ô Ю 7 ñ 312(kbps)

```
Ruijie#configure terminal
Ruijie(config)# cpu-protect traffic-class id 7 bandwidth 312
Ruijie(config)#end
Ruijie# show cpu-protect traffic-class id 7
%*****traffic class      bandwidth(kbps)*****
          7                312
```

| | | | |
|---|-----|--|--|
| ö | ¼ Ô | ¼ | |
| | | cpu-protect type packet-type traffic-class | |
| | | <i>traffic-class-num</i> | |
| | | cpu-protect traffic-class all bandwidth | |
| | | <i>bandwidth_value</i> | |

ö / Ô -

10.5 cpu-protect type packet-type traffic-class *traffic-class-num*

cpu-protect type { bpdu | arp | tpp | dot1x | gvrp | rdlp | dhcp | unknown-ipv6-mc | known-ipv6-m]mº 6u uty` y`¢

ipv6-uc | mld| ns | other } traffic-class traffic-class-num

| | | | |
|---|---|-------------------|--------------|
| ð | Ô | | |
| | | traffic-class-num | id ¼ ì 0 7 Â |

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ð ¼ Ô

ð Ô -

ð Ô IO CPU BPDU ' , W^º Wi φ Y W Γ Ж © —

õ Ô ÌÏ CPU ,

```
Ruijie# show cpu-protect cpu
%cpu port bandwidth: 100000(kbps)
```

õ Ì Ô

| | |
|--|----------------------------|
| Ì | |
| show cpu-protect type <i>packet-type</i> | |
| show cpu-protect traffic-class id <i>id_num</i> | <i>id_num</i> Ì Ì 0 7 |
| show cpu-protect traffic-class all | |

| | | | |
|---|---|---|---|
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ð Ô ð Â

ð Ô ð show cpu-protect traffic-class all ð

```
Ruijie#show cpu-protect traffic-class id 1
%*****traffic class      bandwidth(kbps)*****
1000
```

| | | | |
|---|---|--|------------|
| 3 | Ô | 3 | |
| | | show cpu-protect type <i>packet-type</i> | |
| | | show cpu-protect traffic-class all | |
| | | show cpu-protect cpu | CPU Â |

ö 1 Ô -

10.10 show cpu-protect type packet-type

show cpu-protect type packet-type

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| | | | |
|---|-----|---|---------------------------------|
| ö | 3 Ô | 3 | |
| | | show cpu-protect traffic-class id <i>id_num</i> | Â
<i>id_num</i> 1 ã 0 7 |
| | | show cpu-protect traffic-class all | |
| | | show cpu-protect cpu | CPU Â |

ö 1 Ô -

11 DoS

11.1 ip deny invalid-l4port

1. 配置命令：
ip deny invalid-l4port
no ip deny invalid-l4port

| | |
|-------|--|
| 配置命令： | |
| 显示命令： | |

配置命令：

显示命令：

配置命令：

1. 配置命令：
Ruijie(config)# ip deny invalid-l4port
Ruijie(config)# no ip deny invalid-l4port

| | |
|-------|--|
| 配置命令： | |
| 显示命令： | |

配置命令：

11.2 ip deny invalid-tcp

1. 配置命令：
ip deny invalid-tcp
no ip deny invalid-tcp

| | |
|-------|--|
| 配置命令： | |
| 显示命令： | |

配置命令：

显示命令：

配置命令：

δ $\hat{O}$ $1'$ $\mathfrak{A}$

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õ Ô

DoS Protection Mode

State

12 DHCP Snooping

12.1 clear ip dhcp snooping binding

DHCP Snooping ✓ IO 3 Â

clear ip dhcp snooping binding [*mac* | **vlan** *vlan-id* | *ip* | **interface** *interface-id*]

ö 3 Ô

ö Ô 3 DHCP snooping 11 Â

ö Ô IO DHCP snooping

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

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

ö 3 Ô

| | |
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| 3 | |
| - | - |

ö 1 Ô -

12.3 ip dhcp snooping

DHCP Snooping 11 ~ IO 3 Â 3 no ~

DHCP Snooping 11 Â

ip dhcp snooping

no ip dhcp snooping

ö Ô

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ö Ô 11

ö 3 Ô

ö Ô DHCP Snooping 11 ~ 116 **show ip dhcp snooping** 3 DHCP snooping 11 Â

```
✓ DHCP Snooping Private VLAN
```

ö Ô IO DHCP snooping 11

```
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) |
|-----------|---------|------------------|
| ----- | | |

ö 3 Ô

| | |
|-----------------------|--------------------|
| 3 | |
| show ip dhcp snooping | DHCP snooping Â |

ö / Ô -

12.4 ip dhcp snooping bootp-bind

DHCP Snooping Bootp ¶ ~ Ю 3 Â 3 **no**

~ DHCP snooping Bootp ¶ Â

ip dhcp snooping bootp-bind

no ip dhcp snooping bootp-bind

ö Ô

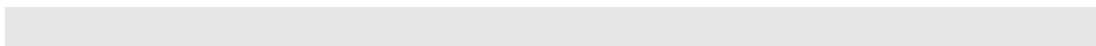
| | |
|--|--|
| | |
|--|--|

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ð ã Õ Â

ð Õ ã / Ì DHCP Snooping FLASH

ð Õ Ю DHCP flash ´



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$$\ddot{\theta} \quad \wedge \quad \hat{\theta} \quad -$$

| | | | |
|-----------|-----------|--|--|
| $\hat{0}$ | $\hat{0}$ | | |
|-----------|-----------|--|--|

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

ð Ò

ð 3 Ò

ð Ò 7 DHCP Snooping VLAN ~ Â

| CPP | CPP[CPU Protect Protocol]
DHCP Snooping | CPP | DHCP
CPP |
|-----|--|-----|-------------|
|-----|--|-----|-------------|

17 **show ip dhcp snooping** 3 ~ Æ

ð Ò Ю 1 ñ 100pps

```
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip dhcp snooping limit rate 100
Ruijie(config-if)# end
Ruijie# show ip dhcp snooping
Switch DHCP snooping status ' ENABLE
Verification of hwaddr field status ' DISABLE
DHCP snooping database write-delay time: 0 seconds
DHCP snooping option 82 status: ENABLE
DHCP snooping Support Bootp bind status: ENABLE
Interface          Trusted   Rate limit (pps)
-----
FastEthernet0/1    NO      100
```

ð 3 Ò

| | |
|------------------------------|-----------------|
| 3 | |
| show ip dhcp snooping | DHCP snooping Æ |

ð 1 Ò NFPP 7 3 Â

12.10 ip dhcp snooping suppression

ñ suppression ~ Ю 3 Â 3 **no** ~
 ñ no suppression Â
ip dhcp snooping suppression
no ip dhcp snooping suppression

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ö Ô ã / Ю DHCP ÷ Ю DHCP
Â

ö Ô Ю fastethernet 0/2 ñ suppression

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

```
show ip dhcp snooping
```

```
DHCP snooping
```

```
^
```

```
ö /l Ô -
```

12.13 ip dhcp snooping vlan

```
VLAN DHCP Snooping ¶ ^
```

```
IO
```

```
3 ^
```

```
3
```

```
no ^
```

```
VLAN DHCP Snooping ¶ ^
```

```
ip dhcp snooping vlan {vlan-rng | {vlan-min [vlan-max]}}
```

```
no ip dhcp snooping vlan {vlan-rng | {vlan-min [vlan-max]}}
```

```
ö
```

```
Ô
```

```
vlan-rng
```

```
dhcp4
```

```
vlan-DHCP Snooingl25252800(sg)]T(pin)-6(g)]TAC2_0
```


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

ö Ô 7

ö 3 Ô

ö Ô 3 DHCP 7 option82 ~ è option82 circuit-id
VLAN 4093 VLAN DHCP 4093 option82 - 7 Â

ö Ô Ю DHCP 7 option82 ~ è option82 circuit-id VLAN4094
4093

```
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip dhcp snooping vlan 4094 information option change-vlan-to vlan 4093
Ruijie(config-if)# end
```

| | | |
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12.15 ip dhcp snooping vlan *vlan-id* information option format-type circuit-id string

option 82 circuit-id 4093 7 ASCII 4093
Ю 3 Â 3 no 7 7 Â

ip dhcp snooping vlan *vlan-id* information option format-type circuit-id string *ascii-string*
no ip dhcp snooping vlan *vlan-id* information option format-type circuit-id string *ascii-string*

| | | |
|-----|---------------------|--------------|
| ö Ô | | |
| | <i>vlan-id</i> | DHCP VLAN |
| | <i>ascii-string</i> | Circuit ID 7 |

ö Ô 7

ö 3 Ô

ö Ô 3 DHCP 7 option82 ~ è option82 circuit-id 4093
7 DHCP 4093 option82 7 Â

ö Ô Ю DHCP 7 option82 ~ è option82 circuit-id 7 port-name

```
Ruijie# configure terminal
```

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip dhcp snooping vlan 4094 information option format-type circuit-id string
port-name
Ruijie(config-if)# end
```

| | | | |
|---|---|---|--|
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12.16 renew ip dhcp snooping database

DHCP snooping ~ / 1 1 1 flash DHCP Snooping
 Â
renew ip dhcp snooping database

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ô Ô 3 ~ / 1 1 1 flash DHCP Snooping Â

ô Ô IO flash DHCP Snooping ,

```
Ruijie# renew ip dhcp snooping database
```

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12.17 show ip dhcp snooping

DHCP Snooping ~ IO 3 Â
show ip dhcp snooping

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ö Ô 3 1 Л DHCP Snooping Â

ö Ô Ю DHCP Snooping ‘

Switch DHCP snooping status ‘ ENABLE

Verification of hwaddr field status ‘ DISABLE

me:m

| | | | |
|---|-----|---------------------------------------|---------------|
| ð | 3 Ô | 3 | |
| | | ip dhcp snooping binding | DHCP snooping |
| | | clear ip dhcp snooping binding | DHCP snooping |

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13 DAI

13.1 ip arp inspection trust

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ip arp inspection trust
no ip arp inspection trust

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| | | - | - |

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ð ð Ô Â

ð Ô ARP DAI ~ / ¼ è ¼ ~
 a ARP ~ Â

NFPP() NFPP DAI
show ip arp inspection interface

ð Ô ¼¼Ö ~ gigabitEthernet 0/19 ¼ Â

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

| | | | |
|---|-----|----------------------------------|------------|
| ð | ð Ô | ð | |
| | | show ip arp inspection interface | DAI ~
Â |

ð / Ô -

13.2 ip arp inspection vlan

ð ~ / ¼ vlan-id VLAN DAI ¼ Â ð no / ¼ vlan-id
 VLAN DAI ¼ ~ vlan-id ð y

| <i>vlan-id</i> | vlan 1 Ǻ |
|----------------|----------|
|----------------|----------|

ǫ Ō VLAN Ǿ DAI ǰ Ǻ

ǫ ǻ Ō Ǻ

ǫ Ō ǻ Ǿ DAI ǰ

ǫ Ō ǻ Ǿ VLAN 1 Ǿ ARP Ǻ

```
Ruijie(config)# ip arp inspection
```

```
Ruijie(config)# ip arp inspection vlan 1
```

| | | |
|------------------------------------|------|---------|
| ǫ ǻ Ō | ǻ | |
| show ip arp inspection vlan | VLAN | DAI ǰ Ǻ |

ǫ ǻ Ō -

13.3 DHCP Snooping

VLAN DAI ǰ Ǿ ARP ǻ a ǻ Ǿ ARP ǻ Ǻ DHCP
Snooping DHCP Snooping ǻ Ǻ

14 IP Source Guard

14.1 ip source binding

no
ip source binding *mac-address* **vlan** *vlan-id* *ip-address* [**interface** *interface-id* | **ip-mac** | **ip-only**]
no ip source binding *mac-address* **vlan** *vlan-id* *ip-address* [**interface** *interface-id* | **ip-mac** | **ip-only**]

| <i>mac-address</i> | MAC | |
|---------------------|---------|--|
| <i>vlan-id</i> | vlan id | |
| <i>ip-address</i> | IP | |
| <i>interface-id</i> | | |
| ip-mac | IP+MAC | |
| ip-only | IP | |

IP Source Guard a DHCP

1

```
Ruijie# configure terminal
Ruijie(config)# ip source binding 0000.0000.0001 vlan 1 1.1.1.1 interface FastEthernet 0/1
Ruijie(config)# end
Ruijie# show ip source binding
MacAddress    IpAddress    Lease(sec)   Type         VLAN    Interface
-----
0000.0000.0001 1.1.1.1     infinite     static       1      FastEthernet 0/1
Total number of bindings: 1
```

| show ip source binding | IP |
|-------------------------------|----|

14.2 ip verify source

no
ip verify source [**port-security**]

no ip verify source [port-security]

| | | | |
|---|---|----------------------|----------------------------|
| ð | Ô | | |
| | | port-security | IP Source Guard 丌 IP+MAC Â |

ð Ô Â

ð 3 Ô Â

ð Ô 3 IP Source Guard 丌 ~ 1 丌 IP ~ IP+MAC
 ,
 IP Source Guard 丌 DHCP Snooping 3 ~ ≠ ~ Trust 丌 DHCP
 Snooping 3 IP Source Guard 丌 ~ IP Source Guard 丌 a Â

ð Ô IO 1 3 IP Source Guard 丌 `

Ruijie# configure terminal

đ 1 Ô -

15 ND Snooping

15.1 ipv6 nd snooping

IPv6 ND snooping 开 关 默认 关闭 配置 命令 **no** IPv6 ND Snooping 开 关 默认 关闭

ipv6 nd snooping
no ipv6 nd snooping

| | | | |
|---|---|---|---|
| 0 | 0 | | |
| | | - | - |

0 0

0 3 0

0 0 3 ipv6 nd snooping 开 关 默认 关闭 配置 命令 **no** IPv6 ND Snooping 开 关 默认 关闭

0 0 IPv6 ND snooping

Ruijie# configure terminal

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

Ruijie(config)# ipv6 nd snooping

| | | | |
|---|-----|-----------------------|------------------|
| 0 | 3 0 | 3 | |
| | | show ipv6 nd snooping | ipv6 nd snooping |

0 1 0 -

15.2 ipv6 nd snooping trust

信任 信任 开 关 默认 关闭 配置 命令 **no** 信任 信任

ipv6 nd snooping trust
no ipv6 nd snooping trust

| | | | |
|---|---|---|---|
| 0 | 0 | | |
| | | - | - |

Ö Ô ñ untrust

Ö 3 Ô

Ö Ô -

Ö Ô ‘ FastEthernet 0/1 ñ Trust

```
Ruijie# configure terminal
```

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

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

```
Ruijie(config-if)# ipv6 nd snooping trust
```

Ö 3 Ô

3

16 DHCPv6 Snooping

16.1 ipv6 dhcp snooping

dhcipv6 snooping 丒 ~ Â 3 **no** dhcipv6 snooping 丒

Â

ipv6 dhcp snooping

no ipv6 dhcp snooping

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|---|---|---|---|
| ð | Ô | | |
| | | - | - |

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ð Ô 3 1 丒 dhcipv6 snooping 丒 ~ 1 丒 **show ipv6 dhcp snooping** 3
dhcipv6 snooping 丒 Â

ð Ô 1' dhcipv6 snooping 丒 Â

Ruijie(config)# ipv6 dhcp snooping

ð 3 Ô 丒 丒

```

Ruijie(config)# ipv6 dhcp snooping binding-delay 10

```

$$\ddot{\theta} \quad \wedge \quad \hat{O} \quad -$$

dhcipv6 snooping flash $\hat{A}$ $\mathfrak{z}$ **no** π $\hat{A}$
ipv6 dhcp snooping database write-delay *time*
no ipv6 dhcp snooping database write-delay

$$\ddot{O} \quad \{ \quad \hat{O}$$

```

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

```

Ồ - Ồ -

```
dhcpcv6 snooping                                flash  ^
ipv6 dhcp snooping database write-to-flash
```

Ö -

Ö 3 Ö

Ö Ö 3 1 2 dhcpv6 snooping flash Ä 1
 y flash 4 flash Ä

Ö Ö 1' dhcpv6 snooping flash
 Ruijie(config)# ipv6 dhcp snooping database write-to-flash

Ö 3 Ö 3

ipv6 dhcp snooping ignore dest-not-found

no ipv6 dhcp snooping ignore dest-not-found

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

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ö Ô DHCPv6 ~ MAC ~ DHCPv6 ~ a
 MAC ~ ñ a Â
 ~ 1 ä ä ~ MAC ~
 1 3 Y ~ 3 I' DHCPV6_SNOOPING-5-DEST_NOT_FOUND:
 Could not find destination port. Destination MAC [mac-address] L ~ ñ DHCPv6
 ~ 1 16 Ю ~ a MAC 16 VLAN
 Â

ö Ô 1' Â
 Ruijie(config)# ipv6 dhcp snooping ignore dest-not-found

| | | | |
|---|-----|--------------------------------|--------------------|
| ö | 3 Ô | 3 | |
| | | show ipv6 dhcp snooping | dhcpv6 snooping 11 |

ö 1 Ô -

16.7 ipv6 dhcp snooping information option

DHCPv6 11 option18/37 11 ~ Ю 3 Â
 3 no ~ 11 Â
 ipt̃ γᵃMpᵃngl'ᵃ ᵃ " }ᵃᵃᵃ


```
Ruijie# configure terminal
Ruijie(config)# ipv6 dhcp snooping information option
Ruijie(config)# end
Ruijie# show ipv6 dhcp snooping
Switch DHCPv6 snooping status ` ENABLE
DHCPv6 snooping vlan: 1-4094
DHCPv6 snooping database write-delay time: 0 seconds
DHCPv6 snooping option 18/37 status: ENABLE
DHCPv6 ignore dest-not-found :DISABLE
DHCPv6 snooping link detection :DISABLE
Interface                Trusted      Filter DHCP
-----
FastEthernet0/10         yes         DISABLE
```

$$\ddot{O} \quad \quad \quad \{ \hat{O}$$

| | |
|-------------------------|------------------------|
| 3 | |
| show ipv6 dhcp snooping | DHCPv6 snooping ^ |

$$\ddot{\theta} \quad \wedge \quad \hat{\theta} \quad -$$

16.8 ipv6 dhcp snooping information option format remote-id

```

DHCPv6      7  option37 remote-id  15  7  ~  10
3  ^  3  no  ~  7  ^

```

ipv6 dhcp snooping information option format remote-id [string *ascii-string* | hostname]
no ipv6 dhcp snooping information option format remote-id [string *ascii-string* | hostname]

$$\ddot{O} \qquad \hat{O}$$

| | |
|-----------------|----------------------------|
| | |
| string | Option37 remote-id ñ Ĥ Â |
| hostname | Option37 remote-id ñ ŷ " Â |

ö 1 Ô -

16.9 ipv6 dhcp snooping link-detection

LINK DOWN ~ ð Â 3 no ~ 11 Â

ipv6 dhcp snooping link-detection

no ipv6 dhcp snooping link-detection

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| | | - | - |

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ö Ô 10 LINK DOWN ~ a 10 Â 11 1 LINK DOWN ~

10 Â

ö Ô 1 LINK DOWN ~ 10 Â

Ruijie(config)# ipv6 dhcp snooping link-detection

ö 3 Ô

ö Ô -

| | | |
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| ö 3 Ô | 3 | |
| | show ipv6 dhcp snooping | dhcpv6 snooping 7 |

ö 1 Ô -

16.11 ipv6 dhcp snooping vlan

vlan 3 dhcpv6 snooping 7 ~ 3 Â 3 **no** ~ vlan
 3 dhcpv6 snooping 7 Â
ipv6 dhcp snooping {vlan-list | {vlan-min [vlan-max]}}
no ipv6 dhcp snooping {vlan-list | {vlan-min [vlan-max]}}

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

ö Ô dhcpv6 snooping vlan 3

ö 3 Ô

ö Ô dhcpv6 snooping 3 ~ vlan 1 dhcpv6 snooping Â vlan a
 dhcpv6 snooping ~ 3 vlan 3 dhcpv6 snooping 7 Â

ö Ô ' vlan 1 3 dhcpv6 snooping 7
 Ruijie(config)# no ipv6 dhcp snooping vlan 1

| | | |
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| | - | - |

ö 1 Ô -

16.12 ipv6 dhcp snooping vlan *vlan-id* information option change-vlan-to vlan

DHCP 7 option18 interface-id ~ VLAN 3 VLAN
 Â IO 3 Â 3 **no** ~ 7 Â
[no] ipv6 dhcp snooping vlan *vlan-id* information option change-vlan-to vlan *vlan-id*

ö

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

vlan-id

| ö | Ô | DHCPv6 | ¶ | option18 interface-id | ÿ | port-name | , |
|---|---|--------|---|-----------------------|---|-----------|---|
|---|---|--------|---|-----------------------|---|-----------|---|

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16.15 ipv6 verify source

Â 3 no ~ Â

ipv6 verify source [port-security]

no ipv6 verify source

ö Ô

| port-security | MAC | + IPV6 | ' |
|----------------------|----------------|--------|---|
| | ~ , ~ й IPV6 ~ | | |
| | IPV6 ~ , | | |

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~ /л IPV6

IPV6 25NM5Ä

ö Ô Ю flash DHCPv6 Snooping

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| - | - |

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16.18 show ipv6 dhcp snooping binding

dhcpv6 snooping

^

show ipv6 dhcp snooping binding [*ipv6-address*] [*mac-address*] [**vlan** *vlan_id*] [**interface** *interface_name*]

ö

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

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Ö Ö 3 1 2 dhcpv6 snooping Ä

Ö Ö 1'

```
Ruijie# show ipv6 dhcp snooping prefix
Total number of prefix: 1
Mac Address      IPv6 Prefix  Lease(s)  VLAN  Interface
-----
00d0.f801.0101  2001:2002::/64  42368      2    fa 0/1
```

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16.20 show ipv6 dhcp snooping statistics

dhcpv6 snooping dhcpv6 Ä
show ipv6 dhcp snooping statistics

Ö Ö

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

| | |
|-----------------------------|--|
| | |
| Received on untrusted ports | untrust 3 L |
| Relay forward | Relay |
| No binding entry | release/decline a ~ |
| Binding fail | ~ |
| Unknown packet | DHCP Â |
| Unknown output interface | ~ MAC a ~ trust |
| No enough memory | |
| Admin filter-dhcpv6-pkt | DHCPv6 ~ Ÿ ñ ipv6 dhcp snooping filter-dhcp-pkt 3 ± Â |

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

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16.21 show ipv6 source binding

dhcpr6 snooping Â

show ipv6 source binding [ipv6-address] [mac-address] [vlan vlan_id] [interface interface_name]
[dhcp-snooping | static]

| | | |
|--------------------------|-----------------|--|
| ô Ô | | |
| ipv6-prefix | ipv6 | |
| mac-address | mac | |
| vlan vlan_id | VLAN | |
| interface interface_name | | |
| dhcp-snooping | dhcpv6 snooping | |
| static | ¶ | |

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ô 3 Ô

ô Ô 3 ~ / Л¶ ¶ dhcpr6 snooping Â

ô Ô 1' ¶ dhcpr6 snooping Â é type ~

static ~ dynamic Â

```
Ruijie# show ipv6 source binding
```

```
Total number of bindings: 1
```

| Mac Address | Ipv6 Address | Lease(s) | type | Vlan | Interface |
|----------------|-----------------|----------|---------|------|-----------|
| 00d0.f866.4777 | 2001:2002::2003 | 57 | dynamic | 10 | fa 0/10 |

| | | |
|---|---|---|
| 3 | 3 | 3 |
| - | - | - |

3 1 3 -

16.22 clear ipv6 dhcp snooping binding

dhcpv6 snooping

^

```
clear ipv6 dhcp snooping binding [ipv6-address] [mac-address] [vlan vlan_id] [interface interface_name]
```

| | | |
|--------------------------|------|---|
| 3 | 3 | 3 |
| ipv6-address | ipv6 | |
| mac-address | mac | |
| vlan vlan_id | VLAN | |
| interface interface_name | | |

3 3 -

3 3 3

3 3 3 3 3 dhcpv6 snooping ^

3 3 1' dhcpv6 snooping

```
Ruijie# clear ipv6 dhcp snooping binding
```

| | | |
|---|---|---|
| 3 | 3 | 3 |
| - | - | - |

3 1 3 -

16.23 clear ipv6 dhcp snooping prefix

dhcpv6 snooping

^

```
clear ipv6 dhcp snooping prefix [ipv6-prefix] [mac-address] [vlan vlan_id] [interface interface_name]
```

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

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ð Ô 3 1 7 dhcpv6 snooping Â

ð Ô 1' dhcpv6 snooping
 Ruijie# clear ipv6 dhcp snooping prefix

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|---|-----|---|---|
| ð | 3 Ô | 3 | |
| | | - | - |

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16.24 clear ipv6 dhcp snooping statistics

dhcpv6 snooping dhcpv6 Â
clear ipv6 dhcp snooping statistics

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

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ð 3 Ô

ð Ô 3 1 7 dhcpv6 snooping dhcpv6 Â

ð Ô 1' dhcpv6 snooping dhcpv6
 Ruijie# clear ipv6 dhcp snooping statistics

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|---|-----|---|---|
| ð | 3 Ô | 3 | |
| | | - | - |

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16.25 debug ipv6 dhcp snooping

dhcpv6 snooping

17 ARP

17.1 anti-arp-spoofing ip

arp $\hat{A}$ $\exists$ no $\hat{A}$
anti-arp-spoofing ip ip-address
no anti-arp-spoofing ip ip-address

| | | | |
|------------|-----------|------------|----|
| $\ddot{o}$ | $\hat{O}$ | | |
| | | ip-address | IP |

$\ddot{o}$ $\hat{O}$ Π a

$\ddot{o}$ $\exists$ $\hat{O}$ $\hat{A}$

$\ddot{o}$ $\hat{O}$ **show anti-arp-spoofing** $\exists$ $\hat{A}$

$\ddot{o}$ $\hat{O}$ Ruijie(config)#interface fastEthernet 0/1
 Ruijie(config-if)#anti-arp-spoofing ip 192.168.1.1

| | | | |
|------------|---------------------|------------------------|--------|
| $\ddot{o}$ | $\exists$ $\hat{O}$ | $\exists$ | |
| | | show anti-arp-spoofing | IO arp |

$\ddot{o}$ / $\hat{O}$ -

17.2 show anti-arp-spoofing

IO arp $\hat{A}$
show anti-arp-spoofing

| | | | |
|------------|-----------|---|---|
| $\ddot{o}$ | $\hat{O}$ | | |
| | | - | - |

$\ddot{o}$ $\hat{O}$ -

$\ddot{o}$ $\exists$ $\hat{O}$

$\ddot{o}$ $\hat{O}$ -

$\ddot{o}$ $\hat{O}$ Ruijie#show anti-arp-spoofing
 port ip

18 NFPP

18.1 arp-guard attack-threshold

arp-guard attack-threshold {per-src-ip | per-src-mac | per-port} *pps*

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NFPP

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• 3. 1. NFPP

• 2. 1. 10 15 16 ARP 17 MAC 18 IP 19 20 MAC
IP IP a 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

• 3. Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard scan-threshold 20

• 4. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100

18.9 clear nfpp arp-guard scan

ARP Å
clear nfpp arp-guard scan

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

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ð Ô Ruijie# clear nfpp arp-guard scan

| | | | |
|---|---|-------------------------------|--|
| ð | Ô | 3 | |
| | | arp-guard scan-threshold | |
| | | nfpp arp-guard scan-threshold | |

ARP

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Ö Ö a ~ Â

Ö Ö VLAN 1 g 0/1 Â

```
Ruijie# clear nfpp dhcpv6-guard hosts vlan 1 interface g0/1
```

Ö 3 Ö

| 3 | |
|-------------------------------|---|
| dhcpv6-guard attack-threshold | |
| nfpp dhcpv6-guard policy | |
| show nfpp dhcpv6-guard hosts | ÿ |

Ö 1 Ö -

18.13 clear nfpp icmp-guard hosts

4 ÿ ~ ÿ ~ Â

clear nfpp icmp-guard hosts [*vlan vid*] [*interface interface-id*] [*ip-address*]

Ö Ö

| <i>vid</i> | 1 |
|---------------------|----|
| <i>interface-id</i> | " |
| <i>ip-address</i> | IP |

Ö Ö -

Ö 3 Ö

Ö Ö a ~ ÿ Â

Ö Ö VLAN 1 g 0/1 4 ÿ Â

```
Ruijie# clear nfpp icmp-guard hosts vlan 1 interface g 0/1
```

Ö 3 Ö

| 3 | |
|-----------------------------|---|
| icmp-guard attack-threshold | |
| nfpp icmp-guard policy | |
| show nfpp icmp-guard hosts | ÿ |

Ö 1 Ö -

18.14 clear nfpp ip-guard hosts

清除指定 VLAN 或指定接口 IP 地址的 NFPP 保护主机。

clear nfpp ip-guard hosts [**vlan** *vid*] [**interface** *interface-id*] [*ip-address*]

| 命令格式 | 命令参数 |
|---------------------|---------|
| <i>vid</i> | VLAN ID |
| <i>interface-id</i> | 接口名称 |
| <i>ip-address</i> | IP 地址 |

缺省情况下，清除所有 NFPP 保护主机。

视图：系统视图

命令：clear nfpp ip-guard hosts

命令模式：系统视图

Ruijie# clear nfpp ip-guard hosts vlan 1 interface g0/1

命令输出：无输出

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 $\{ \quad \quad \quad \}^{\times} \hat{A}$
$$\ddot{\theta} \quad \wedge \quad \hat{\theta} \quad -$$
$$\hat{A}$$
$$\ddot{O} \quad \{ \quad \hat{O}$$

3 Ô NFPP

3 Ô -

3 Ô

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard attack-threshold per-src-mac 15
Ruijie(config-nfpp)# dhcp-guard attack-threshold per-port 200
```

3 3 Ô

| | |
|------------------------------|----------|
| 3 | |
| nfpp dhcp-guard policy | |
| show nfpp dhcp-guard summary | |
| show nfpp dhcp-guard hosts | 4 ǃ |
| clear nfpp dhcp-guard hosts | 4 ǃ |

3 1 Ô -

18.20 dhcp-guard enable

3 DHCP 11 Â

dhcp-guard enable

3 Ô EMC96 432.2 -5.48 0.4.6 reW*mq0 841.98 595.2 -841.98 reW n0.902 g119.94 -7(EMC96125.12902 15.902 g125.1 425E

$$\ddot{\theta} = \frac{1}{L} \hat{O} =$$

```

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

```

| | | | |
|---|-----|------------------------------|--|
| ö | 3 Ô | 3 | |
| | | show nfpp dhcp-guard summary | |

ö 1 Ô -

18.23 dhcp-guard monitor-period

3 Â
dhcp-guard monitor- period seconds

| | | | |
|---|---|---------|----------------------|
| ö | Ô | | |
| | | seconds | ~ ~ 1 [180, 86400] Â |

ö Ô 600 Â

ö 3 Ô NFPP

ö Ô ~ ÿ 0 Ю Ъ Â ~ ÿ a Â

ö Ô Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard monitor-period 180

| | | | |
|---|-----|------------------------------|-----|
| ö | 3 Ô | 3 | |
| | | show nfpp dhcp-guard summary | |
| | | show nfpp dhcp-guard hosts | 1 ÿ |
| | | clear nfpp dhcp-guard hosts | ÿ |

ö 1 Ô -

18.24 dhcp-guard rate-limit

Â
dhcp-guard rate-limit { per-src-mac | per-port} pps

| | | | |
|---|---|-------------|----------------|
| ö | Ô | | |
| | | per-src-mac | MAC |
| | | per-port | |
| | | pps | ~ 1 [1,9999] Â |

ö Ô MAC 5 ~ 150 Â

ð 3 Ô NFPP

ð Ô -

ð Ô

18.26 icmp-guard enable

3 ICMP 11 Â
icmp-guard enable

| | | | |
|---|---|---|---|
| ð | Ô | | |
| | | - | - |

ð Ô ICMP 11

ð 3 Ô NFPP

ð Ô -

ð Ô Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard enable

| | | | |
|---|-----|-------------------------------------|-----------|
| ð | 3 Ô | 3 | |
| | | nfpp icmp-guard enable | 3 ICMP 11 |
| | | show nfpp icmp-guard summary | |

ð 1 Ô -

18.27 icmp-guard isolate-period

3 Â
icmp-guard isolate-period {seconds | permanent}

| | | | |
|---|---|-----------|----------------------------|
| ð | Ô | | |
| | | seconds | ~ ~ 11 0 [30, 86400] 0 a Â |
| | | permanent | |

ð Ô σ a Â

ð 3 Ô NFPP

ð Ô 11 ñ ~ ^ ~ Â ~
~ 11 , ±~ Â

ð Ô Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard isolate-period 180

| | | | |
|---|-----|---|--|
| ð | 3 Ô | 3 | |
|---|-----|---|--|

| | |
|---------------------------------------|---|
| nfpp icmp-guard isolate-period | 3 |
| show nfpp icmp-guard summary | |

ö / Ô -

18.28 icmp-guard monitored-host-limit

3 4 ý
icmp-guard monitored-host-limit *number*

| | | | |
|---|---|---------------|------------------------|
| ö | Ô | | |
| | | <i>number</i> | 4 ý ~ 4 ñ 1 4294967295 |

ö Ô 4 ý ñ 1000 Â

ö 3 Ô NFPP

ö Ô 4 ý 1000 ~ 4 ý 1000 a
 4 ý ~ I %ERROR The value that you configured is smaller than
 current monitored hosts 1000 4 ý ~ please clear a part of monitored hosts. L
 ~ I
 4 ý ~ I % NFPP_ICMP_GUARD-4-SESSION_LIMIT: Attempt to exceed limit of
 1000 4 ý ~ monitored hosts. L Â

ö Ô Ruijie(config)# nfpp
 Ruijie(config-nfpp)# icmp-guard monitored-host-limit 200

| | | | |
|---|-----|-------------------------------------|--|
| ö | 3 Ô | 3 | |
| | | show nfpp icmp-guard summary | |

ö / Ô -

18.29 icmp-guard monitor-period

3 Â
icmp-guard monitor-period *seconds*

| | | | |
|---|---|----------------|----------------------|
| ö | Ô | | |
| | | <i>seconds</i> | ~ ~ 4 [180, 86400] Â |

ö Ô 600 Â

ö 3 Ô NFPP

| | | |
|---|---|---------------------|
| ò | Ô | Ruijie(config)# nfp |
|---|---|---------------------|

```
Ruijie(config)# nfpp
```

18.31 global-policy

global-policy {**per-src-mac** | **per-src-ip** | **per-port**} *rate-limit-pps* *attack-threshold-pps*

| per-src-ip | IP/VID/ <i>mask</i> |
|-----------------------------|----------------------|
| per-src-mac | MAC/VID/ <i>mask</i> |
| per-port | |
| <i>rate-limit-pps</i> | |
| <i>attack-threshold-pps</i> | |

• **per-src-ip** -

• **per-src-mac** - NFPP

• **per-port** - ... **per-src-mac** **per-src-ip** **per-port** **rate-limit-pps** **attack-threshold-pps** **log** **trap** **name** **policy**

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# nfpp define tcp
Ruijie(config-nfpp-define)# global-policy per-src-ip 10 20
Ruijie(config-nfpp-define)# global-policy per-port 100 200
```

| show nfpp define summary | |
|--|--|
| nfpp define <i>name</i> policy | |

• **per-port** -

18.32 icmp-guard attack-threshold

icmp-guard attack-threshold { **per-src-ip** | **per-port** } *pps*

| per-src-ip | IP <i>mask</i> |
|-------------------|----------------------|
| per-port | <i>mask</i> |
| <i>pps</i> | [1,9999] <i>mask</i> |

$$\ddot{\theta} \quad \wedge \quad \hat{O} \quad -$$

18.33 icmp-guard enable

18.34 icmp-guard isolate-period

icmp-guard isolate-period {seconds | permanent}

| | |
|-----------|-------------------|
| | |
| seconds | 0 [30, 86400] 0 a |
| permanent | |

0 a

0 NFPP

0

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard isolate-period 180
```

| | |
|--------------------------------|--|
| | |
| nfpp icmp-guard isolate-period | |
| show nfpp icmp-guard summary | |

0 -

18.35 icmp-guard monitored-host-limit

icmp-guard monitored-host-limit number

| | |
|--------|--------------|
| | |
| number | 1 4294967295 |

0 1000

0 NFPP

0 1000

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

%NFPP_ICMP_GUARD-4-SESSION_LIMIT: Attempt to exceed limit of 1000 monitored hosts. L

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Ruijie(config)# nfpp

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

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| | |
|------------------------------|--|
| Ʒ | |
| show nfpp icmp-guard summary | |

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mon]

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| | |
|-----------------|------------|
| per-port | |
| <i>pps</i> | [1,9999] Å |

Ö Ö IP
S5750-S Æ 400 Å

Ö 3 Ö NFPP

Ö Ö -

Ö Ö Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard rate-limit per-src-ip 500
Ruijie(config-nfpp)# icmp-guard rate-limit per-port 800

| | | |
|-------|-------------------------------------|--|
| Ö 3 Ö | 3 | |
| | nfpp icmp-guard policy | |
| | show nfpp icmp-guard summary | |

Ö 1 Ö -

18.38 icmp-guard trusted-host

a 1 ý Å
icmp-guard trusted-host *ip mask*
no icmp-guard trusted-host {**all** | *ip mask*}

| | | |
|-----|-------------|---------------|
| Ö Ö | | |
| | <i>ip</i> | IP |
| | <i>mask</i> | IP |
| | all | no 1 ý |

Ö Ö 1 ý Å

Ö 3 Ö NFPP

Ö Ö 1 ý a 1 ý 1 Å 1 Å 1 Å
CPU ICMP CPU a Å 1 Å
ý a Å
500 1 ý Å

Ö Ö Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard trusted-host 1.1.1.0 255.255.255.0

| | | | |
|---|-----|---|-----------------------------------|
| ö | 3 Ô | 3 | |
| | | | show nfpp icmp-guard trusted-host |

ö /l Ô -

18.39 ip-guard attack-threshold

ip-guard attack-threshold {

• **IP**

• **NFPP**

• -

• **Ruijie(config)# nfpp**
Ruijie(config-nfpp)# ip-guard enable

| | |
|-----------------------------------|-----------|
| • ip-guard enable | IP |
| show nfpp ip-guard summary | |

• -

18.41 ip-guard isolate-period

ip-guard isolate-period {seconds | permanent}

| | |
|------------------|--------------------|
| • seconds | [30, 86400] |
| permanent | |

• **permanent**

• **NFPP**

• -

• **Ruijie(config)# nfpp**
Ruijie(config-nfpp)# ip-guard isolate-period 180

| | |
|-----------------------------------|------------|
| • ip-guard isolate-period | 180 |
| show nfpp ip-guard summary | |

• -

18.42 ip-guard monitor-period

ip-guard monitor-period {seconds | permanent}

| | | | |
|------------------|----------------|-------|--|
| $\tilde{\sigma}$ | $\hat{O}$ | | |
| | <i>seconds</i> | μ | μ μ μ $[180, 86400] \text{ \AA}$ |

$$\ddot{O} \quad \{ \quad \hat{O} \quad \text{NFPP}$$
[illegible]

```

Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard monitor-period 180

```

| | | | |
|---|-----|----------------------------|-----|
| ð | Ź Œ | Ź | |
| | | show nfpp ip-guard summary | |
| | | show nfpp ip-guard hosts | Ź Ź |
| | | clear nfpp ip-guard hosts | Ź |

$$\ddot{\theta} \quad \wedge \quad \hat{O} \quad -$$

ip-guard monitored-host-limit *number*

| | | | |
|---|---------------|-------------|------------|
| đ | Ô | | |
| | <i>number</i> | л ы ь л и 1 | 4294967295 |

ö Ô 4 ý ñ 1000 Â

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

ð 3 Ô

| | |
|----------------------------|--|
| 3 | |
| show nfpp ip-guard summary | |

ð / Ô -

18.44 ip-guard rate-limit

```
ip-guard rate-limit {p00 ɸ
```

• 3 • NFPP

• • -

• • Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard scan-threshold 20

| | | | |
|---|-----|-------------------------------------|---|
| • | 3 • | 3 | |
| | | nfpp ip-guard scan-threshold | 3 |

isolate-period {seconds | permanent}

| | | | |
|---|------------------|---|-------------------------|
| ð | Ô | | |
| | <i>seconds</i> | ˘ | ˘ ˘ 0 [30, 86400] 0 a Â |
| | permanent | | |

$$\emptyset \quad \{ \quad \hat{O} \quad \text{NFPP} \quad \mathbb{R}$$
$$\begin{array}{ccccc} \partial & \hat{O} & \text{à } 0 & \sim & \mathbb{H} \\ & \mathbb{H} & \hat{A} & & \end{array}$$

```

Ruijie(config)# nfpp
Ruijie(config-nfpp)# nfpp define tcp

```

| | | | |
|---|-----|--|--------------|
| ö | 3 Ô | | |
| | | log-buffer logs <i>number_of_message interval length_in_seconds</i> | NFPP ý ã ¼ Å |
| | | show nfpp log | NFPP ã ¼ |

ö / Ô -

18.49 log-buffer logs

NFPP ý ã ¼ Å
log-buffer logs *number_of_message interval length_in_seconds*

| | | | |
|---|---|--------------------------|--|
| ö | Ô | | |
| | | <i>number_of_message</i> | ý 0-1024 0 ж ã ¼ a Å |
| | | <i>length_in_seconds</i> | ý 0-86400 1 ~ 0 a ã ¼
Å
<i>number_of_message length_in_seconds</i> ý 0 a ã
¼ Å
<i>number_of_message /length_in_second</i> ¼
Å |

ö Ô *number_of_message* ý 1 *length_in_seconds* ý 30 Å

ö 3 Ô NFPP

ö Ô -

ö Ô Ruijie(config)# nfpp
Ruijie(config-nfpp)# log-buffer logs 2 interval 12

| | | | |
|---|-----|---|------------|
| ö | 3 Ô | | |
| | | log-buffer entries <i>number</i> | NFPP ã ¼ Å |
| | | show nfpp log summary | NFPP ã ¼ Å |

ö / Ô -

18.50 logging

NFPP VLAN Å
logging vlan *vlan-range*
logging interface *interface-id*

| | | | |
|---|---|--|--|
| ö | Ô | | |
|---|---|--|--|

| | | |
|---------------------|------|-------|
| <i>vlan-range</i> | VLAN | 1-3,5 |
| <i>interface-id</i> | | |

Ö Ö

Ö 3 Ö NFPP

Ö Ö 3 1 2 VLAN 1-3,5

Ö Ö VLAN 1 à VLAN 2 à 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
```

Ö 3 Ö

| | |
|-----------------------|------|
| 3 | |
| show nfpp log summary | NFPP |

Ö 1 Ö -

18.51 match

3 3 3

match [etype type] [src-mac smac [src-mac-mask smac_mask]] [dst-mac dmac [dst-mac-mask dst_mask]] [protocol protocol] [src-ip sip [src-ip-mask sip_mask]]

| | |
|----------------------|------|
| <i>dipv6</i> | IPv6 |
| <i>dipv6_masklen</i> | IPv6 |
| <i>sport</i> | 1 |
| <i>dport</i> | 1 |

ö Ô -

ö 3 Ô NFPP

ö Ô ... 1000 1000 1000 1000

ö Ô Ruijie(config)# nfpp
Ruijie(config-nfpp)# nfpp define tcp
Ruijie(config-nfpp-define)#match etype 0x0800 protocol 0x06

| | | |
|-------|--------------------------|------|
| ö 3 Ô | 3 | |
| | show nfpp define summary | 1000 |

ö 1 Ô -

18.52 monitored-host-limit

3 1000 1000
monitored-host-limit *number*

| | | |
|-----|---------------|--------------|
| ö Ô | | |
| | <i>number</i> | 1 4294967295 |

ö Ô 1000 1000

ö 3 Ô NFPP 1000

ö Ô 1000 1000
I %ERROR The value that you configured is smaller than
current monitored hosts 1000 please clear a part of monitored hosts. L
I % NFPP_DEFINE-4-SESSION_LIMIT: Attempt to exceed limit of
name(1000)'s 1000 monitored hosts. L

ö Ô Ruijie(config)# nfpp
Ruijie(config-nfpp)# nfpp define tcp
Ruijie(config-nfpp-define)#monitored-host-limit 500

| | | | |
|---|-----|--------------------------|---|
| ö | 3 Ô | 3 | |
| | | show nfpp define summary | ℙ |

ö / Ô -

18.53 monitor-period

3 Â
monitor-period seconds

| | | | |
|---|---|---------|----------------------|
| ö | Ô | | |
| | | seconds | ~ ~ 4 [180, 86400] Â |

ö Ô 600 Â

ö 3 Ô NFPP ℙ

ö Ô ~ ÿ 0 Ю ℙ Â ~ ÿ a Â

ö Ô Ruijie(config)# nfpp
Ruijie(config-nfpp)# nfpp define tcp
Ruijie(config-nfpp-define)#monitor-period 1000

| | | | |
|---|-----|--------------------------|---|
| ö | 3 Ô | 3 | |
| | | show nfpp define summary | ℙ |

ö / Ô -

18.54 nd-guard attack-threshold

~ ÿ ÿ Â
nd-guard attack-threshold per-port {ns-na | rs | ra-redirect} pps

| | | | |
|---|---|-------------|------------------|
| ö | Ô | | |
| | | ns-na | Ω |
| | | rs | |
| | | ra-redirect | Ω |
| | | pps | ~ ~ 4 [1,9999] Â |

ö Ô /Ω 30 ~ 30 ~

Ω /30 $\hat{A}$

| | | | |
|---|-----|-----------------------------|-------|
| ð | 3 Ô | 3 | |
| | | arp-guard enable | ARP π |
| | | show nfpp arp-guard summary | |

ð / Ô -

18.58 nfpp arp-guard isolate-period

3 ð
nfpp arp-guard isolate-period {seconds | permanent}

| | | | |
|---|---|-----------|---------------------|
| ð | Ô | | |
| | | seconds | 0 [30, 86400] 0 a Â |
| | | permanent | |

ð Ô ~ Â

ð 3 Ô

ð Ô -

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

| | | | |
|---|-----|-----------------------------|--|
| ð | 3 Ô | 3 | |
| | | arp-guard isolate-period | |
| | | show nfpp arp-guard summary | |

ð / Ô -

18.59 nfpp arp-guard policy

ð Â
nfpp arp-guard policy {per-src-ip | per-src-mac | per-port} rate-limit-pps attack-threshold-pps

| | | | |
|---|---|----------------------|------------|
| ð | Ô | | |
| | | per-src-ip | IP Â |
| | | per-src-mac | MAC Â |
| | | per-port | Â |
| | | rate-limit-pps | ~ 1 9999 Â |
| | | attack-threshold-pps | ~ 1 9999 Â |

ð Ô ~ Â

ð 3 Ô

ð Ô a Â

ð Ô 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

ð 3 Ô

| 3 | |
|-----------------------------|-----|
| arp-guard attack-threshold | |
| arp-guard rate-limit | |
| show nfpp arp-guard summary | |
| show nfpp arp-guard hosts | 4 ǃ |
| clear nfpp arp-guard hosts | ǃ |

ð 1 Ô -

18.60 nfpp arp-guard scan-threshold

ð Â
 nfpp arp-guard scan-threshold pkt-cnt

ð Ô

| pkt-cnt | ~ 4 [1,9999] Â |
|---------|----------------|

ð Ô ARP ~ ARP Â

ð 3 Ô

ð Ô -

ð Ô Ruijie(config)# interface G 0/1
 Ruijie(config-if)# nfpp arp-guard scan-threshold 20

ð 3 Ô

| 3 | |
|-----------------------------|-----|
| arp-guard scan-threshold | |
| show nfpp arp-guard summary | |
| show nfpp arp-guard scan | ARP |
| clear nfpp arp-guard scan | ARP |

ð 1 Ô -

18.61 nfpp define

...
nfpp define *name*

| | | | |
|---|---|-------------|-----|
| ö | Ô | | |
| | | <i>name</i> | ... |

ö Ô -

ö 3 Ô NFPP

ö Ô ...

ö Ô Ruijie(config)# nfpp
 Ruijie(config-nfpp)# nfpp define tcp
 Ruijie(config-nfpp-define)#

| | | | |
|---|-----|---------------------------------|-----|
| ö | 3 Ô | | |
| | | show nfpp define summary | ... |

ö / Ô -

18.62 nfpp define *name* enable

...
nfpp define *name* **enable**

| | | | |
|---|---|-------------|-----|
| ö | Ô | | |
| | | <i>name</i> | ... |

ö Ô -

ö 3 Ô

ö Ô ... match à rate-count à rate-limit attack-threshold ...

ö Ô Ruijie(config)# interface G0/1
 Ruijie(config-if)# nfpp define tcp enable

| | | | |
|---|-----|---------------------------------|-----|
| ö | 3 Ô | | |
| | | show nfpp define summary | ... |

õ / Õ -

18.63 nfpp define *name* isolate-period

3 ð Â

Ö Ö a Â

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp define tcp policy per-src-ip 2 10
Ruijie(config-if)# nfpp define tcp policy per-port 50 100
```

| | | |
|-----|---------------------------------|---|
| Ö Ö | 3 | |
| | show nfpp define summary | Æ |
| | global-policy | |

Ö / Ö -

18.65 nfpp dhcp-guard enable

3 Ö DHCP ¶
nfpp dhcp-guard enable

| | | |
|-----|---|---|
| Ö Ö | | |
| | - | - |

Ö Ö DHCP ~ Â

Ö 3 Ö

Ö Ö DHCP DHCP Â

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp dhcp-guard enable
```

| | | |
|-----|-------------------------------------|--------|
| Ö Ö | 3 | |
| | dhcp-guard enable | DHCP ¶ |
| | show nfpp dhcp-guard summary | |

Ö / Ö -

18.66 nfpp dhcp-guard isolate-period

3 Ö Â
nfpp dhcp-guard isolate-period {seconds | permanent}

| | | |
|-----|------------------|---------------------------|
| Ö Ö | | |
| | seconds | ~ ~ ¶ 0 [30, 86400] 0 a Â |
| | permanent | |

Ồ / Ô -

18.67 nfpp dhcp-guard policy

| | | | |
|------------------|--------------------|-----|-----------|
| $\tilde{\sigma}$ | $\hat{O}$ | | |
| | per-src-mac | MAC | $\hat{A}$ |
| | per-port | | $\hat{A}$ |

ð / Ô -

18.68 nfpp dhcpv6-guard enable

ð Ñ DHCPv6 ¶ Â
nfpp dhcpv6-guard enable

| | | | |
|---|---|---|---|
| ð | Ô | | |
| | | - | - |

ð Ô DHCPv6 ~ Â

ð Ñ Ô

ð Ô DHCPv6 DHCP Â

ð Ô Ruijie(config)# interface G0/1
 Ruijie(config-if)# nfpp dhcpv6-guard enable

| | | | |
|---|-----|---------------------------------------|----------|
| ð | Ñ Ô | ð | |
| | | dhcpv6-guard enable | DHCPv6 ¶ |
| | | show nfpp dhcpv6-guard summary | |

ð / Ô -

18.69 nfpp dhcpv6-guard isolate-period

ð Ñ Â
nfpp dhcpv6-guard isolate-period {seconds | permanent}

| | | | |
|---|---|------------------|---------------------------|
| ð | Ô | | |
| | | <i>seconds</i> | ~ ~ ¶ 0 [30, 86400] 0 a Â |
| | | permanent | |

ð Ô ~ Â

ð Ñ Ô

ð Ô -

ð Ô Ruijie(config)# interface G 0/1
 Ruijie(config-if)# nfpp dhcpv6-guard isolate-period 180

ö

3 Ô

3

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

Ö Ô ICMP Â

Ö 3 Ô

Ö Ô ICMP ICMP Â

Ö Ô Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp icmp-guard enable

| | | |
|-----------------|------------------------------|-------------|
| Ö 3 Ô | 3 | |
| | icmp-guard enable | ICMP ¶ |
| | show nfpp icmp-guard summary | |

Ö / Ô -

18.72 nfpp icmp-guard isolate-period

3 3 Â
nfpp icmp-guard isolate-period {seconds | permanent}

| | | |
|----------|-----------|--|
| Ö Ô | | |
| | seconds | ~ ~ ¶ 0 [30, 86400] 0 a Â |
| | permanent | |

Ö Ô ~ Â

Ö 3 Ô

Ö Ô -

Ö Ô Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp icmp-guard isolate-period 180

| | | |
|-----------------|---------------------------|--|
| Ö 3 Ô | 3 | |
| | icmp-guard isolate-period | |

18.73 nfpp icmp-guard policy

Θ $\hat{A}$
nfpp icmp-guard policy { per-src-ip | per-port } rate-limit-pps attack-threshold-pps

| | | | |
|----------|-----------|-----------------------------|------------------------------------|
| δ | $\hat{O}$ | | |
| | | per-src-ip | IP $\hat{A}$ |
| | | per-port | $\hat{A}$ |
| | | <i>rate-limit-pps</i> | $\sim \nabla 1 \quad 9999 \hat{A}$ |
| | | <i>attack-threshold-pps</i> | $\sim \nabla 1 \quad 9999 \hat{A}$ |

δ $\hat{O}$ $\sim \hat{A}$

δ $\mathfrak{z}$ $\hat{O}$

δ $\hat{O}$ a $\hat{A}$

δ $\hat{O}$ 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

| | | | |
|----------|------------------------|-------------------------------------|---------------------|
| δ | $\mathfrak{z} \hat{O}$ | $\mathfrak{z}$ | |
| | | icmp-guard attack-threshold | |
| | | icmp-guard rate-limit | |
| | | show nfpp icmp-guard summary | |
| | | show nfpp icmp-guard hosts | $\nabla \checkmark$ |
| | | clear nfpp icmp-guard hosts | $\checkmark$ |

δ ∇ $\hat{O}$ -

18.74 nfpp ip-guard enable

$\mathfrak{z}$ Θ IP $\nabla \hat{A}$
nfpp ip-guard enable

| | | | |
|----------|-----------|---|---|
| δ | $\hat{O}$ | | |
| | | - | - |

δ $\hat{O}$ IP $\sim \hat{A}$

δ $\mathfrak{z}$ $\hat{O}$

δ $\hat{O}$ IP $\hat{A}$

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp ip-guard enable
```

| | |
|----------------------------|----|
| 3 | |
| ip-guard enable | IP |
| show nfpp ip-guard summary | |

0 1 0 -

18.75 nfpp ip-guard isolate-period

3 3 Â

nfpp ip-guard isolate-period {seconds | permanent}

| | |
|-----------|---------------------|
| | |
| seconds | 0 [30, 86400] 0 a Â |
| permanent | |

0 0 ~ Â

0 3 0

0 0 -

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

| | |
|----------------------------|--|
| 3 | |
| ip-guard isolate-period | |
| show nfpp ip-guard summary | |

0 1 0 -

18.76 nfpp ip-guard policy

3 3 Â

nfpp ip-guard policy {per-src-ip | per-port} rate-limit-pps attack-threshold-pps

| | |
|----------------|----------|
| | |
| per-src-ip | IP Â |
| per-port | Â |
| rate-limit-pps | 1 9999 Â |

| | |
|-----------------------------|--------|
| <i>attack-threshold-pps</i> | 1 9999 |
|-----------------------------|--------|

Ö Ö

Ö 3 Ö

Ö Ö a

Ö Ö Ruijie(config)# interface G 0/1
 Ruijie(config-if)# nfpp ip-guard policy per-src-ip 2 10
 Ruijie(config-if)# nfpp ip-guard policy per-port 50 100

| | | |
|-------|-----------------------------------|-----|
| Ö 3 Ö | 3 | |
| | ip-guard attack-threshold | |
| | ip-guard rate-limit | |
| | show nfpp ip-guard summary | |
| | show nfpp ip-guard hosts | 1 3 |
| | clear nfpp ip-guard hosts | 3 |

Ö 1 Ö -

18.77 nfpp ip-guard scan-threshold

Ö Ö
nfpp ip-guard scan-threshold *pkt-cnt*

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

Ö Ö IP ARP

Ö 3 Ö

Ö Ö -

Ö Ö Ruijie(config)# interface G 0/1
 Ruijie(config-if)# nfpp ip-guard scan-threshold 20

| | | |
|-------|-----------------------------------|--|
| Ö 3 Ö | 3 | |
| | ip-guard scan-threshold | |
| | show nfpp ip-guard summary | |

Ö 1 Ö -

18.78 nfpp nd-guard enable

3 3 ND


```
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 | | | | |

ð 3 Ô

| | |
|----------------------------|-----|
| 3 | |
| clear nfpp arp-guard hosts | 4 5 |

ð 1 Ô -

18.81 show nfpp arp-guard scan

ARP

show nfpp arp-guard scan [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*ip-address*] [*mac-address*]]]

ð Ô

| | |
|---------------------|-----|
| | |
| statistics | ARP |
| <i>vid</i> | 1 |
| <i>interface-id</i> | " |
| <i>ip-address</i> | IP |
| <i>mac-address</i> | MAC |

ð Ô -

ð 3 Ô

ð Ô -

ð Ô Ruijie# show nfpp arp-guard scan statistics

ARP scan table has 4 record(s).

' 1 ARP 4 L A

```
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
16 23 10 ARP 0000.0000.0001

```

Ruijie# show nfpp arp-guard scan vlan 1 interface G 0/1 0000.0000.0001

```

VLAN    interface  IP address  MAC address  timestamp
-----
1       Gi0/1       N/A        0000.0000.0001  2008-01-23 16:23:10

```

Total 1 record(s)

| | |
|-------------------------------|-----|
| arp-guard scan-threshold | |
| nfpp arp-guard scan-threshold | |
| clear nfpp arp-guard scan | ARP |

1 -

18.82 show nfpp arp-guard summary

^

show nfpp arp-guard summary

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

-

3

3 1 16 ^

```

Ruijie# show nfpp arp-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  Scan-threshold
Global     Enable  300             4/5/60     8/10/100         15
Gi 0/1     Enable  180             5/-/-      8/-/-          -
Gi 0/2     Disable 200             4/5/60     8/10/100        20

Maximum count of monitored hosts: 1000
Monitor period 300s

```

Interface Global

Status

Rate-limit IP / MAC /
 Attack-threshold -

ð ð

| ð | |
|--------------------------------|---|
| arp-guard attack-threshold | |
| arp-guard enable | ARP ¶ |
| arp-guard isolate-period | |
| arp-guard monitor-period | |
| arp-guard monitored-host-limit | ¶ ÿ |
| arp-guard rate-limit | |
| arp-guard scan-threshold | |
| nfpp arp-guard enable | ð ARP ¶ |
| nfpp arp-guard isolate-period | |
| nfpp arp-guard policy | |
| nfpp arp-guard scan-threshold | |

ð ¶ ð -

18.83 show nfpp define hosts

¶ ÿ Â

show nfpp define hosts *name* [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*ip-address*] [*mac-address*] [*ipv6-address*]]]

ð ð

| ð | ð |
|---------------------|--------------------------|
| <i>name</i> | Ð |
| statistics | ¶ ÿ |
| <i>vid</i> | ¶ |
| <i>interface-id</i> | " |
| <i>ip-address</i> | IP |
| <i>mac-address</i> | MAC |
| <i>ipv6-address</i> | IPv6 |

ð ð

ð ð -

ð ð ¶ Â

ð ð Ruijie#show nfpp define hosts *tcp* statistics

```
Define tcp
success    fail      total
-----    -
```

53

| | | | |
|---|-----|----------------------|------|
| ö | 3 Ô | 3 | |
| | | match | 1X 5 |
| | | policy | 1X |
| | | isolate-period | 1X |
| | | monitor-period | 1X |
| | | monitored-host-limit | 1X |

ö 1 Ô -

18.85 show nfpp define trusted-host

a 1 ý
show nfpp define trusted-host *name*

| | | | |
|---|---|------|------|
| ö | Ô | | |
| | | name | 1X " |

ö Ô -

ö 3 Ô

ö Ô -

ö Ô 1 ý Â

```
Ruijie# show nfpp define trusted-host tcp
Define tcp:
IP address      mask
-----
1.1.1.0         255.255.255.0
1.1.2.0         255.255.255.0
Total: 2 record(s)
```

| | | | |
|---|-----|--------------|------|
| ö | 3 Ô | 3 | |
| | | trusted-host | 1X 1 |

ö 1 Ô -

18.86 show nfpp dhcp-guard hosts

1 ý Â
show nfpp dhcp-guard hosts [statistics | [[vlan *vid*] [interface *interface-id*] [mac-address]]]

| | | | |
|---|---|--------------|-----|
| ð | Ô | | |
| | | statistics | ¼ ỹ |
| | | vid | ¼ |
| | | interface-id | " |
| | | mac-address | MAC |

ð Ô -

ð ¾ Ô

ð Ô -

ð Ô ¼ ỹ Â

```
Ruijie# show nfpp dhcp-guard hosts statistics
success    fail    total
-----
100         20     120
120 ¼ ỹ    ~ è 100 ¼ ỹ    ¼    ~ 20 ¼ ỹ    ^
a ~
a ~ Â
```

¼ ỹ ~ l' remain-time(seconds) L Â

```
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)
```

| | | | |
|---|-----|-----------------------------|-----|
| ð | ¾ Ô | ¾ | |
| | | clear nfpp dhcp-guard hosts | ¼ ỹ |

ð ¼ Ô -

18.87 show nfpp dhcp-guard summary

Â

show nfpp dhcp-guard summary

| | | | |
|---|---|---|---|
| ð | Ô | | |
| | | - | - |

ð Ô -

3 0

0 0 3 1 16 A

0 0 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

Interface Global

Status

Rate-limit IP / MAC /

Attack-threshold -

0 3 0

| 3 | |
|---------------------------------|---------|
| dhcp-guard attack-threshold | |
| dhcp-guard enable | DHCP 11 |
| dhcp-guard isolate-period | |
| dhcp-guard monitor-period | |
| dhcp-guard monitored-host-limit | 11 11 |
| dhcp-guard rate-limit | |

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

Ö Ö -

Ö 3 Ö

Ö Ö -

Ö Ö 4 ý Â

```
Ruijie# show nfpp dhcpv6-guard hosts statistics
success      fail      total
-----
100           20       120
```

120 1 ý ~ è 100 1 ý 20 1 ý
a ~ a ~ Â

4 ý ~ l remain-time(seconds) L Â

```
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)
```

Ö 3 Ö

| | |
|---|---|
| 3 | |
| - | - |

Ö 1 Ö -

18/89C/Dj345 >>BDC <1DB92CD7d721354205B51648CID 37 >>BDC /C2_0 1 Tf21 0 T

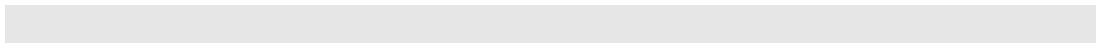
ö

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| | |
|------------------|------------|
| Interface | Global |
| Status | |
| Rate-limit | IP / MAC / |
| Attack-threshold | - |

ö 3 Ô

| 3 | |
|---------------------------------|-----------|
| icmp-guard attack-threshold | |
| icmp-guard enable | ICMP 11 |
| icmp-guard isolate-period | |
| icmp-guard monitor-period | |
| icmp-guard monitored-host-limit | 11 3 |
| icmp-guard rate-limit | |
| nfpp icmp-guard enable | 3 ICMP 11 |
| nfpp icmp-guard isolate-period | |
| nfpp icmp-guard policy | |

ö 1 Ô -

18.92 show nfpp icmp-guard trusitc

| | |
|-------------------------|-------|
| icmp-guard trusted-host | a 1 ỹ |
|-------------------------|-------|

ö 1 Ô -

18.93 show nfpp ip-guard hosts

1 ỹ Â

show nfpp ip-guard hosts [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*ip-address*]]]

ö Ô

| statistics | 1 ỹ |
|---------------------|-----|
| <i>vid</i> | 1 |
| <i>interface-id</i> | " |
| <i>ip-address</i> | IP |

ö Ô -

ö 3 Ô

ö Ô -

ö Ô Ruijie#show nfpp ip-guard hosts statistics

```

success    fail    total
-----
100         20     120

```

' 1' 120 1 ỹ ~ è 100 1 ỹ 11 20 1 ỹ E Â

Ruijie#show nfpp ip-guard hosts

If column 1 shows '*', it means "hardware do not isolate host" .

| VLAN | interface | IP address | Reason | remain-time(s) |
|-----------------|-----------|------------|--------|----------------|
| 1 | Gi0/1 | 1.1.1.1 | ATTACK | 110 |
| 2 | Gi0/2 | 1.1.2.1 | SCAN | 61 |
| Total 2 host(s) | | | | |

Reason

ATTACK

IP

SCAN

ö 3 Ô

| | |
|---------------------------|-----|
| clear nfpp ip-guard hosts | 1 ỹ |
|---------------------------|-----|

ö 1 Ô -

18.94 show nfpp ip-guard summary

show nfpp ip-guard summary

| | | | |
|---|---|---|---|
| ð | Ô | | |
| | | - | - |

ð Ô -

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ð 18.4 show o Û ð " " x Œ I M я r Mp hœ A o ħ ċ

18.95 show nfpp ip-guard trusted-host

a 1 Ÿ Â





-

-
1. CFM
 2. REUP
 3. RLDP
 4. DLDP
 5. VRRP
 6. VRRP Plus
 7. TPP
 8. BFD
 9. RNS & Track
 10. IP Event Dampening
 11. GRTD
 12. SEM
 13. VSU

1 CFM

1.1 cfm alarm-priority service-instance

MEP no

cfm alarm-priority *priority-value* **service-instance** *instance-id* [**mep** *mep-id*]

no cfm alarm-priority

| | | |
|-----------------------|--------|-----------|
| <i>priority-value</i> | [1,5] | 2 |
| <i>instance-id</i> | ID | [1,32767] |
| <i>mep-id</i> | MEP ID | [1,8191] |
| no | | |

MEP 2

-

Ruijie(config)#cfm alarm-priority 3

| | |
|--------------------------------------|-----|
| show cfm mep service-instance | MEP |
|--------------------------------------|-----|

-

1.2 cfm cc interval service-instance

CCM no

cfm cc interval *interval-type* **service-instance** *instance-id*

no cfm cc interval service-instance *instance-id*

| | | |
|----------------------|---------------|-----|
| <i>interval-type</i> | Interval-type | CCM |
| | 4 | 1s |
| | 5 | 10s |

| | | |
|--------------------|----|---------|
| | 6 | 60s |
| | 7 | 600s |
| <i>instance-id</i> | ID | 1-32767 |
| no | | |

interval-type 4

-

```
Ruijie(config)#cfm cc interval 5 service-instance 1
```

| | |
|---------------------------------------|-----|
| | |
| cfm cc service-instance enable | CCM |
| | |

-

1.3 cfm cc service-instance enable

MEP MEP CC no

cfm cc service-instance *instance-id* [**mep** *mep-id*] **enable**

no cfm cc service-instance *instance-id* [**mep** *mep-id*] **enable**

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

-

1.4 cfm linktrace auto-detection

cfm linktrace auto-detection [**size** *entries-count*]

no cfm linktrace auto-detection

| size <i>entries-count</i> | entries-count
1-100 |
|----------------------------------|-------------------------------|
| no | |

entries-count 5

-

```
Ruijie(config)# cfm linktrace atuto-detection
```

| show cfm linktrace auto-detection size | |
|---|--|

-

1.5 cfm linktrace service-instance mep

cfm linktrace service-instance *instance-id* **mep** *mep-id* { **remote-mep** *remote-mep-id* | **remote-mac** *mac-address* } [**ttl** *tvl-value*] [**hw-only**]

| <i>instance-id</i> | ID | 1-32767 |
|--|-----|---------|
| <i>mep-id</i> | ID | 1-8191 |
| remote-mep <i>remote-mep-id</i> | ID | |
| remote-mac <i>mac-address</i> | | MAC |
| tvl <i>tvl-value</i> | LTM | 1-255 |
| hw-only | FDB | LTM |

tvl-value 64 *hw-only*

-

```
Ruijie# cfm linktrace service-instance 1 mep 100 remote-mep 200 ttl 80 hw-only
Ruijie# cfm linktrace service-instance 1 mep 100 remote-mac 00d0.f800.1e2f ttl 30
```

| | |
|--|--|
| | |
| show cfm linktrace-info service-instance | |

-

1.6 cfm loopback service-instance mep

cfm loopback service-instance *instance-id* **mep** *mep-id* { **remote-mep** *remote-mep-id* | **remote-mac** *mac-address* } [**count** *count*]

| | | |
|--|-----|---------|
| | | |
| <i>instance-id</i> | ID | 1-32767 |
| <i>mep-id</i> | ID | 1-8191 |
| remote-mep <i>remote-mep-id</i> | ID | |
| remote-mac <i>mac-address</i> | | MAC |
| count <i>count-value</i> | LBM | |

count 5

-

```
Ruijie# cfm loopback service-instance 1 mep 100 remote-mep 200 count 3
```

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

-

1.7 cfm ma md

no

cfm ma *ma-name* **md** *md-name*
no cfm ma *ma-name* **md** *md-name*

| | |
|----------------|------|
| | |
| <i>ma-name</i> | 1-43 |
| | 44 |
| <i>md-name</i> | |
| no | |

-

44

```
Ruijie(config)# cfm ma MA_A_MD_A md MD_A
Ruijie(config)# no cfm ma MA_A_MD_A md MD_A
```

| | |
|-----------------------|--|
| | |
| show cfm ma md | |

-

1.8 cfm md level

no

cfm md *md-name* **level** *level*
no cfm md *md-name*

| | |
|----------------|------|
| | |
| <i>md-name</i> | 1-43 |
| <i>level</i> | 0-7 |
| no | |

-

-

```
Ruijie(config)# cfm md MD_A level 5
Ruijie(config)# no cfm md MD_A
```

| | |
|--------------------|--|
| | |
| show cfm md | |

-

1.9 cfm mep service-instance

no

cfm mep *mep-id* **service-instance** *instance-id* { **inward** | **outward** }

no cfm mep *mep-id* **service-instance** *instance-id*

| <i>mep-id</i> | ID | 1-8191 |
|--------------------|----|---------|
| <i>instance-id</i> | ID | 1-32767 |
| inward | | |
| outward | | |
| no | | |

-

-

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# cfm mep 100 service-instance 1 inward
```

| show cfm mep service-instance | |
|--------------------------------------|--|
| show cfm mp | |

-

1.10 cfm mep-list service-instance

no

cfm mep-list *mep-list* **service-instance** *instance-id*

no cfm mep-list *mep-list* **service-instance** *instance-id*

| <i>mep-list</i> | mep-list
ID | ID | - |
|--------------------|----------------|---------|--------|
| | 10 – 20 | ID | 1-8191 |
| <i>instance-id</i> | ID | 1-32767 | |
| no | | | |

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

-

-

```
Ruijie(config)# cfm mep-list 1-3 service-instance 1
```

1.12 cfm service-instance vlan md ma

no

cfm service-instance *instance-id* **vlan** *vlan-id* **md** *md-name* **ma** *ma-name*

no cfm service-instance *instance-id*

| <i>instance-id</i> | ID 1-32767 |
|--------------------|----------------|
| <i>vlan-id</i> | VLAN ID 1~4094 |
| <i>md-name</i> | |
| <i>ma-name</i> | |
| no | |

-

```
Ruijie(config)# cfm service-instance 10 vlan 1 md MD_A ma MA_A_MD_A
```

```
Ruijie(config)# no cfm service-instance 10
```

| show cfm service-instance | |
|----------------------------------|--|

-

1.13

2 10

```
Ruijie# show cfm linktrace-info auto-detection size 10
```

| | |
|-----------------------------------|--|
| | |
| cfm linktrace auto-detection size | |

-

1.14 show cfm linktrace-info

```
show cfm linktrace-info [ service-instance instance-id [ mep mep-id ] ]
```

| | | |
|--------------------|----|---------|
| | | |
| <i>instance-id</i> | ID | 1-32767 |
| <i>mep-id</i> | ID | 1-8191 |

Instance

-

1

```
Ruijie# show cfm linktrace-info service-instance 1 mep 100
```

2

```
Ruijie# show cfm linktrace-info service-instance 1
```

3

```
Ruijie# show cfm linktrace-info
```

| | |
|--|--|
| | |
| cfm linktrace service-instance mep ttl | |

-

1.15 show cfm ma

```
show cfm ma [ [ ma-name ] md md-name ]
```

| | |
|---------|--|
| | |
| ma-name | |
| md-name | |

-

```
1      MD_A      MA_A_MD_A
Ruijie# show cfm ma MA_A_MD_A md MD_A
```

```
2      MD_A      MA
Ruijie# show cfm ma md MD_A
```

```
3              MA
```

-

1.17 show cfm mep service-instance

show cfm mep *mep-id* **service-instance** *instance-id*

| <i>mep-id</i> | ID | 1-8191 |
|--------------------|----|---------|
| <i>instance-id</i> | ID | 1-32767 |

-

-

Ruijie# show cfm mep 100 service-instance 1

| cfm mep service-instance | |
|---------------------------------|--|

-

1.18 show cfm mep-list

show cfm mep-list [**service-instance** *instance-id*]

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

-

Ruijie# show cfm mep-list service-instance 1

| cfm mep service-instance | |
|--------------------------------------|--|
| cfm mip-rule service-instance | |

-

1.19 show cfm mp

show cfm mp [**interface** *interface-id*]

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

-

Ruijie# show cfm mp interface gigabitethernet 1/1

| cfm mep service-instance | |
|--------------------------------------|--|
| cfm mip-rule service-instance | |

-

1.20 show cfm remote-mep service-instance mep

show cfm remote-mep service-instance *instance-id* **mep** *mep-id*

| <i>instance-id</i> | ID | 1-32767 |
|--------------------|----|---------|
| <i>mep-id</i> | ID | 1-8191 |

-

-

Ruijie# show cfm remote-mep service-instance 1 mep 100

|--|--|

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

-

1.21 show cfm service-instance

show cfm service-instance [*instance-id*]

| <i>instance-id</i> | ID 1-32767 |
|--------------------|------------|

-

Ruijie# show cfm service-instance 1

| cfm service-instance md ma | |
|----------------------------|--|

-

2 REUP

2.1 link state track

no

link state track [*num*]

no link state track [*num*]

| <i>num</i> | ID |
|------------|----|

-

```
Ruijie(config)# link state track 1
```

| link state group | |
|------------------|--|

-

2.2 link state group

no

link state group *num* { upstream | downstream }

no link state group

| <i>num</i> | ID |
|------------|----|
| upstream | |
| downstream | |

fa 0/2

```
Ruijie(config)# link state track 1
Ruijie(config)# interface fa 0/2
Ruijie(config-if)# link state group 1 upstream
```

| link state track | |
|------------------|--|

-

2.3 mac-address-table move update max-update-rate

MAC

mac-address-table move update max-update-rate *pkts-per-second*
no mac-address-table move update max-update-rate

| <i>pkts-per-second</i> | MAC
0-32000 150 |
|------------------------|--------------------|

150 MAC

REUP

MAC

MAC

```
Ruijie(config)# mac-address-table move update max-update-rate 20
```

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

-

2.4 mac-address-table move update receive

MAC

mac-address-table

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

MAC
MAC
MAC
MAC

```
Ruijie(config)# mac-address-table move update receive
```

| | |
|---------------------------------------|-----|
| | |
| mac-address-table move update transit | MAC |

-

2.5 mac-address-table move update receive vlan

MAC VLAN
mac-address-table move update receive vlan *vlan-range*
no mac-address-table move update receive vlan *vlan-range*

| | |
|-------------------|----------|
| | |
| <i>vlan-range</i> | MAC VLAN |

VLAN MAC

VLAN MAC MAC VLAN
MAC

MAC VLAN

```
Ruijie(config)# no mac-address-table move update receive vlan 20
```

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

2.6 mac-address-table move update transit

MAC

mac-address-table move update transit

no mac-address-table move update transit

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

MAC

MAC

Ruijie(config)# mac-address-table move update transit

| | |
|---------------------------------------|-----|
| | |
| mac-address-table move update transit | MAC |

-

2.7 mac-address-table move update transit vlan

MAC

VLAN

mac-address-table move update transit vlan *vid*

no mac-address-table move update transit vlan

| | |
|------------|-------------|
| | |
| <i>vid</i> | MAC VLAN ID |

VLAN

MAC

MAC

MAC

MAC

VLAN

Ruijie(config-if)# mac-address-table move update transit vlan 1

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

interface-id

fa 0/1 fa 0/2

```
Ruijie(config)# interface fa 0/1
Ruijie(config-if)# switchport backup interface fa 0/2
```

| | |
|----------------------------------|--|
| | |
| show interface switchport backup | |

-

2.10 switchport backup interface preemption

REUP


```

Ruijie # show interfaces switchport backup detail
Switch Backup Interface Pairs:
Active Interface  Backup Interface  State
-----
Gi0/23           Gi0/24           Active Up/Backup Standby
Interface Pair : Gi0/23, Gi0/24
Preemption Mode : Off
Preemption Delay : 35 seconds
Bandwidth : Gi0/23(1000 Mbits), Gi0/24(1000 Mbits)

```

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

-

2.13 show link state group

show link state group *num*

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

2.14 show mac-address-table update group

show mac-address-table update group [detail]

| | |
|--------|--|
| | |
| detail | |

-

EXEC

-

```
Ruijie # configure terminal
Ruijie (config)# mac-address-table move update receive
Ruijie (config)# interface range gigabitEthernet 0/3-4
Ruijie (config-if-range)# mac-address-table update group
Ruijie (config-if-range)# end
Ruijie # show mac-address-table update group detail
Mac-address-table Update Group:1
Received mac-address-table update message count:7
Group member      Receive Count  Last Receive Switch-ID  Receive Time
-----
GigabitEthernet 0/3    0            0000.0000.0000
GigabitEthernet 0/4    0            0000.0000.0000
```


5s

```
Ruijie(config)# rldp detect-interval 5
```

| | |
|-----------------|--|
| | |
| rldp detect-max | |

-

3.3 rldp detect-max

RLDP

rldp detect-max *num*
no rldp detect-max

| | |
|------------|--------|
| | |
| <i>num</i> | , 2-10 |

2

5

```
Ruijie(config)# rldp detect-max 5
```

| | |
|----------------------|--|
| | |
| rldp detect-interval | |

-

3.4 rldp enable

RLDP

rldp enable
no rldp enable

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

RLDP

RLDP

```
Ruijie(config)# rldp enable
```

| | |
|------------------|------|
| | |
| rldp port | RLDP |

-

3.5 rldp port

rldp

```
rldp port { unidirection-detect | bidirection-detect | loop-detect } { warning | shutdown-svi |  
shutdown-port | block }
```

```
no rldp port { unidirection-detect | bidirection-detect | loop-detect }
```

| | |
|----------------------------|-------------------|
| | |
| unidirection-detect | |
| bidirection-detect | |
| loop-detect | |
| warning | |
| shutdown-svi | shutdown svi |
| shutdown-port | shutdown |
| block | |

-

RLDP

RLDP

fas 0/1 rldp

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

```
Ruijie(config-if)# rldp port loop-detect block
```

| | |
|--------------------|------|
| | |
| rldp enable | rldp |

-

3.6 rldp reset

rldp shutdown disable rldp
rldp reset

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

-

-

Ruijie# rldp reset

| | |
|--------------------|------|
| | |
| rldp enable | Rldp |

-

3.7 show rldp

rldp
show rldp [interface *interface-id*]

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

-

EXEC

-

-

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

-

| | | | |
|--|----|-----|---|
| | | | |
| <i>ip-address</i> | IP | | |
| mac-address
<i>mac-address</i> | IP | MAC | |
| next-hop <i>ip-address</i> | m | IP | a |

```
Ruijie#config
Ruijie(config)#interface vlan 1
Ruijie(config-if-VLAN 1)#no dldp 10.83.132.10
```

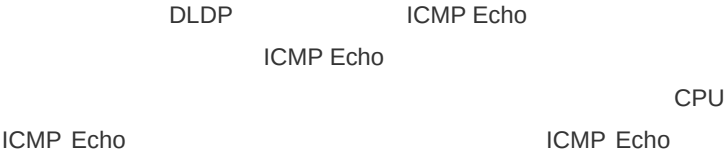
| | |
|---|---|
| | |
| - | - |

—

4.3 dldp passive

| | |
|------------------------|----|
| dldp | no |
| dldp passive | |
| no dldp passive | |

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



| | |
|------------|------|
| Down-count | down |
|------------|------|

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

-

5 VRRP

5.1 debug vrrp

```
debug [ ipv6 VRRP VRRP VRRP no
```

| ipv6 | IPv6 | IPv4 |
|------|------|------|

-

VRRP

```
Ruijie# debug vrrp errors
```

```
Ruijie# debug ipv6 vrrp errors
```

```
VRRP: IPv4 VRRP Grp 1 Advertisement from 192.168.1.1 has wrong checksum.
```

```
VRRP: IPv4 VRRP Grp 1 Advertisement from 192.168.1.1 has wrong checksum.
```

```
VRRP: IPv4 VRRP Grp 1 Advertisement from 192.168.1.1 has wrong checksum.
```

```
192.168.1.1 IPv4 VRRP 1 VRRP
```

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

-

5.3 debug vrrp events

VRRP

no

```
debug [ ipv6 ] vrrp events
```

```
no debug [ ipv6 ] vrrp events
```

| ipv6 | IPv6 | IPv4 |
|------|------|------|

-

VRRP

```
Ruijie# debug vrrp events
```

```
Ruijie# debug ipv6 vrrp events
```

```
VRRP: IPv4 VRRP Grp 1 Event - Advert higher or equal priority
```

```
VRRP: IPv4 VRRP Grp 1 Event - Advert higher or equal priority
```


5.5 debug vrrp state

VRRP no

debug [ipv6] vrrp state

no debug [ipv6] vrrp state

| ipv6 | IPv6 | IPv4 |
|------|------|------|

-

VRRP

```
Ruijie# debug vrrp state
Ruijie# debug ipv6 vrrp state
VRRP: IPv4 VRRP Grp 1 add primary virtual IP, startup
Ruijie# debug ipv6 vrrp state
VRRP: IPv6 VRRP Grp 1 add primary virtual IP, startup.
```

Fastethernet 0/0 IPv4 VRRP IPv6 VRRP IP VRRP

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

-

5.6 show vrrp

IPv4 VRRP IPv6 VRRP

show [ipv6] vrrp [brief | group]

| ipv6 | IPv6 | IPv4 |
|-------|------|------|
| brief | VRRP | |
| group | VRRP | |

-

VRRP

1 VRRP

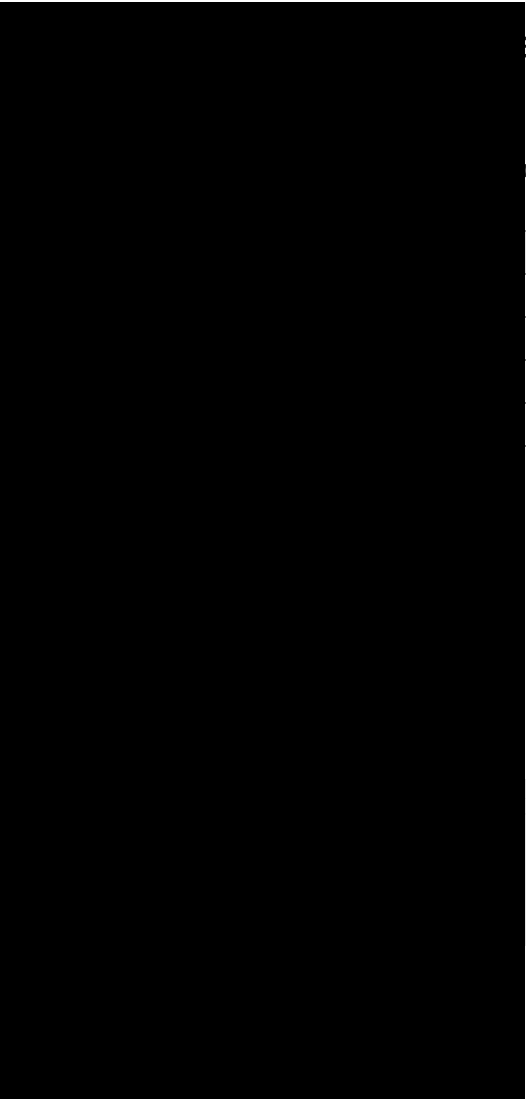
```
Ruijie# show vrrp
FastEthernet 0/0 - Group 1
State is Backup
Virtual IP address is 192.168.201.1 configured
Virtual MAC address is 0000.5e00.0101
Advertisement interval is 3 sec
Preemption is enabled
min delay is 0 sec
Priority is 100
Master Router is 192.168.201.213 , priority is 120
Master Advertisement interval is 3 sec
Master Down interval is 10.82 sec
FastEthernet 0/0 - Group 2
State is Master
Virtual IP address is 192.168.201.2 configured
Virtual MAC address is 0000.5e00.0102
Advertisement interval is 3 sec
Preemption is enabled
min delay is 0 sec
Priority is 120
Master Router is 192.168.201.217 (local), priority is 120
Master Advertisement interval is 3 sec
Master Down interval is 10.59 sec
Ruijie#show ipv6 vrrp
GigabitEthernet 0/13 - Group 1
State is Master
Virtual IPv6 address is as follows:
FE80::2
1::2
Virtual MAC address is 0000.5e00.0201
Advertisement interval is 1 sec
Accept_Mode is enabled
Preemption is enabled
min delay is 0 sec
Priority is 100
Master Router is FE80::1 (local), priority is 100
Master Advertisement interval is 1 sec
Master Down interval is 3.60 sec
Ruijie#
```

2 VRRP

```
Ruijie# show vrrp brief
Interface  Grp Pri Time  Own Pre State  Master addr  Group addr
Fa0/0      1 100 10.82  -   P Backup 192.168.201.213 192.168.201.1
Fa0/0      2 120 10.59  -   P Master 192.168.201.217 192.168.201.2
Ruijie#show ipv6 vrrp brief
Interface      Grp Pri timer Own Pre State Master addr  Group addr
Gi0/13         1 100 3.60 -   P Master FE80::1          FE80::2
Ruijie#
```

| | | |
|-----------|------|------|
| | | |
| vrrp ip | VRRP | IP |
| vrrp ipv6 | VRRP | IPv6 |

-



ace

IPv4 VRRP IPv6 VRRP
interface type number [brief]

| | | |
|--|------|------|
| | | |
| | IPv6 | IPv4 |
| | | |
| | | |
| | | |

FastEthernet 0/0 IPv4 VRRP
p interface fastethernet 0/0
- Group 1

õ , M i , , ,


```
Master Down interval is 10.82 sec
FastEthernet 0/0 - Group 2
State is Master
Virtual IP address is 192.168.201.2 configured
Virtual MAC address is 0000.5e00.0102
Advertisement interval is 3 sec
Preemption is enabled
min delay is 0 sec
Priority is 120
Master Router is 192.168.201.217 (local), priority is 120
Master Advertisement interval is 3 sec
Master Down interval is 10.59 sec
```

2

gigabitEthernet 0/13

N

~

O

O

~

s

Master

IPv6 VRRP

VRRP 1 IPv6 VRRP

```
Ruijie(config-if)# vrrp ipv6 1 accept_mode
```

| | | |
|-----------|------|------|
| | | |
| vrrp ipv6 | VRRP | IPv6 |

-

5.10 vrrp authentication

VRRP no

vrrp group authentication string
no vrrp group authentication

| | | | | |
|--------|------|---|---|--|
| | | | | |
| group | VRRP | | | |
| string | VRRP | (| 8 | |

5.11 vrrp delay

VRRP

VRRP

VRRP

Fa 0/0 IPv4 VRRP 1 Building A – Marketing and Administration IPv6 VRRP 1
 Building B – Marketing and Administration

```
Ruijie(config)#interface FastEthernet 0/0
Ruijie(config-if)#ip address 10.0.1.1 255.255.255.0
Ruijie(config-if)#vrrp 1 ip 10.0.1.20
Ruijie(config-if)#vrrp 1 description "Building A - Marketing and Administration"
Ruijie(config-if)#vrrp 1 ipv6 fe80::1
Ruijie(config-if)#vrrp ipv6 1 description "Building B - Marketing and Administration"
```

| vrrp ip | VRRP | IP |
|------------------|------|------|
| vrrp ipv6 | VRRP | IPv6 |

-

5.13 vrrp ip

IPv4 VRRP IPv4 **no** IPv4
 VRRP IPv4
vrrp group ip ipaddress [secondary]
no vrrp group ip ipaddress [secondary]

| <i>group</i> | VRRP |
|------------------|------|
| <i>ipaddress</i> | IP |
| secondary | IP |

VRRP

secondary IP IP VRRP
 IP no VRRP IP
 IP
 Fa 0/0 VRRP VRRP 1 IP 10.0.1.20 IP
 10.0.2.20

```
Ruijie(config)#interface FastEthernet 0/0
/* 'no switchport' */
Ruijie(config-if)#no switchport
```

```
Ruijie(config-if)#ip address 10.0.1.1 255.255.255.0  
Ruijie(config-if)#ip address 10.0.2.1 255.255.255.0 secondary
```

5.15 vrrp preempt

IPv4 VRRP IPv6 VRRP no VRRP

vrrp [ipv6] group preempt [delay seconds]

no vrrp [ipv6] group preempt [delay]

| ipv6 | IPv6 IPv4 |
|----------------------|----------------|
| <i>group</i> | VRRP |
| delay seconds | Master 0 |

VRRP

VRRP VRRP

VRRP Master

VRRP VRRP Master

VRRP VRRP IP

VRRP VRRP VRRP

1 IPv4 VRRP (200) 15

IPv4 VRRP 4~ ¥),7¾ Å,X ì 4{(200) 15

8ÁrS/! " ñ Ñ %0\$\$p(» VRR2Tj /C2_0 1 Tf 0 Tc 3.027 0 Td [<3498074B>-7<1CDD>]T3>-7<3

no vrrp [ipv6] group priority

| ipv6 | IPv6 IPv4 |
|--------------|----------------|
| <i>group</i> | VRRP |
| <i>level</i> | VRRP |

VRRP
VRRP VRRP 100

VRRP

1 IPv4 VRRP 1 254

Ruijie(config-if)#vrrp 1 priority 254

2 IPv6 VRRP 1 254

Ruijie(config-if)#vrrp ipv6 1 priority 254

| vrrp ip | VRRP IP |
|------------------|----------------|
| vrrp ipv6 | VRRP IPv6 |

6

5.17 vrrp timers advertise

VRRP

VRRP

VRRP

1 IPv4 VRRP 4

```
Ruijie(config-if)#vrrp 1 timers advertise 4
```

2 IPv6 VRRP 4

```
Ruijie(config-if)#vrrp ipv6 1 timers advertise 4
```

| vrrp ip | VRRP | IP |
|-------------------------------|-----------|------|
| vrrp ipv6 | VRRP | IPv6 |
| vrrp timers learn | IPv4 VRRP | |
| vrrp ipv6 timers learn | IPv6 VRRP | |

-

5.18 vrrp timers learn

IPv4 VRRP IPv6 VRRP

no

```
vrrp [ ipv6 ] group timers learn
```

```
no vrrp [ ipv6 ] group timers learn
```


| | | | | | | | |
|--|-------|----------|-------------------|---------|-------------|------|----------|
| | | | | | | | (Routed |
| Port | SVI | Loopback | Tunnel |) | | | |
| | | IPv4 | | | IPv4 | IPv6 | IPv6 |
| | VRRP | (Own) | | IP | VRRP | 255 | IP |
| 1 | VRRP | 1 | Routed Port Fa1/1 | | Fa1/1 | VRRP | 30 |
| | Fa1/1 | | VRRP | 1 | | | |
| Ruijie(config-if)#vrrp 1 track FastEthernet 1/1 30 | | | | | | | |
| 2 | | 1000::1 | | | | | |
| Ruijie(config-if)#vrrp ipv6 1 track 1000::1 | | | | | | | |
| 3 | | VLAN 1 | | FE80::1 | | | |
| Ruijie(config-if)#vrrp ipv6 1 track FE80::1 vlan 1 | | | | | | | |
| 4 | | VRRP | BFD | | 192.168.1.3 | | |
| Ruijie#configure terminal | | | | | | | |
| | | | | | | | |
| | | | | | | | |

5.20 vrrp version

IPv4 VRRP VRRP **no** IPv4 VRRP VRRP

VRRPv2 VRRPv3

vrrp group version { 2 | 3 }

no vrrp group version

| 2 | VRRPv2 |
|----------|--------|
| 3 | VRRPv3 |

IPv4 VRRP VRRPv2

IPv4 VRRP VRRPv2 VRRPv3 VRRP

VRRPv2 RFC3768 VRRPv3 RFC 5798. IPv4 VRRP

IPv4 VRRP

```
Ruijie(config-if)# vrrp 1 version 3
```

| vrrp ip | VRRP IP |
|------------------------------|------------|
| vrrp timers advertise | VRRP |

-

6 VRRP Plus

6.1 debug vrrp balance

VRRP Plus

debug vrrp balance [errors | messages | packets | state | timer | event]

| errors | |
|-----------------|------------|
| messages | VRRP TRACK |
| packets | VRRP Plus |
| state | VRRP Plus |
| timer | VRRP Plus |
| event | VRRP Plus |

VRRP Plus

-

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

-

6.2 show vrrp balance

VRRP Plus

show vrrp balance [brief | group]

| brief VRRP Plus | |
|------------------------|--|
| group VRRP Plus | |

-

VRRP Plus

1 VRRP Plus

```

Ruijie#show vrrp balance
VLAN 1 - Group 1
  State is BVG
  Virtual IP address is 192.168.1.54
  Hello time 1 sec, hold time 3 sec
  Load balancing: host-dependent
  Redirect time 300 sec, forwarder time-out 14400 sec
  Weighting 90 (configured 100), thresholds: lower 1, upper 100
  Track object 1, state: down, decrement weight: 10
  There are 2 forwarders
  Forwarder 1 (local)
    MAC address:
      0000.5e00.0101
    Owner ID is 00d0.f822.33ab
  Forwarder 2
    MAC address:
      001a.a916.0201
    Owner ID is 00d0.f822.8800

```

2 VRRP Plus

```

Ruijie# show vrrp balance brief
Interface      Grp  State   Group Addr      MAC addr
VLAN 1         1    BVG     192.168.1.1     0000.5e00.0101

```

| | |
|------------------------------------|-----------|
| | |
| vrrp balance | VRRP Plus |
| vrrp load-balancing | VRRP Plus |
| show vrrp balance interface | VRRP Plus |

-

6.3 show vrrp balance interface

VRRP Plus

show vrrp balance interface *type number* [**brief**]

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

-

-

FastEthernet 0/0 VRRP Plus

```

Ruijie# show vrrp balance interface FastEthernet 0/0
FastEthernet 0/0 - Group 1
  State is BVG
  Virtual IP address is 192.168.1.54
  Hello time 1 sec, hold time 3 sec
  Load balancing: host-dependent
  Redirect time 300 sec, forwarder time-out 14400 sec
  Weighting 90 (configured 100), thresholds: lower 1, upper 100
  Track object 1, state: down, decrement weight: 10
  There are 2 forwarders
  Forwarder 1 (local)
    MAC address:
      0000.5e00.0101
    Owner ID is 00d0.f822.33ab
  Forwarder 2
    MAC address:
      001a.a916.0201
    Owner ID is 00d0.f822.8800

```

| vrrp balance | VRRP Plus |
|----------------------------|-----------|
| vrrp load-balancing | VRRP Plus |
| show vrrp balance | VRRP Plus |

-

6.4 vrrp balance

VRRP Plus **no****vrrp group balance****no vrrp group balance**

| <i>group</i> | VRRP VRRP Plus |
|--------------|---------------------|

-

6.6 vrrp load-balancing

VRRP Plus

no

```
vrrp group load-balancing { host-dependent | round-robin | weighted }
```

```
no vrrp group load-balancing { host-dependent | round-robin | weighted }
```

| <i>group</i> | VRRP |
|-----------------------|------------|
| host-dependent | MAC
ARP |
| round-robin | MAC ARP |
| weighted | ARP |

VRRP Plus

round-robin

| | | | | |
|-----------------|-----------|-------|-----|-----------------------------|
| <i>group</i> | VRRP Plus | 1 | 255 | |
| <i>redirect</i> | | 300 | 5 | 0 3600 |
| <i>timeout</i> | | 14400 | 4 | <i>redirect</i> + 600 64800 |

VRRP Plus MAC 300 14400

VRRP Plus VRRP Plus MAC

VRRP Plus 1 MAC

```
Ruijie(config-if)# vrrp 1 ip 192.168.1.1
Ruijie(config-if)# vrrp 1 balance
Ruijie(config-if)# vrrp 1 timers redirect 300 6000
```

| | |
|------------------------------------|-----------|
| | |
| vrrp balance | VRRP Plus |
| show vrrp balance | VRRP Plus |
| show vrrp balance interface | VRRP Plus |

-

6.8 vrrp weighting

VRRP Plus **no** VRRP Plus

vrrp group weighting *maximum* [**lower** *lower*] [**upper** *upper*]

no vrrp group weighting

| | |
|---------------------------|---|
| | |
| <i>group</i> | VRRP Plus 1 255 |
| <i>maximum</i> | 100 2 254 |
| lower <i>lower</i> | 1 1 <i>maximum</i> - 1 |
| upper <i>upper</i> | 100 <i>lower</i> <i>maximum</i> |

VRRP Plus 100 1 100

VRRP Plus VRRP Plus

VRRP Plus 1

```
Ruijie(config-if)# vrrp 1 ip 192.168.1.1
```

```
Ruijie(config-if)# vrrp 1 balance
```

```
Ruijie(config-if)# vrrp 1 weighting 50 lower 30 upper 50
```

7 TPP

7.1 show tpp

show tpp

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

-

tpp

Ruijie# show tpp

| | |
|----------------|--|
| | |
| topology guard | |

-

7.2 topology guard

no

[no] topology guard

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

cpu topology-limit

```
Ruijie(config)# topology guard
Ruijie(config)# no topology guard
```

| | |
|-----------------------------|-----|
| | |
| tp-guard port enable | |
| cpu topology-limit | CPU |

-

7.3 tp-guard port enable

no

[no] tp-guard port enable

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

-

CPU
(AP
)

```
Ruijie(config-if)# tp-guard port enable
Ruijie(config-if)# no tp-guard port enable
```

| | |
|-----------------------|--|
| | |
| topology guard | |

-

8 BFD

8.1 bfd

| | BFD | no | BFD |
|------------------------|---------------------|---------------|---|
| bfd interval | <i>milliseconds</i> | min_rx | <i>milliseconds multiplier multiplier-value</i> |
| no bfd interval | | | |

-

8.4 bfd slow-timer

BFD no

bfd slow-timer *milliseconds*

no bfd slow-timer

| <i>milliseconds</i> | BFD 1000 30000,
1000 |
|---------------------|-------------------------|

1000ms

-

UP UP 60,000

```
Ruijie(config-if) bfd up-dampening 60000
```

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

-

8.6 ip rip bfd

RIP BFD **disable** RIP BFD **no**

```
ip rip bfd [ disable ]
```

```
no ip rip bfd
```

| | |
|----------------|---------|
| | |
| disable | RIP BFD |

disable RIP BFD

RIP BFD

1 RIP [**no**] **bfd all-interfaces** RIP BFD

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

Routed Port FastEthernet 0/2 RIP BFD

```
Ruijie(config)# interface FastEthernet 0/2
```

```
Ruijie(config-if)# no switchport( )
```

```
Ruijie(config-if)# ip rip bfd disable
```

| | |
|---------------------------|-----|
| | |
| bfd | BFD |
| bfd all-interfaces | BFD |

-

8.7 ip route static bfd

IPv4 BFD **no**

```
ip route static bfd [ vrf vrf-name ] interface-type interface-number gateway [ source ip-address ]
```

```
no ip route static bfd [ vrf vrf-name ] interface-type interface-number gateway [ source ip-address ]
```

| | |
|--|-------------|
| | |
| vrf <i>vrf-name</i> | VRF |
| <i>interface-type</i>
<i>interface-number</i> | |
| <i>gateway</i> | IP BFD IP |
| source <i>ip-address</i> | BFD IP , IP |

BFD

BFD

BFD BFD 172.16.0.2

```

Ruijie(config)# interface FastEthernet 0/1
Ruijie(config-if)# no switchport
Ruijie(config-if)# ip address 172.16.0.1 255.255.255.0
Ruijie(config-if)# bfd interval 50 min_rx 50 multiplier 3
Ruijie(config-if)#exit
Ruijie(config)# ip route static bfd FastEthernet 0/1 172.16.0.2
Ruijie(config)# ip route 10.0.0.0 255.0.0.0 FastEthernet 0/1 172.16.0.2

```

| | |
|------------|-----|
| | |
| bfd | BFD |

-

8.8 set ip next-hop verify-availability

1A± – D Ä E I `B"S"G Ôr T

| | | | |
|-------------------------|-----|-----|----|
| <i>interface-type</i> | | | |
| <i>interface-number</i> | | | |
| <i>gateway</i> | IP | BFD | IP |
| | BFD | | |

BFD

IP BFD

BFD BFD 172.16.0.2

```
Ruijie#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# route-map Example1 permit 10
Ruijie(config-route-map)# match ip address 1
Ruijie(config-route-map)# set ip precedence priority
Ruijie(config-route-map)# set ip next-hop verify-availability 172.16.0.2 bfd FastEthernet 0/1
172.16.0.2
Ruijie(config-route-map)#end
```

| | |
|------------|-----|
| | |
| bfd | BFD |

-

8.9 show bfd neighbors

BFD

-

show bfd neighbors

| | OurAddr |
|-----|---------|
| LSP | IP |
| | BFD |

“ — ”

show bfd neighbors

Ruijie# show bfd neighbors

| OurAddr | NeighAddr | LD/RD | RH/RS | Holdown(mult) | State | Int |
|-------------|-------------|-------|-------|---------------|-------|-------|
| 172.16.11.1 | 172.16.11.2 | 1/2 | Up | 532 (3) | Up | Ge2/1 |

show bfd neighbors details

Ruijie# show bfd neighbors details

| OurAddr | NeighAddr | LD/RD | RH/RS | Holdown(mult) | State | Int |
|-------------|-------------|-------|-------|---------------|-------|-------|
| 172.16.11.1 | 172.16.11.2 | 1/2 | Up | 532 (3) | Up | Ge2/1 |

Local Diag: 0, Demand mode: 0, Poll bit: 0

MinTxInt: 200000, MinRxInt: 200000, Multiplier: 5

Received MinRxInt: 50000, Received Multiplier: 3

Holdown (hits): 600(22), Hello (hits): 200(84453)

Rx Count: 49824, Rx Interval (ms) min/max/avg: 208/440/332

Tx Count: 84488, Tx Interval (ms) min/max/avg: 152/248/196 Registered protocols: BGP

Uptime: 02:18:49

Last packet: Version: 1 - Diagnostic: 0

I Hear You bit: 1 - Demand bit: 0

Poll bit: 0 - Final bit: 0

Multiplier: 3 - Length: 24

My Discr.: 2 - Your Discr.: 1

Min tx interval: 50000 - Min rx interval: 50000

Min Echo interval: 0

| OurAddr | IP |
|---------------|-------|
| NeighAddr | IP |
| LD/RD | |
| RH/RS | |
| Holdown(mult) | hello |
| State | |
| Int | |
| Local Diag | |
| Demand mode | |

| | |
|------------------------------|-------|
| Multiplier | |
| Received MinRxInt | |
| Received Multiplier | |
| Holddown (hits) | |
| Hello (hits) | hello |
| Rx Count | BFD |
| Rx Interval (ms) min/max/avg | |
| Tx Count | BFD |
| Tx Interval (ms) min/max/avg | |
| Registered protocols | |
| Uptime | UP |
| Last packet | BFD |

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

```
Ruijie(config-if)#vrrp 1 ip 192.168.201.1
Ruijie(config-if)#vrrp 1 bfd 192.168.201.12
Ruijie(config-if)#end
```

| | |
|------------|-----|
| | |
| bfd | BFD |

-

ip rns

dns

www.ruijie.com.cn

ip

22.41

16Q0

ip rns

icmp echo

ip

ip

ip rns icmp echo ip 10.1.1.1

Ruijie(config-ip-rns)# icmp-echo 10.1.1.1

-

| | |
|---------------------|-------------|
| <i>ip-address</i> | IP |
| <i>track-number</i> | TRACK 1 700 |

-

route-map

track

track

-

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

-

9.7 show ip rns configuration

RNS

show ip rns configuration [*operation-number*]

| | |
|-------------------------|--------------|
| | |
| <i>operation-number</i> | ip rns 1 700 |

-

RNS

-

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

-

9.8 show ip rns statistics

RNS

show ip rns statistics [*operation-number*]

| <i>operation-number</i> | ip rns 1 700 |
|-------------------------|--------------|

-

RNS

-

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

-

9.9 show track

TRACK

show track [*track-number*]

| <i>track-number</i> | TRACK 1 700 |
|---------------------|-------------|

-

TRACK

-

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

-

9.10 timeout

timeout *millisecond*

|--|--|

| | |
|---------------------|--|
| <i>milliseconds</i> | |
|---------------------|--|

icmp echo 5 dns 9

icmp ehco dns

9.12 track rns

track

rns

track

no



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



10 IP Event Dampening

10.1 dampening

ip event dampening **no** ip
event dampening
dampening [*half-life-period* [*reuse-threshold* *suppress-threshold*

| | |
|----------------------------------|--|
| | |
| clear counters | |
| show dampening interface | |
| show interfaces dampening | |

-

10.2 show dampening interface

dampening

show dampening interface

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

-

-

dampening

```
Ruijie# show dampening interface
3 interfaces are configured with dampening.
No interface is being suppressed.
```

| | |
|----------------------------------|--|
| | |
| dampening | |
| clear counters | |
| show interfaces dampening | |

-

10.3 show interfaces dampening

dampening

show interfaces [*interface-id*] dampening

| | |
|---------------------|---------------------|
| | |
| <i>interface-id</i> | gigabitEthernet 0/1 |

interface-id dampening

dampening

```
Ruijie# show interfaces dampening
Ethernet1/0
Flaps  Penalty  Supp  ReuseTm  HalfL  ReuseV  SuppV  MaxSTm  MaxP  Restart
0      0          FALSE 0         5      1000    2000   20      16000  0
```

| Flaps | |
|---------|-----|
| Penalty | |
| Supp | |
| ReuseTm | (s) |
| HalfL | (s) |
| ReuseV | |
| SuppV | |
| MaxSTm | |
| MaxP | |
| Restart | |

| dampening | |
|--------------------------|--|
| clear counters | |
| show dampening interface | |

-

11 GRTD

11.1 diagnostic bootup level

bootup ()
diagnostic bootup level { bypass | minimal | complete }

| bypass | bootup |
|----------|--------|
| minimal | bootup |
| complete | bootup |

minimal bootup

bootup

minimal

1 bootup bootup
ruijie(config)# diagnostic bootup level complete

2 bootup
ruijie(config)# no diagnostic bootup level

| show diagnostic bootup level | bootup |
|------------------------------|--------|

-

11.2 diagnostic event-log size

diagnostic event-log size *size-value*
no diagnostic event-log size

| <i>size-value</i> | 1 1000 |
|-------------------|--------|

500

1 1000

```
ruijie(config)# diagnostic event-log size 1000
```

2

```
ruijie(config)# no diagnostic event-log size
```

| | |
|------------------------|--|
| | |
| show diagnostic events | |

-

11.3 diagnostic loopback-test

ID

diagnostic loopback-test [**slot** *slot_id* [**sub_sysytem** *subsys_id*]] **port** { **all** | **range** *potr_range* | *port_id* } **loopback** { **mac** | **phy** | **none** }

| | |
|-------------------------------------|----------------------------|
| | |
| <i>range_value</i> | 1/1-24 1 ID |
| slot <i>slot_id</i> | |
| sub_sysytem <i>subsys_id</i> | 0-1 show version
cpu id |
| mac | mac |
| phy | phy |
| none | |

-

diagnostic loopback-test

VSU **slot** *slot_id* [**sub_sysytem** *subsys_id*]

1 VSU 1 1 10
ID 5

```
ruijie# diagnostic loopback-test slot 1 port range 1-10 loopback no  
ruijie# diagnostic start slot 1 test 5
```

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

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

-

11.4 diagnostic monitor active

no

diagnostic monitor active [slot *slot_id* [**sub_sysytem** *subsys_id*]] **test** { **all** | *test-id* | **range** *test-range* }

no diagnostic monitor active [slot *slot_id* [**sub_sysytem** *subsys_id*]] **test** { **all** | *test-id* | **range** *test-range* }

| | |
|--|-----------------------------------|
| | |
| slot <i>slot_id</i> | |
| sub_sysytem <i>subsys_id</i> | 0-1 show version
cpu id |
| test { all <i>test-id</i> range <i>test-range</i> } | all m
n |

-

show diagnostic content

VSU **slot** *slot_id* [**sub_sysytem** *subsys_id*]

1 VSU 2 1 4

```
ruijie(config)# diagnostic monitor active slot 2 test range 1-4
The test:1 can not be used as health monitoring test
```

2

```
ruijie(config)# no diagnostic monitor active test all
```

| | |
|--------------------------------|--|
| | |
| show diagnostic content | |

-

11.5 diagnostic monitor interval

diagnostic monitor interval [slot *slot_id* [**sub_sysytem** *subsys_id*]] **test** { **all** | *test-id* | **range**

test-range } *hh:mm:ss* **day** *day_count*

no diagnostic monitor interval [**slot** *slot_id*

-

1

```
ruijie(config)# diagnostic monitor syslog
```

2

```
ruijie(config)# no diagnostic monitor syslog
```

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

-

11.7 diagnostic monitor threshold

diagnostic monitor threshold [slot *slot_id* [sub_sysytem *subsys_id*]] test { all | *test-id* | range *test-range* } failure-count *count-value*

no diagnostic monitor threshold [slot *slot_id* [sub_sysytem *subsys_id*]] test { all | *test-id* | range *test-range* }

| | |
|---|----------------------------|
| | |
| slot <i>slot_id</i> | |
| sub_sysytem <i>subsys_id</i> | 0-1 show version
cpu id |
| test { all <i>test-id</i> range <i>test-range</i> } | all m
n |
| failure-count <i>count-value</i> | 1 99 |

10

diagnostic monitor threshold

10

10

show diagnostic content

VSU

slot *slot_id* [sub_sysytem *subsys_id*]

1 VSU

2

50

```
ruijie(config)# diagnostic monitor threshold slot 2 test all failure-count 50
```

```
ruijie(config)#
The test:1 can not be used as health monitoring test
The test:5 can not be used as health monitoring test
```

2

```
ruijie(config)# no diagnostic monitor threshold test all
```

| | |
|-------------------------|--|
| | |
| show diagnostic content | |

-

11.8 diagnostic packet

```
diagnostic packet [ slot slot_id [ sub_sysytem subsys_id ] ] [ length lengtn_size ] [ num num_count ]
[ time_out tick_count ]
```

| | |
|-----------------------|-------------------------------------|
| | |
| slot slot_id | |
| sub_sysytem subsys_id | 0-1
show version cpu id |
| length | |

11.9 diagnostic schedule

```
diagnostic schedule [ slot slot_id [ sub_sysytem subsys_id ] ] test { all | test-id | range test-range }  
{ daily hh:mm | on year month day_of_month hh:mm | weekly day_of_week hh:mm }  
no diagnostic schedule [ slot slot_id [
```


11.10 diagnostic start

diagnostic start [slot *slot_id* [sub_sysytem *subsys_id*]] test { all | *test-id* | range *test-range* }

| slot <i>slot_id</i> | |
|---|----------------------------|
| sub_sysytem <i>subsys_id</i> | 0-1 show version
cpu id |
| test {all <i>test-id</i> range
<i>test-range</i> } | all m
n |

-

VSU **slot** *slot_id* [**sub_ssys**tem *subsys_id*]

1 VSU 5

```
ruijie# diagnostic stop slot 5
```

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

-

11.12 show diagnostic bootup

bootup

show diagnostic bootup level

| level | bootup |
|--------------|--------|

-

-

```
ruijie# show diagnostic bootup level
Current bootup diagnostic level: Complete
```

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

-

11.13 show diagnostic content

show diagnostic content [**slot** *slot_id* [**sub_ssys**tem *subsys_id*]]

| sub_ssys tem <i>subsys_id</i> | 0-1 show version |
|--------------------------------------|-------------------------|
| slot <i>slot_id</i> | cpu id |

-

show moduleVSU **slot slot_id [sub_system subsys_id]**

1 VSU 1

Ruijie# show diagnostic content slot 1/0

*Diagnostic test suite attributes:

M/C*/-Minimal bootup level test / Complete bootup level test / NA

P/V*/-Per port test / Per device test / NA

D/N*/-Disruptive test / Non-disruptive test / NA

X*/-Not a health monitoring test / NA

F*/-Fixed monitoring interval test / NA

E*/-Always enabled monitoring test / NA

A/I*/-Monitoring in active / Monitoring in inactive / NA

Y/O*/-Key test / Non-key test / NA

B*/-Basic ondemand test / NA

R*/-Power-down line cards and need reload mainbord / NA

K*/-Require resetting the line card after the test completed / NA

| ID | Test Name | Attributes | test interval
day hh:mm:ss | Thre-
shold |
|----|------------------------|--------------|-------------------------------|----------------|
| 1) | PortLoopbackTest-----> | MPDX***** | not config | N/A |
| 2) | MacSelfTest-----> | C*DX***** | not config | N/A |
| 3) | TestCpld-----> | C*DX***** | not config | N/A |
| 4) | TestNandFlash-----> | **DX***** | not config | N/A |
| 5) | TestNorFlash-----> | **DX***** | not config | N/A |
| 6) | TestI2C-----> | C*DX***** | not config | N/A |
| 7) | TestPCI-----> | C*DX***** | not config | N/A |
| 8) | TestDdr-----> | **DX*****B** | not config | N/A |

Ruijie#

| ID | id |
|---------------|----|
| Test Name | |
| Attributes | |
| test interval | |
| threshold | |

| | |
|------------------------------|--|
| diagnostic monitor interval | |
| diagnostic monitor threshold | |

This test verifies the i2c bus work exactly or not.

TestPCI :

This test verifies the pci bus work exactly or not.

TestDdr :

This test verifies the ddr work exactly or not.

But some ddr failure is difficult to diagnose only through write and read.

On this condition, you must try some other methods, such as high temperature test...

Ruijie#

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

-

11.15 show diagnostic events

GRTD

show

| | |
|---------------------------|--|
| | |
| diagnostic event-log size | |

-

11.16 show diagnostic result

show diagnostic result [**slot** *slot_id* [**sub_sysytem** *subsys_id*]] [**test** { **all** | *test-id* | **range** *test-range* }]

| | |
|--|-----------------------------------|
| | |
| slot <i>slot_id</i> | |
| sub_sysytem <i>subsys_id</i> | 0-1 show version
cpu id |
| test { all <i>test-id</i> range <i>test-range</i> } | |

-

VSU **slot** *slot_id* [**sub_sysytem** *subsys_id*]

```
Ruijie#sho dia result slot 3/0 t a
Current bootup diagnostic level: minimal
Overall Diagnostic Result for Module: PASS
Test result: (P = Pass, F = Fail, U = Untested)
1) PortLoopbackTest(loop mode: Mac):
  slot 0 port  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
               P  P  P  P  P  P  P  P  P  P  P  P  P  P  P  P  P  P  P  P  P  P  P  P
               26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
               P  P  P  P  P  P  P  P  P  P  P  P  P  P  P  P  P  P  P  U  P  U  U
2) MacSelfTest-----> U
3) TestCpld-----> U
4) TestNandFlash-----> U
5) TestNorFlash-----> U
6) TestI2C-----> U
7) TestPCI-----> U
8) TestDdr-----> U
Ruijie#
```

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

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

-

11.17 show diagnostic schedule

show diagnostic schedule [**slot** *slot_id* [**sub_sysytem** *subsys_id*]]

| slot <i>slot_id</i> | |
|-------------------------------------|-----------------------------------|
| sub_sysytem <i>subsys_id</i> | 0-1 show version
cpu id |

-

VSU **slot** *slot_id* [**sub_sysytem** *subsys_id*]

```
Ruijie#sho diagnostic schedule slot 1/0
Schedule #1:
  To be run on daily 12:00
  Test ID(s) to be executed : 1 2 3 4 5 6 7 8
à      :
  To be run on June 15 2012 19:00
  Test ID(s) to be executed : 1
Ruijie#
```

| diagnostic sche] | |
|-------------------------|--|

-

11.18 show diagnostic status

show diagnostic status

| status | |
|---------------|--|

-

-

```
Ruijie#sho dia status
```

```
(BU)-Bootup Diagnostics, (HM)-Health Monitoring Diagnostics,
```

```
(OD)-OnDemand Diagnostics, (SCH)-Scheduled Diagnostics
```

```
=====  
Dev Slot Description          Current Running Test    Run by  
----  
1   0   S5750-48GT/4SFP-S      N/A                    N/A  
3   0   S5750-48GT/4SFP-S      N/A                    N/A  
=====
```

```
Ruijie#
```

| Dev | |
|-------------|---|
| Slot | 0 |
| Description | |

12 SEM

12.1 action cli

SEM

no

action *label* **cli** **command** *cli-string* [**pattern** *pattern-string*]

no action *label*

| | |
|--------------------------------------|--|
| | |
| <i>label</i> | |
| command <i>cli-string</i> | |
| pattern <i>pattern-string</i> | |

SEM

enable

action cli

enable

pattern-string

“ ”

policy record

smart manager policy record clean

policy record

smart manager run

none event

clear_cache

arp

ip

```
Ruijie(config)#smart manager applet clear_cache
Ruijie(config-applet)#event tag monitor_cmd none
Ruijie(config-applet)#action 00 cli command "enable"
Ruijie(config-applet)#action 10 cli command "clear arp-cache"
Ruijie(config-applet)#action 20 cli command "clear ip route *"
Ruijie(config-applet)#commit
Ruijie(config-applet)#exit
```

| | |
|------------------------------------|---------|
| | |
| smart manager applet | SEM |
| policy record | CLI |
| smart manager policy record | SEM CLI |

-

12.2 action counter

SEM

SEM

no

action *label* **counter** **name** *counter-name* **value** *counter-value* **op** { **dec** | **inc** | **nop** | **set** }

no action *label*

| <i>label</i> | |
|---|--|
| name <i>counter-name</i> | |
| value <i>counter-value</i> | |
| op { dec inc nop set } | |

SEM

name *counter-name*

“ login faile ”

Authenticate_Faile 1

```
Ruijie(config)#smart manager applet Test_1
Ruijie(config-applet)#event tag monitor_log syslog pattern "login faile"
Ruijie(config-applet)#action 00 counter name Authenticate_Faile op inc value 1
Ruijie(config-applet)#commit
Ruijie(config-applet)#exit
```

| smart manager applet | SEM |
|-----------------------------|-----|

-

12.3 action exit

SEM

no

action *label* **exit** [*result*]

no action *label*

| <i>label</i> | |
|---------------|--------|
| <i>result</i> | Exit 1 |

1

11



| | |
|----------------------|-----|
| | |
| smart manager applet | SEM |

-

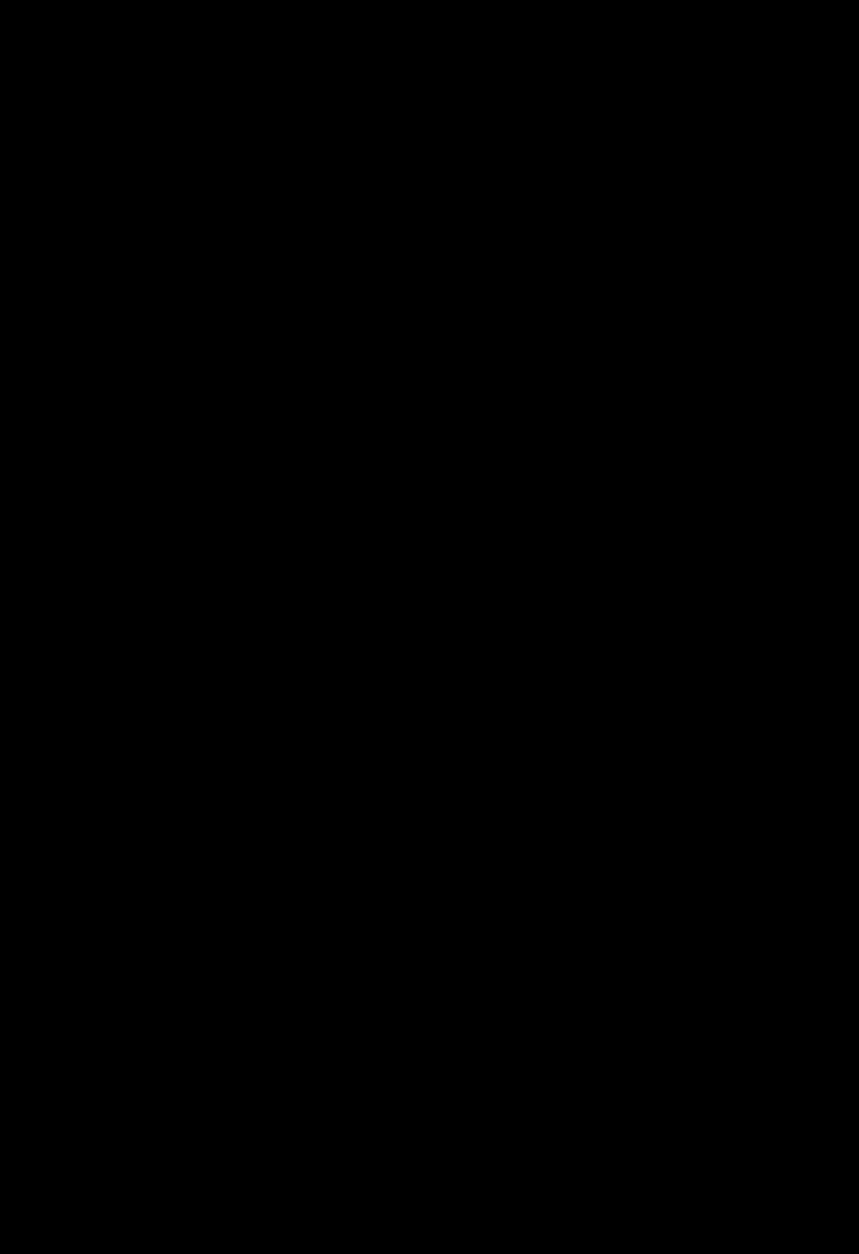
12.6 action set

SEM

no

action label set variable-name variable-value
no action label

| | |
|----------------|--|
| | |
| label | |
| variable-name | |
| variable-value | |



| | |
|--------------|--|
| | |
| <i>label</i> | |

SEM

VSU

“ memory fail ”

```
Ruijie(config)#smart manager applet Test_1
Ruijie(config-applet)#event tag monitor_log syslog pattern "memory fail"
Ruijie(config-applet)#action 00 switchover
Ruijie(config-applet)#commit
Ruijie(config-applet)#exit
```

| | |
|-----------------------------|-----|
| | |
| smart manager applet | SEM |

-

12.8 action syslog

SEM

no

```
Ruijie(config-applet)#event tag monitor_cpu sysmon cpu scope system entry-op gt entry-val 95
Ruijie(config-applet)#action 00 syslog msg "system busy !"
Ruijie(config-applet)#commit
Ruijie(config-applet)#exit
```

| | | | |
|--------|---|----|--------|
| ✓ | 4 | 32 | Action |
| syslog | | | |

| | |
|----------------------|-----|
| | |
| smart manager applet | SEM |

-

12.9 action wait

SEM no
action label wait wait-seconds
3

12.10 commit

SEM
commit

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

SEM

-

```
Ruijie(config)#smart manager applet Test_1
Ruijie(config-applet)#event tag none-event none
Ruijie(config-applet)#action 00 set var_for_test "Test_1 running"
Ruijie(config-applet)#commit
Ruijie(config-applet)#exit
```

| | |
|----------|--|
| | |
| rollback | |

-

12.11 description

SEM SEM no SEM
description string
no description

| | |
|--------|-----|
| | |
| string | SEM |

SEM

SEM

1 SEM “ Description_For_SEM_Applet ”

| | Ruijie(config-applet)#description | Description_For_SEM_Applet |
|--|-----------------------------------|----------------------------|
|--|-----------------------------------|----------------------------|

| | |
|---|-----|
| 2 | SEM |
|---|-----|

| | |
|-----------|--|
| _cli_mode | |
|-----------|--|

1 show ip route

```
Ruijie(config)#smart manager applet Test_1
```

```
Ruijie(config-applet)#event tag monitor_input cli pattern "show ip route" sync no skip no
```

```
Ruijie(config-applet)#action "00 syslog msg "show ip route running"
```

```
Ruijie(config)#applet manager 10 exit
```

```
Ruijie(config-applet)#event tag monitor_input cli p
```

```
fbs] m l M D φ E A
```

| | |
|-----------------------------------|----------------------------------|
| exit-op <i>operator</i> | eq
ge
gt
le
lt
ne |
| exit-val <i>exit-value</i> | |

SEM

event counter SEM action counter

entry-op **entry-val**

exit-op **exit-val**

exit-op **exit-val**

entry-op **entry-val**

event

| | |
|----------------|--|
| | |
| _counter_name | |
| _counter_value | |

Test_Counter Test_Counter 10

Test_Counter 0 Test_Counter 5

```
Ruijie(config)#smart manager applet Test_1
Ruijie(config-applet)#event tag monitor_counter counter name Test_Counter entry-op ge
entry-val 10 exit-op gt exit-val 5
Ruijie(config-applet)#action 10 counter name Test_Counter op set value 0
Ruijie(config-applet)#commit
Ruijie(config-applet)#exit
```

| | |
|-----------------------------|-----|
| | |
| smart manager applet | SEM |
| action counter | |

-

12.15 event cpp

SEM CPP no

event tag *event-name* [**correlate** { **andnot** | **and** | **or** }] **cpp parameter** { *counter-name* | **any** } **type**
{ **pps** | **total** | **drop** } **op operator** **value** *value* [**slot** { *slotid* | **mboard** }] **poll-interval** *poll-int-value*

no event tag *event-name*

| | |
|---|----------------------------------|
| <i>event-name</i> | |
| correlate { andnot and or } | and
or andnot |
| parameter { <i>counter-name</i> any } | |
| type { pps total drop } | |
| op <i>operator</i> | eq
ge
gt
le
lt
ne |
| value <i>value</i> | |
| slot { <i>slotid</i> mboard } | mboard |
| poll-interval <i>poll-int-value</i> | |

SEM

VSU **slot** { *slotid* | **mboard** }

event

| | |
|----------------|--|
| | |
| _cpp_slot | |
| _cpp_parameter | |
| _cpp_type | |
| _cpp_value | |

```

Ruijie(config)#smart manager applet Test_1
Ruijie(config-applet)# event tag event_1 cpp parameter any type drop op ge value 1000
poll-interval 15
Ruijie(config-applet)# action action_1 cli command "enable"
Ruijie(config-applet)# action action_2 cli command "configure terminal"
Ruijie(config-applet)# action action_3 cli command "cpu-protect type $_type pri 0"
Ruijie(config-applet)#commit
Ruijie(config-applet)#exit

```

| | |
|-----------------------------|-----|
| | |
| smart manager applet | SEM |

-

12.16 event grtd

```

SEM                                GRTD                                no
event tag event-name [ correlate { andnot | and | or } ] grtd slot { slot-num | all | master | slave }
[ testing-type { bootup | ondemand | schedule | monitoring } ] [ test-name test-name ] [ test-id
test-id ] [ severity-major ] [ severity-minor ] [ severity-normal ]
no event tag event-name

```

| <i>event-name</i> | |
|--|---|
| correlate { andnot and or } | and or andnot |
| slot { <i>slot-num</i> all mboard slave } | |
| testing-type { bootup ondemand schedule monitoring } | bootup
ondemand
schedule
monitoring |
| test-name <i>test-name</i> | |
| test-id <i>test-id</i> | ID |
| severity-major
severity-minor
severity-normal | severity-major
severity-normal
severity-minor |

SEM

```

VSU                                slot { slot-num | all | master | slave }
event

```

| _grtd_test_slot | |
|---------------------|----|
| _grtd_test_type | |
| _grtd_test_name | |
| _grtd_test_id | ID |
| _grtd_test_severity | |

```

Ruijie(config)#smart manager applet Test_1
Ruijie(config-applet)#event tag monitor_grtd grtd slot all severity-major severity-normal
Ruijie(config-applet)#action 00 syslog msg "grtd detect some failure"
Ruijie(config-applet)#commit

```


| | | |
|--|-------------|----------------|
| exit-type { value increment rate } | | |
| exit-time <i>exit-time-value</i> | | |
| average-factor <i>average-factor-value</i> | rate | poll-int-value |

§

t

| | |
|-------------------------|--|
| _interface_is_increment | |
| _interface_name | |
| _interface_parameter | |
| _interface_value | |

5 GigabitEthernet3/0 interface_resets

```
Ruijie(config)#smart manager applet Test_1
Ruijie(config)#event tag monitor_interface interface name GigabitEthernet3/0 parameter
interface_resets entry-op ge entry-val 1 entry-type increment exit-op eq exit-val 1 exit-type
increment poll-interval 5
Ruijie(config-applet)#action 00 syslog msg "$_interface_name reseted"
Ruijie(config-applet)#commit
Ruijie(config-applet)#exit
```

| | |
|----------------------|-----|
| | |
| smart manager applet | SEM |
| show interfaces | |

-

12.18 event none

SEM

smart manager run

no

event tag *event-name* [**correlate** { **andnot** | **and** | **or** }] **none** [**sync** { **yes** [**default** *wait-time*] | **no** }]
no event tag *event-name*

| | |
|---|------------------|
| | |
| <i>event-name</i> | |
| correlate { andnot and or } | and
or andnot |
| sync { yes no } | |
| default <i>wait-time</i> | 30 |

SEM

smart manager run

event

| _policy_name | |
|--------------|---|
| _none_argc | |
| _none_arg1 | 1 |
| _none_arg2 | 2 |
| _none_arg3 | 3 |
| _none_arg4 | 4 |
| _none_arg5 | 5 |

none event Test_1

```
Ruijie(config)#smart manager applet Test_1
Ruijie(config-applet)#event tag monitor_cmd none
Ruijie(config-applet)#action 00 syslog msg "none event triggered with $_none_argc argc"
Ruijie(config-applet)#commit
Ruijie(config-applet)#exit
```

| smart manager applet | SEM |
|----------------------|------------|
| smart manager run | none event |

-

12.19 event oir

SEM

no

event tag *event-name* [**correlate** { **andnot** | **and** |

| | | |
|------------|--------|--------|
| _oir_event | plugin | remove |
| _oir_slot | | |

1

```
Ruijie(config)#smart manager applet Test_1
Ruijie(config-applet)#event tag monitor_oir oir
Ruijie(config-applet)#action 00 syslog msg "plugin or remove $_oir_event $_oir_slot"
Ruijie(config-applet)#commit
Ruijie(config-applet)#exit
```

2

1

1

```
Ruijie(config)#smart manager applet Test_1
Ruijie(config-applet)#event monitor_oir oir type remove slot 1
Ruijie(config-applet)#action 00 syslog msg "Slot $_oir_slot hot removed"
Ruijie(config-applet)#commit
Ruijie(config-applet)#exit
```

| | |
|----------------------|-----|
| | |
| smart manager applet | SEM |

-

12.20 event snmp

SEM

snmp

no

event tag *event-name* [**correlate** { **andnot** | **and** | **or** }] **snmp oid** *oid-value* **get-type** { **exact** | **next** }
entry-op *operator* **entry-val** *entry-value* **entry-type** { **value** | **increment** | **rate** } **poll-interval**
poll-int-value [**exit-op** *operator* **exit-val** *exit-value* **exit-type** { **value** | **increment** | **rate** }] [**exit-comb**
{ **or** | **and** } **exit-time** *exit-time-value*]] [**average-factor** *average-factor-value*]
no event tag *event-name*

| | |
|-------------------|--|
| | |
| <i>event-name</i> | |

correlate { andnot | and | or }

1

“

Ú J Ô Ě

| | |
|---|----------------------------------|
| | ne |
| entry-val <i>entry-value</i> | |
| entry-type { value increment rate } | |
| exit-comb { or and } | exit-op exit-time |
| exit-op <i>operator</i> | eq
ge
gt
le
lt
ne |
| exit-val <i>exit-value</i> | |
| exit-type { value increment rate } | |
| exit-time <i>exit-time-value</i> | Policy |
| average-factor <i>W_{avg}</i> | |

```

SEM                                snmp trap                                no
event tag event-name [ correlate { andnot | and | or } ] snmp-notification oid oid-string oid-val
comparison-value op operator [ skip { yes | no } ]
no event tag event-name

```

| | |
|---------------------|----------|
| | |
| _snmp_notif_oid | Trap OID |
| _snmp_notif_oid_val | Trap OID |

```
Ruijie(config)#smart manager applet Test_1
Ruijie(config-applet)#event tag monitor_trap snmp-notification oid 1.3.6.1.2.1.52.2.1 op gt
oid-val 1000
Ruijie(config-applet)#action 00 syslog msg "have trap $_snmp_notif_oid value
$_snmp_notif_oid_val"
Ruijie(config-applet)#action 10 exit 1
Ruijie(config-applet)#commit
Ruijie(config-applet)#exit
```

12.22 event snmp-object

SEM

snmp snmp

12.23 event syslog

SEM log no

event tag *event-name* [**correlate** { **andnot** | **and** | **or** }] **syslog pattern** *regular-expression* [**priority** *priority-level*] [**occurs** *num-occurrences*] [**period** *period-value*] [**skip** { **yes** | **no** }]

no event tag *event-name*

| <i>event-name</i> | |
|---|---|
| correlate { andnot and or } | and
or andnot |
| pattern <i>regular-expression</i> | |
| priority <i>priority-level</i> | |
| occurs <i>num-occurrences</i> | |
| period <i>period-value</i> | occurs <i>period-value</i> occurs |
| skip { yes no } | Syslog yes
no |

SEM

SEM

SEM

SEM

Action Syslog

Syslog
pattern

event

| _syslog_msg | Syslog |
|------------------|--------|
| _syslog_priority | Syslog |

“ memory fail ”

```
Ruijie(config)#smart manager applet Test_1
Ruijie(config-applet)#event tag monitor_log syslog pattern "memory fail"
Ruijie(config-applet)#action 00 switchover
Ruijie(config-applet)#commit
Ruijie(config-applet)#exit
```


12.24 event sysmon

SEM

no

```

event tag event-name [ correlate { andnot | and | or } ] sysmon type { cpu { system | task
task-name } | memory { system-use | system-free | task task-name } { percent | absolute } }
entry-op operator entry-val entry-value poll-interval poll-int-value [ exit-op operator exit-val
exit-value ] [ slot { slot-num | slave [ subsystem subsystem-id ] } ]
no event tag event-name

```

| <i>event-name</i> | |
|---|---|
| correlate { andnot and or } | and “ ” or “ ” andnot “ ” |
| cpu { system task task-name } | cpu cpu |
| memory { system-use
system-free task task-name } | |
| entry-op <i>operator</i> | eq
ge
gt
le
lt
ne |
| entry-val <i>entry-value</i> | |
| poll-interval <i>poll-int-value</i> | 5 |
| exit-op <i>operator</i> | eq
ge
gt
le
lt
ne |
| exit-val <i>exit-value</i> | |
| slot { <i>slot-num</i> slave } | slave |
| subsystem <i>subsystem-id</i> | CPU |

SEM

event system

```

cpu                    type cpu scope system
cpu                    type cpu scope task task-name

```

type memory scope system-use percent
type memory scope system-use absolute
type memory scope system-free percent
type memory scope system-free absolute
type memory scope task task-name percent
type memory scope task task-name absolute
exit-op exit-val
exit-op exit-val
entry-op entry-val
VSU slot { slot-num | slave [subsystem subsystem-id] }
event

| | |
|--------------|--|
| | |
| _sysmon_type | |
| _sysmon_task | |

| <i>event-name</i> | |
|---|------------------|
| correlate { andnot and or } | and
or andnot |
| absolute unix <i>time-value</i> | Unix |
| absolute date <i>date-value</i> | Date |
| countdown time <i>time-value</i> | |
| cron cron-entry <i>cron-entry</i> | Cron |
| watchdog time <i>time-value</i> | |
| name <i>timer-name</i> | |

Event

SEM

1

2

3 cron

4

“ ” Date time Unix
event

| _timer_type | |
|---------------|------|
| _timer_time | |
| _timer_remain | cron |

1 Unix 1257831095

```
Ruijie(config)#smart manager applet Test_1
Ruijie(config-applet)#event tag monitor_timer timer absolute time 1257831095
Ruijie(config-applet)#action 00 reload
Ruijie(config-applet)#commit
Ruijie(config-applet)#exit
```

2 3600 “ 3600 second arrival ”

```
Ruijie(config)#smart manager applet Test_2
Ruijie(config-applet)#event tag monitor_timer timer countdown time 3600
Ruijie(config-applet)#action 00 syslog msg "3600 second arrival"
Ruijie(config-applet)#commit
Ruijie(config-applet)#exit
```

3 7200 arp

```
Ruijie(config)#smart manager applet Test_3
Ruijie(config-applet)#event tag monitor_timer timer watchdog time 7200
```

```
Ruijie(config-applet)#action 00 cli command "enable"
Ruijie(config-applet)#action 10 cli command "clear arp-cache"
Ruijie(config-applet)#commit
Ruijie(config-applet)#exit
```

4 0

```
Ruijie(config)#smart manager applet Test_4
Ruijie(config-applet)#event tag monitor_timer timer cron cron-entry "0 0 * * *"
Ruijie(config-applet)#action 00 cli command "enable"
Ruijie(config-applet)#action 10 cli command "clear ip route *"
Ruijie(config-applet)#commit
Ruijie(config-applet)#exit
```

| smart manager applet | SEM |
|----------------------|-----|

-

12.26 list-config

SEM

list-config

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

SEM

-

-

| commit | |
|----------|--|
| rollback | |

-

12.27 policy record

SEM

CLI

CLI

policy record [**per-instance** *record-size-per-policy*] [**per-policy** *record-size-per-policy*]
no policy record

| per-instance
<i>record-size-per-policy</i> | CLI | K | 50 |
|--|-----|---|------|
| per-policy
<i>record-size-per-policy</i> | CLI | K | 1000 |

CLI

SEM

```

SEM          CLI          policy record          CLI
CLI
"/sem_record/policy_name/yyyy-mm-dd_hh-mm-ss_mspolicytriggerid.txt "    "/sem_record/ "
CLI          " policy_name "
"/sem_record/ "
" yyyy-mm-dd_hh-mm-ss_mspolicytriggerid.txt "
```

more

```

CLI          per-instance record-size-per-policy

CLI          per-policy record-size-per-policy
per-policy record-size-per-policy

smart manager policy record clean          CLI
```

```

Ruijie(config)#smart manager applet Test_1
Ruijie(config-applet)#event tag none-event none
Ruijie(config-applet)#action 00 cli command "enable"
Ruijie(config-applet)#action 10 cli command "show arp"
Ruijie(config-applet)#policy record
Ruijie(config-applet)#commit
Ruijie(config-applet)#exit
Ruijie(config)# exit
Ruijie# more /sem_record/Test_1/2010-01-01_01-00-00_1001.txt
SEM CLI RECORD FILE
SEM policy name: Test_1
SEM policy trigger id :1
SEM policy cli record time : Fri Jan 01 01:00:00 2010
=====
Ruijie#enable
Ruijie#show arp
```

```

Protocol  Address      Age(min)  Hardware      Type  Interface
Internet  6.6.6.6       21        0027.1994.e59b  arpa  VLAN 1
Internet  6.6.6.1       --        00d0.f822.33b3  arpa  VLAN 1
Total number of ARP entries: 2
Ruijie#

```

| | |
|------------------------------------|---------|
| | |
| action cli | |
| smart manager policy record | SEM CLI |

-

12.28 rollback

```

SEM
rollback

```

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

SEM

-

```

Ruijie(config)#smart manager applet Test_1
Ruijie(config-applet)#event tag none-event none
Ruijie(config-applet)#action 00 set var_for_test "Test_1 running"
Ruijie(config-applet)#rollback
Ruijie(config-applet)#exit

```

| | |
|---------------|--|
| | |
| commit | |

-

12.29 show smart manager detector

```

show smart manager detector [ all | detector-name ] [ detailed | statistics ]

```

| | |
|-----------------------------------|--|
| | |
| all <i>detector-name</i> | |
| detailed | |
| statistics | |

-

-

1 show smart manager detector all

```
Ruijie# show smart manager detector all
```

| No. | Name | Version |
|-----|-------------------|---------|
| 1 | application | 01.00 |
| 2 | syslog | 01.00 |
| 3 | cli | 01.00 |
| 4 | counter | 01.00 |
| 5 | interface | 01.00 |
| 6 | sysmon | 01.00 |
| 7 | none | 01.00 |
| 8 | oir | 01.00 |
| 9 | snmp | 01.00 |
| 10 | snmp-notification | 01.00 |
| 11 | timer | 01.00 |
| 12 | snmp-object | 01.00 |

2 show smart manager detector cli

```
Ruijie# show smart manager detector cli
```

| No. | Name | Version |
|-----|------|---------|
| 1 | cli | 01.00 |

3 show smart manager detector cli detailed

```
Ruijie# show smart manager detector cli detailed
```

| No. | Name | Version |
|-----|------|---------|
| 1 | cli | 01.00 |

Applet Configuration Syntax for cli detector :

```
event tag <event-name> [correlate {and | or | andnot}] cli pattern
<regular-expression> sync {yes [default <wait-time>] | no skip {yes | no}} [mode <mode val>]
[occurs <num-occurrences>] [period <period-value>]
```

```
no event tag <event-name>
```

Applet Built-in Environment Variables:

```
_event_id
```

```
_event_type  
_event_type_string  
_event_pub_time  
_event_pub_sec  
_event_pub_msec  
_cli_msg  
_cli_msg_count  
_cli_mode
```

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

-

12.30 show smart manager environment

show smart manager environment [**all** | *variable-name*]

| all | |
|-----|--|

value_a

4 **show smart manager environment** *var_none*

Ruijie# show smart manager environment var_none

No such environment variable defined.

| smart manager environment | - |
|---------------------------|---|

-

12.31 show smart manager history events

SEM event

show smart manager history events [**detailed**] [**maximum** *number*]

| detailed | |
|------------------------------|--|
| maximum <i>number</i> | |

-

-

1 **show smart manager history events**

```

3    925      timer           Thu Oct 21 13:59:52 2010  Test_1
    Class default Policy Type  applet
4    924      timer           Thu Oct 21 13:59:51 2010  Test_1
    Class default Policy Type  applet
5    923      timer           Thu Oct 21 13:59:50 2010  Test_1
    Class default Policy Type  applet

```

| smart manager history | - |
|-----------------------|---|

-

12.32 show smart manager policy all

show smart manager policy all

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

-

show smart manager policy all

, State

Policy Name

```

Ruijie#show smart manager policy all
No.  Status      Policy Name
1    commit      Test_1
2    not commit   Test_2

```

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

-

12.33 show smart manager policy active

show smart manager policy active [class *class-options*] [detailed]

| | |
|-----------------------------------|--|
| | |
| class <i>class-options</i> | |
| detailed | |

-

1 show smart manager policy active

```
Ruijie#show smart manager policy active
```

```
Key: P - Priority          :L - Low, H - High, N - Normal
```

```
S - Scheduling mode :A - Active, P -Pending
```

| No. | Job Id | P S Status | Time Of Event | Event Type | Policy Name |
|-----|--------|-------------|-------------------------|------------|-------------|
| 1 | 3159 | N A running | Wed Nov11 10:28:14 2009 | none | Test_1 |
| 2 | 3160 | N A running | Wed Nov11 10:28:38 2009 | none | Test_1 |
| 3 | 3161 | N A running | Wed Nov11 10:28:38 2009 | none | Test_1 |
| 4 | 3162 | N A running | Wed Nov11 10:28:39 2009 | none | Test_1 |
| 5 | 3163 | N A running | Wed Nov11 10:28:39 2009 | none | Test_1 |
| 6 | 3164 | N A running | Wed Nov11 10:28:40 2009 | none | Test_1 |

2 show smart manager policy active detailed

```
Ruijie#show smart manager policy active detailed
```

```
Key: P - Priority          :L - Low, H - High, N - Normal
```

```
S - Scheduling mode :A - Active, P -Pending
```

| No. | Job Id | P S Status | Time Of Event | Event Type | Policy Name |
|-----|--------|-------------|------------------------------------|----------------------|-------------|
| 1 | 3159 | N A running | Wed Nov11 10:28:14 2009 | none | Test_1 |
| | | | exec time: Wed Nov11 10:28:14 2009 | elapsed time 142.768 | |
| | | | maxrun 31536000.000 | | |
| 2 | 3160 | N A running | Wed Nov11 10:28:38 2009 | none | Test_1 |
| | | | exec time: Wed Nov11 10:28:38 2009 | elapsed time 119.024 | |
| | | | maxrun 31536000.000 | | |
| 3 | 3161 | N A running | Wed Nov11 10:28:38 2009 | none | Test_1 |
| | | | exec time: Wed Nov11 10:28:38 2009 | elapsed time 118.660 | |
| | | | maxrun 31536000.000 | | |

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

-

12.34 show smart manager policy pending

show smart manager policy pending [class *class-options*] [detailed]

| | |
|----------------------------|--|
| | |
| class <i>class-options</i> | |
| detailed | |

-

1 show smart manager policy pending

Ruijie#show smart manager policy pending

Key: P - Priority :L - Low, H - High, N - Normal

S - Scheduling mode :A - Active, P -Pending

| No. | Job Id | P S Status | Time Of Event | Event Type | Policy Name |
|-----|--------|------------|-------------------------|------------|-------------|
| 1 | 3191 | N P pend | Wed Nov11 10:28:53 2009 | none | Test_1 |
| 2 | 3192 | N P pend | Wed Nov11 10:28:53 2009 | none | Test_1 |
| 3 | 3193 | N P pend | Wed Nov11 10:28:54 2009 | none | Test_1 |
| 4 | 3194 | N P pend | Wed Nov11 10:28:54 2009 | none | Test_1 |
| 5 | 3195 | N P pend | Wed Nov11 10:28:54 2009 | none | Test_1 |
| 6 | 3196 | N P pend | Wed Nov11 10:28:55 2009 | none | Test_1 |

2

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

-

12.35 show smart manager policy registered

show smart manager policy registered [**statistics**] [**policy** *policy-name*] [**event-type** *event-name*] [**class** *class-options*] [**time-ordered** | **name-ordered**]

| | |
|---|-------|
| | |
| statistics | |
| policy <i>policy-name</i> | |
| event-type <i>event-name</i> | event |
| class <i>class-options</i> | |
| time-ordered name-ordered | |

-

-

show smart manager policy registered

No

Name

Class

Type

Event Type

Time Registered

```
Ruijie# show smart manager policy registered
```

```
No.  Name      Class  Type   Event Type      Time Registered
  1   Test_1    A      applet timer        Thu Oct 21 13:46:16 2010
event_1: timer: watchdog time 1
  action 00 syslog msg "Action_00"
  action 10 wait 360
  action 20 syslog msg "Action_20"
```

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

| | |
|-----------------|--|
| | |
| detailed | |

-

-

1 **show smart manager scheduler thread** total

running idle

```
Ruijie# show smart manager scheduler thread
```

```
1 Applet threads service class default
```

```
total: 1 running: 0 idle: 1
```

```
2 Applet threads service class A B C
```

```
total: 32 running: 0 idle: 32
```

2 **show smart manager scheduler thread detailed**

```
Ruijie# show smart manager scheduler thread detailed
```

```
1 Applet threads service class default
```

```
total: 1 running: 0 idle: 1
```

```
2 Applet threads service class A B C
```

```
total: 32 running: 3 idle: 29
```

```
class A 1
```

```
calss B 2
```

| | |
|-----------------------------|-----|
| | |
| smart manager applet | SEM |

-

12.37 show smart manager version

SEM

show smart manager version

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

-

-

show smart manager version

SEM

```

Ruijie#show smart manager version
Smart Embedded Manager Version 1.0
Event Detectors:
name                version
application          1.0
syslog               1.0
cli                  1.0
counter              1.0
cpp                  1.0
grtd                 1.0
interface            1.0
none                 1.0
oir                  1.0
snmp                 1.0
snmp-object          1.0
snmp-notification    1.0
sysmon               1.0
timer                1.0

```

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

-

12.38 smart manager applet

SEM

no

SEM

smart manager applet *applet-name* [**class** *class-options*]

no smart manager applet *applet-name* [**reserve-record** | **clean-record**]

| | |
|-----------------------------------|---------|
| | |
| <i>applet-name</i> | SEM |
| class <i>class-options</i> | default |
| reserve-record | CLI |
| clean-record | CLI |

1
2
3
4

smart manager applet SEM SEM

1
2
3
4
5
6
7

Action tag SEM SEM tag Policy
label SEM label

SEM
1
2

Event [@++#&D+40](#) '+'+à` ñ6ž ,ž %ĩ° œ# ù Áe •-f34¹©Đ P `•+ 8 PêÛ á q W > pÅ@¹+4μ ð `•

-

12.40 smart manager history

SEM

no

smart manager history size events *size***no smart manager history size events**

| events | Event |
|---------------|-------|
| <i>size</i> | 50 50 |

Event 50

0 SEM

SEM Event 30

Ruijie(config)#smart manager history size events 30

| show smart manager history events | |
|--|--|

-

12.41 smart manager policy bootup-delay

SEM

smart manager policy bootup-delay *dealy-time*

| <i>dealy-time</i> | SEM 60 900 |
|-------------------|------------|

60

-

120 SEM

```
Ruijie(config)#smart manager policy bootup-delay 120
```

| | |
|----------------------|-----|
| | |
| smart manager applet | SEM |

-

12.42 smart manager policy record

SEM

CLI

```
smart manager policy record clean [ no-registered | policy registd-polciy-name | dir record-directory | all ]
```

| | | |
|-----------------------------------|-----|-----|
| | | |
| no-registered | SEM | CLI |
| policy <i>registd-polciy-name</i> | | CLI |
| dir <i>record-directory</i> | SEM | CLI |
| all | SEM | CLI |

-

1

CLI

CLI

```
Ruijie#smart manager policy record clean no-registered
```

2

SEM

CLI

```
Ruijie#smart manager policy record clean all
```

| | |
|---------------|-----|
| | |
| action cli | |
| policy record | CLI |

-

12.43 smart manager run

none

```
smart manager run policy-name [ parameter ]
```

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

| | |
|--------------------|------|
| <i>policy-name</i> | none |
| <i>parameter</i> | 5 |

-

none event Test_1

```
Ruijie(config)#smart manager applet Test_1
Ruijie(config-applet)#event tag monitor_cmd none
Ruijie(config-applet)#action 00 syslog msg "none event triggered with $_none_argc argc"
Ruijie(config-applet)#commit
Ruijie(config-applet)#exit
```



```
Ruijie(config)#smart manager scheduler thread class B D number 5
```

```
2      Policy      10
```

```
Ruijie(config)#smart manager scheduler thread class default number 10
```

| show smart manager scheduler | SEM |
|------------------------------|-----|

-

12.45 smart manager scheduler clear

SEM

```
smart manager scheduler clear { all
```

| | |
|-----------------------------------|----|
| all | |
| policy <i>job-id</i> | ID |
| class <i>class-options</i> | |

hold

-

1

```
Ruijie#smart manager scheduler hold all
```

2

applet class B

```
Ruijie#smart manager scheduler hold class B
```

| | |
|-----------------------------|-----|
| | |
| smart manager applet | SEM |

-

12.47 smart manager scheduler modify

```
smart manager scheduler modify class class-options queue-priority { high | low | normal }
```

12.48 smart manager scheduler release

smart manager scheduler release { all | policy *policy-id* | class *class-options* }

| | |
|----------------------------|----|
| | |
| all | |
| policy <i>job-id</i> | ID |
| class <i>class-options</i> | |

release

smart manager scheduler hold

Ruijie#smart manager scheduler release all

| | |
|----------------------|-----|
| | |
| smart manager applet | SEM |

-

12.49 smart manager scheduler suspend

SEM no SEM

smart manager scheduler suspend
no smart manager scheduler suspend



```
Ruijie(config)#no smart manager scheduler suspend
```

| | |
|-------------------------------------|-----|
| | |
| show smart manager scheduler | SEM |

-

12.50 trigger

SEM

```
trigger [ occurs-value occurs-value ] [ occurs-period occurs-period-value ] [ correlate-start
period-start-value ] [ correlate-period correlate-period-value ] [ delay delay-value ] [ maxrun
maxruntime-number ]
```

```
no trigger
```

| | |
|---|---|
| | |
| occurs-value <i>occurs-value</i> | 1 |
| occurs-period <i>occurs-period-value</i> | occurs <i>period-value</i> occurs
occurs 1 30 |
| correlate-start <i>period-start-value</i> | Cron |
| correlate-period <i>correlate-period-value</i> | 60 |
| delay <i>delay-value</i> | 0 |
| maxrun <i>maxruntime-number</i> | 20 |

```
trigger
```

SEM

-

```
Test_1 10
```

```
Ruijie(config)#smart manager applet Test_1
Ruijie(config-applet)#event tag none-event none
Ruijie(config-applet)#trigger delay 10
Ruijie(config-applet)#commit
Ruijie(config-applet)#exit
```

| | |
|-----------------------------|-----|
| | |
| smart manager applet | SEM |

-

13 VSU

13.1 dual-active detection

```
no
dual-active detection { aggregateport | bfd }
no dual-active detection { aggregateport | bfd }
```

| | |
|---------------|-----|
| | |
| aggregateport | |
| bfd | BFD |

config-vs-domain

VSU

```
# BFD
Ruijie(config)# switch virtual domain 1
Ruijie(config-vsdomain)# dual-active detection bfd
# BFD
```

13.2 dual-active exclude interface

VSU recovery no
dual-active exclude interface *interface-name*
no dual-active exclude interface *interface-name*

| <i>interface-name</i> | |
|-----------------------|--|

-

config-vs-domain

VSU

VSL

Gi 1/0/3

Ruijie(config)# interface GigabitEthernet 1/0/3

Ruijie(config-if)# no switchport

Ruijie(config)# switch virtual domain 1

Ruijie(config-vs-domain)# dual-active exclude interface GigabitEthernet 1/0/3

| dual-active detection | |
|--|-----|
| dual-active bfd interface | BFD |
| dual-active interface | |
| show switch virtual dual-active | |

-

13.3 dual-active bfd interface

bfd no
dual-active bfd interface *interface-name*
no dual-active bfd interface *interface-name*

| <i>interface-name</i> | |
|-----------------------|--|

-

config-vs-domain

BFD

```
#      Gi 1/1/1   BFD
Ruijie(config)# interface GigabitEthernet 1/1/1
Ruijie(config-if)# no switchport
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# dual-active bfd interface GigabitEthernet 1/1/1
```

| | |
|---------------------------------|--|
| | |
| dual-active detection | |
| show switch virtual dual-active | |

-

13.4 dual-active interface

no

dual-active interface *interface-name*
no dual-active interface

| | | |
|-----------------------|------|---|
| | | |
| <i>interface-name</i> | AP A | P |

-

config-vsl-ap

VSU

VSL

```
# / VSL-AP
Ruijie(config)# vsl-aggregateport 1
Ruijie(config-vsl-ap-1)# port-member interface GigabitEthernet 0/1
Ruijie(config-vsl-ap-1)# no port-member interface GigabitEthernet 0/2
```

```
#VSU / VSL-AP
Ruijie(config)# vsl-aggregateport 1/1
Ruijie(config-vsl-ap-1/1)# port-member interface GigabitEthernet 0/1
Ruijie(config-vsl-ap-1/1)# no port-member interface GigabitEthernet 0/1
```

vsl-a a eport

13.8 session

```
session { device sw_id | master }
```

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

| | |
|------------------------------|-----------|
| switch <i>sw_id</i> priority | |
| switch <i>sw_id</i> renumber | |
| switch <i>sw_id</i> domain | domain_id |
| switch virtual domain | VSU ID |

-

13.11 show switch virtual balance

VSU

show switch virtual balance

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

-

-

#VSU

```
Ruijie#show switch virtual balance
Aggregate port LFF enable
```

| | |
|---------------------|----|
| | |
| show switch virtual | ID |

-

13.12 show switch virtual config

VSU VSU

show switch virtual config [*sw_id*]

| | |
|--------------|-----|
| | |
| <i>sw_id</i> | VSU |


```
vsl-aggregateport 1
port-member interface GigabitEthernet 0/1
port-member interface GigabitEthernet 0/2
!
Switch convert mode virtual
!
```

```
#VSU          VSU          1
Ruijie#show switch virtual config 1
switch_id: 1 (mac: 00d0.f810.1111)
!
switch virtual domain 1
!
switch 1
switch 1 priority 200
switch 1 description switch1
!
vsl-aggregateport 1
port-member interface GigabitEthernet 0/1
port-member interface GigabitEthernet 0/2
!
```

| | |
|---------------------|----|
| | |
| show switch virtual | ID |

-

-

1 VSL

Ruijie# show switch virtual link

| VSL-AP | State | Peer-VSL | Rx | Tx | Uptime |
|--------|-------|----------|--------|--------|-----------|
| 1/1 | UP | 2/1 | 100000 | 100000 | 1d,4h,29m |
| 2/1 | UP | 1/1 | 100000 | 100000 | 1d,4h,29m |

| | | |
|------------|------|----|
| VSL Status | DOWN | UP |
|------------|------|----|

2 VSL

Ruijie# show switch virtual link port

VSL-AP-1/1:

| Port | State | Peer-port | Rx | Tx | Uptime |
|-----------------------|-------|-----------------------|------|------|-----------|
| GigabitEthernet 1/0/1 | OK | GigabitEthernet 2/0/1 | 9000 | 9000 | 0d,0h,20m |
| GigabitEthernet 1/0/2 | OK | GigabitEthernet 2/0/2 | 9000 | 9000 | 0d,0h,20m |

VSL-AP-2/1:

| Port | State | Peer-port | Rx | Tx | Uptime |
|-----------------------|-------|-----------------------|------|------|-----------|
| GigabitEthernet 2/0/1 | OK | GigabitEthernet 1/0/1 | 9000 | 9000 | 0d,0h,20m |
| GigabitEthernet 2/0/2 | OK | GigabitEthernet 1/0/2 | 9000 | 9000 | 0d,0h,20m |

| | |
|---------------------|-----|
| | |
| show switch virtual | VSU |

-

13.15 show switch virtual topology

VSU

show switch virtual topology

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

-

-

```
#
Ruijie# show switch virtual topology
Introduction: '[num]' means switch num, '(num/num)' means vsl-aggregateport num.

Ring Topology:
[1](1/2)---(2/1)[2](2/2)---(1/1)[1]

Switch[1]: ACTIVE, MAC: 00d0.f822.33d6, Description: Switch1
Switch[2]: STANDBY, MAC: 1234.5678.9003, Description: Switch2
```

| | |
|--------------------------|--------|
| | |
| switch sw_id priority | VSU |
| switch virtual domain | VSU ID |
| show switch virtual link | VSL |

-

13.16 switch

```
switch sw_id VSU no
switch sw_id
no switch
```

| | |
|-------|---------|
| | |
| sw_id | VSU 1-8 |

1

config-vs-domain

```
VSU " slot/port "
" switch/slot/port " " switch "

VSU switch sw_id renumber new_sw_id
VSU
```

```
# ID 1 VSU 2
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# switch 2
```


| | | |
|----------------------|-----------|-------|
| <i>new_domain_id</i> | domain id | 1-255 |
|----------------------|-----------|-------|

100

config-vs-domain

VSU
no damain_id 100

#VSU 1 domain_id 10

Ruijie(config)# switch virtual domain 1

Ruijie(config-vs-domain)# switch 1 domian 10

#VSU 2 domain_id 10

Ruijie(config)# switch virtual domain 1

Ruijie(config-vs-domain)# switch 2 domian 10

VSU 2 domain_id

Ruijie(config)# switch virtual domain 1

Ruijie(config-vs-domain)# no switch 2 domain

T

1

V

2

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Ú, Ô

t

| | |
|--|-----|
| | |
| switch num | VSU |
| switch virtual domain | VSU |
| switch number priority priority_num | VSU |
| show switch virtual | ID |

-

13.22 switch virtual aggregateport-lff enable

VSU AP no

switch virtual aggregateport-lff enable
no switch virtual aggregateport-lff enable

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

config-vs-domain

-

#VSU AP

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# switch virtual aggregateport-lff enable
```

| | |
|------------------------------------|--|
| | |
| show switch virtual balance | |

-

13.23 switch virtual domain

VSU no

switch virtual domain number
no switch virtual domain

| | |
|--------|-------|
| | |
| number | VSU 0 |

100

config-vs-domain

1

```
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)#
```

| | |
|---------------------|-----|
| | |
| show switch virtual | VSU |

-

13.24 vsl-aggregateport

VSL-AP

```
vsl-aggregateport ap_num
vsl-aggregateport sw_id/ap_num
```

| | |
|--------|------------|
| | |
| ap_num | VSL-AP 1-2 |
| sw_id | 1-8 |

-

config

| | | | |
|--------|--------|--------------|-----|
| | VSU | sw_id/ap_num | VSU |
| ap_num | | | |
| VSL | ap-num | AP | |

```
# VSL-AP
Ruijie(config)# vsl-aggregateprot 1
Ruijie(config-vsl-ap-1)#
```

```
#VSU VSL-AP
Ruijie(config)# vsl-aggregateprot 1/1
Ruijie(config-vsl-ap-1/1)#
```

| | |
|-----------------------|----------|
| | |
| port-member interface | / VSU-AP |

JPfBT01U



-ACL&QOS

ACL&QOS

1. ACL
2. QOS

1 ACL

1.1

| 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 | |
| port | IPv6 ipv6 icmp tcp udp 0-255
IPv4 eigrp gre ipinip igmp nos ospf icmp udp tcp esp
pcp pim ip IP 0-255
icmp/tcp/udp |
| interface idx | |
| src | |

| | |
|------------------------|--|
| precedence | 0-7 |
| range | |
| time-range tm-rng-name | tm-rng-name |
| tos | 0-15 |
| cos | cos (0-7) |
| cos inner cos | tag cos |
| icmp-type | ICMP 0-255 |
| icmp-code | ICMP 0-255 |
| icmp-message | ICMP |
| operator port[port] | Operator lt- eq- gt- neq- range-
port |
| src-mac-addr | |
| dst-mac-addr | |
| VID vid | vlan id |
| VID inner vid | tag vid |
| ethernet-type | 0x |
| match-all tcpf | tcp flag |
| established | tcp flag rst ack |
| text | |
| in | |
| out | |
| {rule mask offset}+ | rule mask
offset
“+” |
| log | ACL |

1.2 access-list

no

IP 1 - 99 1300 - 1999

access-list *id* {deny | permit} {source source-wildcard | host source | any} interface *idx* [time-range *tm-range-name*] [log]

IP 100 - 199 2000 - 2699

access-list *id* {deny | permit} protocol {source source-wildcard | host source | any} interface *idx* {destination destination-wildcard | host destination | any} [precedence precedence] [tos tos]

[fragment] [range lower upper] [time-range time-range-name] [log]

MAC 700 - 799

access-list id {deny | permit} {any | host source-mac-address} {any | host destination-mac-address} [ethernet-type][cos [out][inner in]]

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] [fragment] [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]

| | |
|------------------------|---|
| | |
| <i>id</i> | 1-99 100-199 1300-1999 2000-2699
2700 – 2899 700 - 799 |
| deny | |
| permit | |
| <i>source</i> | |
| <i>source-wildcard</i> | 0.255.0.32 |
| protocol | IP EIGRP GRE IPINIP IGMP NOS OSPF
ICMP UDP TCP IP IP 0-255
ICMP/TCP/UDP |
| <i>destination</i> | |

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

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

lavr-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 log
Ruijie(config)# access-list 102 permit udp any any eq domain log
Ruijie(config)# access-list 102 permit icmp any any echo log
Ruijie(config)# access-list 102 permit icmp any any echo-reply
3 MAC
MAC                                00d0f8000c0c                                100
gigabitethernet 1/1
Ruijie(config)# access-list 702 deny host 00d0f8000c0c any aarp
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mac access-group 702 in
4 Expert
Expert Extended ACL              ACL      IP      192.168.12.3
MAC      00d0.f800.0044          TCP
Ruijie(config)# access-list 2702 deny tcp host
192.168.12.3 mac 00d0.f800.0044 any any
Ruijie(config)# access-list 2702 permit any any any any
Ruijie(config)# show access-lists
expert access-list extended 2702
10 deny tcp host 192.168.12.3 mac 00d0.f800.0044 any any
10 permit any any any any

```

| | |
|--------------------------|-----|
| | |
| show access-lists | |
| mac access-group | MAC |

-

1.3 clear counters access-list

ACL

clear counters access-list [*id* | *name*]

| | |
|-------------|--|
| | |
| <i>id</i> | |
| <i>name</i> | |

-

ACL ACL 0

2700 ACL

Ruijie #show access-lists 2700

expert access-list extended 2700

10 permit ip VID 4 host 192.168.3.55 any host 192.168.99.6 any (88 matches)

20 deny tcp any any eq login any any (33455 matches)

30 permit tcp any any host 192.168.6.9 any (10 matches)

Ruijie# configure terminal

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

Ruijie(config)# clear counters access-list 2700

Ruijie(config)# end

Ruijie #show access-lists 2700

expert access-list extended 2700

10 permit ip VID 4 host 192.168.3.55 any host 192.168.99.6 any

20 deny tcp any any eq login any any

30 permit tcp any any host 192.168.6.9 any

U •><NM0 @

[sn] **deny tcp** {source source-wildcard | **host** Source | **any**} [operator **port** [port]] {destination destination-wildcard | **host** destination | **any**} [operator **port** [port]] [**precedence** precedence] [**tos** tos] [**fragment**] [range lower upper] [time-range time-range-name] [match-all tcp-flag | **established**]

User Datagram Protocol (UDP)

[sn] **deny udp** {source source -wildcard | **host** source | **any**} [operator **port** [port]] {destination destination-wildcard | **host** destination | **any**} [operator **port** [port]] [**precedence** precedence] [**tos** tos] [**fragment**] [range lower upper] [time-range time-range-name]

MAC

[sn] **deny** {**any** | **host** source-mac-address}{**any** | **host** destination-mac-address} [ethernet-type][**cos** [out] [inner in]]

Expert

[sn] **deny**[protocol | [ethernet-type][**cos** [out] [inner in]]] [[**VID** [out][inner in]]] {source source-wildcard | **host** source | **any**}{**host** source-mac-address | **any** } {destination destination-wildcard | **host** destination | **any**} {**host** destination-mac-address | **any**} [**precedence** precedence] [**tos** tos][**fragment**] [range lower upper] [time-range time-range-name]

ethernet-type cos

any{**host** *destination-mac-address* | **any**} [

ACL

ACL

ACL

1 Expert Extended ACL ACL IP 192.168.4.12
MAC 001300498272 TCP

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

2 IP ACL IP 192.168.4.12 TCP 100
gigabitethernet 1/1

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

3 MAC ACL MAC 0013.0049.8272 100
gigabitethernet 1/1

```
Ruijie(config)# mac access-list extended mac1
Ruijie(config-mac-nacl)# deny host 0013.0049.8272 any arp
Ruijie(config-mac-nacl)# show access-lists
mac access-list extended mac1
10 deny host 0013.0049.8272 any arp
Ruijie(config-mac-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mac access-group mac1 in
```

4 IP ACL IP 192.168.4.12
gigabitethernet 1/1

```
Ruijie(config)# ip access-list standard 34
Ruijie(config-ext-nacl)# deny host 192.168.4.12
Ruijie(config-ext-nacl)# show access-lists
ip access-list standard 34
10 deny host 192.168.4.12
```

```
Ruijie(config-ext-nacl)# exit  
Ruijie(config)# interface gigabitethernet 1/1
```

ACL

show access-group

```
access-list accept_00d0f8xxxxxx_only Gigabit 0/1
Ruijie(config)# interface GigaEthernet 0/1
Ruijie(config-if)# expert access-group accept_00d0f8xxxxxx_only in
```

| | |
|-------------------|-----|
| | |
| show access-group | ACL |

-

1.6 expert access-list

ACL

no

ACL

```
expert access-list extended {id | name}
no expert access-list extended {id | name}
```

| | |
|------|------------------|
| | |
| id | Expert 2700-2899 |
| name | ACL |

Expert ACL

show expert access-lists

```
1 ACL
Ruijie(config)# expert access-list extended exp-acl
Ruijie(config-exp-nacl)# show 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 access-lists
expert access-list extended 2704
Ruijie(config-exp-nacl)#
```

| | |
|-------------------|--|
| | |
| show access-lists | |

-

1.7 expert access-list new-fragment-mode

```
no
expert access-list new-fragment-mode { id | name }
no expert access-list new-fragment-mode { id | name }
```

| id | expert 2700-2899 |
|------|------------------|
| name | ACL |

ACL fragment ACL fragment

ACL

```
Ruijie(config)# expert access-list counter exp-acl
Ruijie(config)# show access-lists
expert access-list extended 2700
 10 permit ip VID 4 host 192.168.3.55 any host 192.168.99.6 any (16 matches)
 20 deny tcp any any eq login any any (78 matches)
```

2 ACL

```
Ruijie(config)#no expert access-list counter exp-acl
Ruijie(config)# show access-lists
expert access-list extended 2700
 10 permit ip VID 4 host 192.168.3.55 any host 192.168.99.6 any
 20 deny tcp any any eq login any any
```

| | |
|-------------------|--|
| | |
| show access-lists | |

-

1.9 ip access-group

no

ip access-group

1.10 ip access-list

```
IP ACL      IP ACL      no      ACL
ip access-list {extended | standard} {id | name}
no ip access-list {extended | standard} {id | name}
```

| | |
|------|---------------------------------|
| | |
| id | IP1-991300-1999100-1992000-2699 |
| name | IP |

ACL

```
ACL      ACL      deny  permit
show access-lists      ACL
```

1 ACL

Rui j i 7

| | | | | |
|--|-----|-----------|-------------|---|
| | | [0, 1440] | 5 | 5 |
| | ACL | 0 | ACL logging | |

IPv4 ACL 5

IPv4 ACL

IPv4 ACL 10

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# ip access-list log-update interval 10
```

| | |
|-----------------------|----------|
| | |
| ip access-list | IPv4 ACL |
| deny | ACL |
| permit | ACL |

-

1.12 ip access-list counter

IP ACL IP ACL ACE no

ACL ACE

ip access-list counter { *id* | *name* }

no ip access-list counter { *id* | *name* }

| | |
|-------------|--|
| | |
| <i>id</i> | IP IP ACL 1-99 1300-1999 IP ACL
100-199 2000-2699 |
| <i>name</i> | IP |

ACL

show access-lists ACL

1 ACL

```
Ruijie(config)# ip access-list counter std-acl
Ruijie(config-std-nacl)# show access-lists
ip access-list standard std-acl
10 permit 195.168.6.0 0.0.0.255 (999 matches)
```

20 deny host 5.5.5.5 time-range tm (2000 matches)

2 ACL

Ruijie(config)#no ip access-list counter std-acl

Ruijie(config-std-nacl)# show access-lists

ip access-list standard std-acl

10 permit 195.168.6.0 0.0.0.255

20 deny host 5.5.5.5 time-range tm

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

| | |
|-----------------|-----|
| | |
| <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# show access-lists
ip access-list standard 1
10 permit host 192.168.4.12
20 deny any any
Ruijie# config
Ruijie(config)# ip access-list resequence 1 21 43
Ruijie(config)# exit
Ruijie# show access-lists
ip access-list standard 1
21 permit host 192.168.4.12
64 deny any any
```

| | |
|-------------------|--|
| | |
| show access-lists | |

-

1.15 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)#
```

| show access-lists | IPV6 |
|-------------------|------|

-

1.16 ipv6 access-list log-update interval

IPv6 ACL no

```
ipv6 access-list log-update interval time
no ipv6 access-list log-update interval
```

| time | ACL | ACL logging | | |
|------|-----------|-------------|-------------|--|
| | [0, 1440] | 5 | 5 | |
| | ACL | 0 | ACL logging | |

IPv6 ACL 5

IPv6 ACL

IPv6 ACL 10

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# ipv6 access-list log-update interval 9
```

| ipv6 access-list | IPv6 ACL |
|------------------|----------|
| deny | ACL |
| permit | ACL |

-

1.17 ipv6 access-list counter

IPv6 ACL ACE no ACL ACE

ipv6 access-list counter *name*
no ipv6 access-list counter*name*

| | |
|-------------|-----|
| | |
| <i>name</i> | ACL |

-

show access-lists

1 IPV6 ACL
Ruijie(config)# ipv6 access-list v6-acl
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list acl-v6
10 permit icmp any any (7 matches)
20 deny tcp any any (7 matches)

2 IPV6 ACL
Ruijie(config)#no ipv6 access-list v6-acl counter
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list acl-v6
10 permit icmp any any
20 deny tcp any any

| | |
|-------------------|------|
| | |
| show access-lists | IPv6 |

-

1.18 ipv6 traffic-filter

IPV6 ACL no
ipv6 traffic-filter *name* {in | out}
ou**b** " 0ŭ & ou }

| | |
|-------------------|----|
| show access-lists | |
| ip access-list | IP |

-

1.20 mac access-group

MAC ACL no

mac access-group {*id* | *name*}{

| show access-lists | mac |
|-------------------|-----|

-

1.22 mac access-list counter


```
Ruijie(config)#no mac access-list extended mac-acl counter
Ruijie(config-mac-nacl)# show access-lists
mac access-list extended mac-acl
 10 permit host 0023.56ac.8965 any
 20 deny any any etype-any cos 6
```

| | |
|--------------------------|-----|
| | |
| show access-lists | mac |

-

1.23 no sn

ACL

no sn

| | |
|----|-----|
| | |
| sn | ACL |

-

ACL

ACL

ACL

```
Ruijie(config)# ipv6 access-list extended v6-acl
Ruijie(config-ipv6-nacl)# permit ipv6 host ::192.168.4.12 any
Ruijie(config-ipv6-nacl)# 12 deny ipv6 host any any
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
 10 permit ipv6 host ::192.168.4.12 any
 12 deny ipv6 any any
Ruijie(config-ipv6-nacl)# no 12
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
 10 permit ipv6 host ::192.168.4.12 any
Ruijie(config-ipv6-nacl)#
```

| | |
|--------|-----|
| permit | ACL |
|--------|-----|

-

1.24 permit

(permit)

IP

[sn] **permit** {*source source-wildcard* | **host** *source* | **any** | **interface** *idx* } [**time-range** *tm-range-name*]
[**log**]

IP

[sn] **permit protocol** *source source-wildcard destination destination-wildcard* [**precedence** *precedence*] [**tos tos**] [*e40004 Tc 0.84 0 Td <0045B10022 Ti43Tj EMC*


```

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
gigabitethernet 1/1
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 any
Ruijie(config-ipv6-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ipv6 traffic-filter v6-acl in

```

| | |
|----------------------------|----------|
| | |
| show access-lists | |
| ipv6 traffic-filter | IPV6 |
| ip access-group | IP ACL |
| mac access-group | MAC ACL |
| ip access-list | IP ACL |
| mac access-list | MAC ACL |
| expert access-list | ACL |
| ipv6 access-list | IPV6 ACL |
| deny | ACL |

-

1.25 remark

```

ACL      ACE          no
remark text

```

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

-

ACL

| ACE | | ACL | |
|-----|-----|-----|--------|
| 100 | | 2 | |
| ace | ace | ace | remark |

```
Ruijie# ip access-list extended 102
Ruijie(config-ext-nacl)# remark first_remark
Ruijie(config-ext-nacl)# permit tcp 1.1.1.1 0.0.0.0 2.2.2.2 0.0.0.0
Ruijie(config-ext-nacl)# remark second_remark
Ruijie(config-ext-nacl)# permit tcp 3.3.3.3 0.0.0.0 4.4.4.4 0.0.0.0
Ruijie(config-ext-nacl)# end
Ruijie#
```

| show access-lists | |
|-------------------|----|
| ip access-list | IP |

-

1.26 security access-group

security access-group {id|name}
no security access-group

| id | ACL id |
|------|--------|
| name | ACL |

-

```
Ruijie(config-if)#security access-group 1
```

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

-

1.27 security global access-group

security global access-group {*id*|*name*}
no security global access-group

| <i>id</i> | ACL id |
|-------------|--------|
| <i>name</i> | ACL |

-

Ruijie(config)#security global access-group 1

-

1.29 show access-group

ACL

show access-group [*interface interface*]

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

-

ACL

ACL

```
Ruijie# show access-group
ip access-list standard ipstd3
Applied On interface GigabitEthernet 0/1.
ip access-list standard ipstd4
Applied On interface GigabitEthernet 0/2.
ip access-list extended 101
Applied On interface GigabitEthernet 0/3.
ip access-list extended 102
Applied On interface GigabitEthernet 0/8.
```

| ip access-group | ip |
|----------------------------|--------|
| mac access-group | mac |
| expert access-group | expert |
| ipv6 traffic-filter | ipv6 |

-

1.30 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
ip access-list extended 101
    permit icmp host 192.168.1.1 any log (1080 matches)
    permit tcp host 1.1.1.1 any established
    deny ip any any (80021 matches)
mac access-list extended mac_acl
expert access-list extended exp_acl
ipv6 access-list extended v6_acl
    petmit ipv6 ::192.168.4.12 any (100 matches)
    deny any any (9 matches)
```

| ip access-list | IP ACL |
|--------------------|---------------|
| mac access-list | MAC ACL |
| expert access-list | Expert ACL |
| ipv6 access-list | IPv6 ACL |

-

1.31 show expert access-group

Expert

show expert access-group [interface interface]

```
Ruijie# show expert access-group interface gigabitethernet 0/2
expert access-group ee in
```

IPv6 ACL

IPv6 ACL

```
Ruijie# show ipv6 traffic-filter interface gigabitethernet 0/4
ipv6 traffic-filter v6 in
Applied On interface GigabitEthernet 0/4.
```

| | |
|------------------|---------------|
| | |
| ipv6 access-list | IPV6 ACL |

-

1.34 show mac access-group

MAC

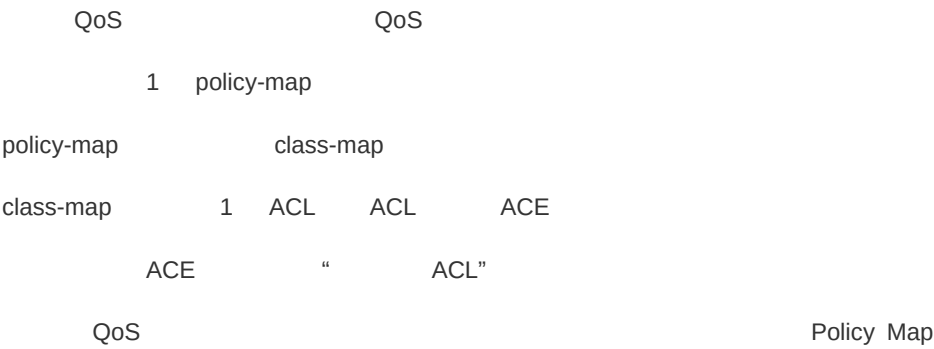
```
show mac access-group[interface interface]
```

| | |
|-----------|--|
| | |
| interface | |



2 IP QOS

2.1



| | | |
|--|---|----|
| | 5 | 40 |
| | 6 | 48 |
| | 7 | 56 |

IP-Precedence to DSCP

| | IP-Precedence | DSCP |
|-----------------------|---------------|------|
| IP-Precedence to DSCP | 0 | 0 |
| | 1 | 8 |
| | 2 | 16 |
| | 3 | 24 |
| | 4 | 32 |
| | 5 | 40 |
| | 6 | 48 |
| | 7 | 56 |

DSCP to CoS

| | DSCP | CoS |
|-------------|------|-----|
| DSCP to CoS | 0 | 0 |
| | 8 | 1 |
| | 16 | 2 |
| | 24 | 3 |
| | 32 | 4 |
| | 40 | 5 |
| | 48 | 6 |
| | 56 | 7 |

2.2 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**access-list** acl-id ACL

class map class map

[no] class-map class-map-name

class map

[no] match access-group acl-name|acl-id**[no] match ip dscp** dscp-value1 [dscp-value2 [dscp-valueN]]**[no] match ip precedence** ip-pre-value1 [ip-pre-value2 [ip-pre-valueN]]

| | |
|--|---------------|
| <i>acl-name</i> | ACL |
| <i>acl-id</i> | ACL id |
| <i>class-map-name</i> | class map |
| <i>dscp-valueN</i> | ip dscp |
| <i>ip-pre-valueN</i> | ip precedence |
| no class-map <i>class-map-name</i> | class map |
| no match access-group <i>acl-name</i> <i>acl-id</i> | |
| no match ip dscp <i>dscp-value1</i> [<i>dscp-value2</i> [<i>dscp-valueN</i>]] | ip dscp |
| no match ip precedence <i>ip-pre-value1</i> [<i>ip-pre-value2</i> [<i>ip-pre-valueN</i>]] | ip precedence |

-

-

1 MAC ACL,

2.3 drr-queue bandwidth

DRR

drr-queue bandwidth *weight1...weight8*
no drr-queue bandwidth

| | |
|--------------------------|--|
| | |
| <i>weight1...weight8</i> | |
| no | |

-

```
Ruijie(config)# drr-queue bandwidth 1 2 3 4 5 6 7 8
```

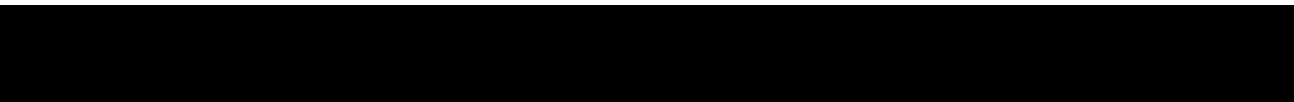
| | |
|-----------------------|---|
| | |
| show mls qos queueing | - |

-

2.4 interface rate-limit

rate-limit {input | output} *bps burst-size*
no rate-limit

| | |
|-------------------|------------------|
| | |
| input | |
| output | |
| <i>bps</i> | |
| <i>burst-size</i> | (Kbyte)dscp-list |




```
Ruijie(config-if)# rate-limit input 1000000 4096
```

| | |
|-------------------------------|---|
| | |
| show mls qos interface | - |

-

2.5 mls qos cos

CoS

```
mls qos cos default-cos
```

```
no mls qos cos
```

| | |
|--------------------|-----|
| | |
| <i>default-cos</i> | 0 7 |
| no | |

CoS 0

-

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

```
Ruijie(config-if)# mls qos cos 7
```

| | |
|---|---|
| | |
| show mls qos interface <i>interface-id</i> | - |

-

2.6 mls qos map cos-dscp

CoS

DSCP

```
mls qos map cos-dscp dscp1...dscp8
```

```
no mls qos map cos-dscp
```

| | |
|-------------|--|
| | |
| <i>dscp</i> | |
| no | |

Ruijie(config)# mls qos map cos-dscp 8 10 16 18 24 26 32 34

| | |
|-------------------|--|
| | |
| show mls qos maps | dscp-cos maps,dscp-cos maps ip-prec-dscp maps |

2.7 mls qos map dscp-cos

DSCP CoS
mls qos map dscp-cos *dscp-list* to *cos*

| | |
|----|--|
| no | |
|----|--|

-

```
Ruijie(config)# mls qo map ip-prec -dscp 8 10 16 18 24 26 32 34
```

| | |
|-------------------|--|
| | |
| show mls qos maps | dscp-cos maps,dscp-cos maps ip-prec-dscp maps |

-

2.9 mls qos scheduler

mls qos scheduler [sp | wrr | drr]
no mls qos scheduler

| | |
|-----|--|
| | |
| sp | |
| wrr | |
| drr | |
| no | |

wrr

-

```
Ruijie(config)# mls qos scheduler sp
```

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

mls qos trust {cos | dscp | ip-precedence}
no mls qos trust

| cos | Qos | QoS |
|---------------|-----|-----|
| dscp | | |
| ip-precedence | | |

| | | | |
|---------------------------------------|-------|-----|--|
| no class <i>class-map-name</i> | | | |
| <i>new-dscp</i> | DSCP | | |
| <i>new-cos</i> | CoS | 0-7 | |
| <i>rate-bps</i> | kbps | | |
| <i>burst-byte</i> | kbyte | | |
| <i>drop</i> | | | |
| <i>dscp-value</i> | DSCP | | |
| <i>cos-value</i> | CoS | 0-7 | |

-

-

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
```

```
Ruijie(config)# no priority-queue
```

| | |
|-----------------------|---|
| | |
| show mls qos queueing | - |

-

2.13 priority-queue cos-map

CoS

```
priority-queue cos-map qid cos0 [cos1 [cos2 [cos3 [cos4 [cos5 [cos6 [cos7]]]]]]]
```

```
no priority-queue cos-map
```

| | |
|-------------|---------------------|
| | |
| <i>qid</i> | id |
| <i>cos7</i> | <i>cos0</i> ... CoS |
| no | |

-

```
Ruijie(config)# priority-queue cos-map 1 0 1
```

| | |
|-----------------------|---|
| | |
| show mls qos queueing | - |

2.14 service-policy

policy map

```
service-policy {input | output} policy-map-name
```

```
no service-policy {input | output}
```

| | |
|------------------------|------------|
| | |
| <i>policy-map-name</i> | polycymap |
| no | policy map |

-

-

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# service-policy input po
Ruijie(config)# virtual-group 3
Ruijie(config-if)# service-policy input po
```

| show mls qos interface | - |
|------------------------|---|

virtual-group

output

2.15 show class-map

class map

show class-map [*class-name*]

| <i>class-name</i> | class map |
|-------------------|-----------|

class map

-

```
Ruijie# show class-map
```

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

-

2.16 show mls qos interface

QoS

show mls qos interface *interface-id* [*policers*]

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

| | |
|-----------------|---------------|
| policers | police |
|-----------------|---------------|

QoS

-

```
Ruijie# show mls qos interface fastEthernet 0/1
```

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

-

2.17 show mls qos maps

dscp-cos maps, dscp-cos maps ip-prec-dscp maps
show mls qos maps [cos-dscp | dscp-cos | ip-prec-dscp]

| | |
|---------------------|-------------------|
| | |
| cos-dscp | cos-dscp maps |
| dscp-cos | dscp-cos maps |
| ip-prec-dscp | ip-prec-dscp maps |

dscp-cos maps dscp-cos maps ip-prec-dscp maps

-

```
Ruijie# show mls qos maps
```

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

-

2.18 show mls qos queueing

QoS (cos-to-queue map, wrr weight, drr weight)
show mls qos queueing

-

| - | - 3 8 |
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-

Ruijie# show mls qos queueing

| - | - |
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```
Ruijie# show mls qos scheduler
```

| | |
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| | |
| - | - |

-

2.21 show mls qos virtual-group

police

```
show mls qos virtual-group [virtual-group-number | policers]
```

| | |
|----------------------|--------|
| | |
| virtual-group-number | |
| policers | police |

police

-

```
Ruijie# show mls qos virtual-group 1
Ruijie# show mls qos virtual-group policers
```

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

| <i>policy-name</i> | policy name |
|--------------------|-------------|
| <i>class-name</i> | class map |

policy name

-

```
Ruijie# show policy-map
```

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

-

2.23 show virtual-group

show virtual-group [*virtual-group-number* | **summary**]

| <i>virtual-group-number</i> | 128 |
|-----------------------------|-----|
| summary | |

-

-

```
Ruijie# show virtual-group 1
Ruijie# show virtual-group summary
```

| virtual-group | |
|---------------|--|

-

2.24 wrr-queue bandwidth

WRR

wrr-queue bandwidth *weight1 ... weightn*
no wrr-queue bandwidth

| | |
|--------------------------|-----|
| | |
| <i>weight1...weightn</i> | n n |
| no | |

weight1: ...: weightn = 1:...:1

-

```
Ruijie(config)# wrr-queue bandwidth 1 2 3 4 5 6 7 8
```

| | |
|------------------------------|---|
| | |
| show mls qos queueing | - |

2.25 virtual-group

Aggregate Port

no

virtual-group *virtual-group-number*
no virtual-group *virtual-group-number*

| | |
|-----------------------------|-----|
| | |
| <i>virtual-group-number</i> | 128 |

Aggregate Port

(

)
24

(
24

48

| | |
|--------------------|--|
| show virtual-group | |
|--------------------|--|

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3. ЛЮ

1. SNMP
2. RMON
3. NTP
4. Sntp
5. SPAN
6. RSPAN

1 SNMP

1.1 no snmp-server

SNMP 3 11
no snmp-server

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ö Ô SNMP 3 11

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ö Ô 3 SNMP 3 11

ö Ô SNMP 3 11
Ruijie(config)# no snmp-server

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1.2 show snmp

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

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ö Ô show snmp 3 SNMP
show snmp mib snmp mib
show snmp user snmp
show snmp view snmp
show snmp group snmp

3

9

Объясните, как настроить LinkTrap на интерфейсе SVI. Какие команды нужно использовать?

Объясните, как настроить LinkTrap на интерфейсе Ethernet 1/1. Какие команды нужно использовать?

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

Объясните, как настроить LinkTrap на интерфейсе Ethernet 1/1. Какие команды нужно использовать?

Объясните, как настроить LinkTrap на интерфейсе Ethernet 1/1. Какие команды нужно использовать?

1.4 snmp-server chassis-id

SNMP-серверу можно задать идентификатор шасси (chassis-id) с помощью команды **snmp-server chassis-id**. Если не задать, то по умолчанию используется MAC-адрес интерфейса Ethernet 0/0/0/0.

snmp-server chassis-id text
no snmp-server chassis-id

Объясните, как настроить snmp-server chassis-id. Какие команды нужно использовать?

| | |
|------|---------------------|
| text | Идентификатор шасси |
|------|---------------------|

Объясните, как настроить snmp-server chassis-id. Какие команды нужно использовать?

Объясните, как настроить snmp-server chassis-id. Какие команды нужно использовать?

Объясните, как настроить snmp-server chassis-id. Какие команды нужно использовать?

SNMP-серверу можно задать идентификатор шасси (chassis-id) с помощью команды **snmp-server chassis-id**. Если не задать, то по умолчанию используется MAC-адрес интерфейса Ethernet 0/0/0/0.

Объясните, как настроить snmp-server chassis-id. Какие команды нужно использовать?

SNMP

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snmp-server community [0|7] *string* [**view** *view-name*] [[**ro** | **rw**] [**host** *ipaddr*]] [**ipv6** *ipv6-aclname*][*aclnum* | *aclname*]
no snmp-server community [0|7] *string*

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| 0 | Ï |
|---------------|-----|
| 7 | Ï |
| <i>string</i> | ŕ ℕ |

1.6 snmp-server contact

SNMP ʒ snmp-server contact ʒ no
 SNMP ʒ
 snmp-server contact *text*
 no snmp-server contact

| | | | |
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| õ | Ô | | |
| | | <i>text</i> | |

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õ Ô IO SNMP ʒ i-net800@i-net.com.cn ‘
 Ruijie(config)# snmp-server contact i-net800@i-net.com.cn

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| õ | ʒ Ô | ʒ | |
| | | show snmp-server | SNMP |
| | | no snmp-server | SNMP ʒ ʒ |

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1.7 snmp-server enable traps

SNMP ʒ NMS Trap
 ʒ snmp-server enable traps ʒ ʒ no SNMP NMS ʒ Trap ʒ
 snmp-server enable traps [snmp]
 no snmp-server enable traps

| | | | |
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| õ | Ô | | |
| | | snmp | SNMP ʒ |

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õ Ô ʒ ʒ ʒ snmp-server host ʒ

õ Ô IO ʒ SNMP ‘
 Ruijie(config)# snmp-server enable traps snmp

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

| | |
|------------------|--------|
| 3 | |
| snmp-server host | SNMP 3 |

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1.8 snmp-server group

SNMP 3 **snmp-server group** 3 **no** 3

snmp-server group *groupname* { **v1** | **v2c** | **v3** { **auth** | **noauth** | **priv** } } [**read** *readview*] [**write** *writeview*] [**access** { **ipv6** *ipv6-aclname* | *aclnum* | *aclname* }]

no snmp-server group *groupname* { **v1** | **v2c** | **v3** { **auth** | **noauth** | **priv** } }

| | | |
|------------------------------------|---------------------|--|
| 3 | 3 | |
| v1 v2c v3 | SNMP 3 | |
| auth | a v3 3 | |
| noauth | a a v3 3 | |
| priv | * v3 3 | |
| <i>readview</i> | 3 | |
| <i>writeview</i> | 3 | |
| <i>aclnum</i> | 3 1 MIB ipv4 NMS | |
| <i>aclname</i> | 3 3 MIB ipv4 NMS | |
| <i>ipv6-aclname</i> | ipv6 3 MIB ipv6 NMS | |

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1.9 snmp-server host

SNMP ᳵ ^ NMS

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| | | <i>text</i> | Â |

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

1.12 snmp-server packetsize

SNMP

3 snmp-server packetsize 17876 17876 17876 no

17876

snmp-server packetsize byte-count

no snmp-server packetsize

| | | | |
|---|---|------------|-------------------|
| 0 | 0 | | |
| | | byte-count | 17876 17876 17876 |

0 0 1472

0 3 0

0 0 -

0 0 Ю SNMP 17876 17876 17876

Ruijie(config)# snmp-server packetsize 1492

| | | | |
|---|-----|--------------------------|------|
| 0 | 3 0 | | |
| | | snmp-server queue-length | SNMP |

0 1 0 -

1.13 snmp-server queue-length

3 snmp-server queue-length 17876

snmp-server queue-length length

| | | | |
|---|---|--------|-------------------|
| 0 | 0 | | |
| | | length | 17876 17876 17876 |

0 0 10

0 3 0

0 0 17876 17876 17876 17876

17876 17876 17876

0 0 Ю SNMP 17876 17876 17876

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

| | | | |
|---|-----|--|--|
| 0 | 3 0 | | |
|---|-----|--|--|

snmp-server packetsize

SNMP

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1.14 snmp-server system-shutdown

SNMP

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3 snmp-server system-shutdown Â 3 no

SNMP

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snmp-server system-shutdown

no snmp-server system-shutdown

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RGOS

reload/reboot π NMS

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Ruijie(config)# snmp-server system-shutdown

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1.15 snmp-server trap-format private

SNMP Trap

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snmp-server trap-format private

no snmp-server trap-format private

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Trap
 RUIJIE-TRAP-FORMAT-MIB.mib

SNMP v1 Trap

Trap
 Ruijie(config)# snmp-server trap-format private

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

Trap -

1.16 snmp-server trap-source

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

| | |
|------------------|----|
| <i>interface</i> | IP |
|------------------|----|

SNMP IP

Trap

SNMP IP
 IP SNMP

0/1 IP
 Ruijie(config)# snmp-server trap-source fastethernet 0/1

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

Trap -

1.17 snmp-server trap-timeout

3 snmp-server trap-timeout 1 3 no

1

snmp-server trap-timeout seconds

no snmp-server trap-timeout

| | | | |
|---|---|---------|------------|
| 0 | 0 | | |
| | | seconds | 1 – 1000 1 |

0 0 30

0 3 0

0 0 -

0 0 Ю 60 1
Ruijie(config)# snmp-server trap-timeout 60

| | | | |
|---|-----|--------------------------|-----------|
| 0 | 3 0 | 3 | |
| | | snmp-server queue-length | |
| | | snmp-server host | NMS 3 |
| | | snmp-server trap-source | SNMP TRAP |

0 1 0 -

1.18 snmp-server udp-port

SNMP 1 3 snmp-server udp-port 1 3 no
1 SNMP 1 161 1
snmp-server udp-port port-num
no snmp-server udp-port

| | | | |
|---|---|----------|--------|
| 0 | 0 | | |
| | | port-num | SNMP 1 |

0 0 Ю 161 SNMP

0 3 0

0 0 -

0 0 Ю 15000 SNMP 1

```
Ruijie(config)# snmp-server udp-port 15000
```

| | |
|---|---|
| 3 | |
| - | - |

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1.19 snmp-server user

SNMP `snmp-server user` `username` `groupname` {`v1` | `v2c` | `v3` [`encrypted`] [`auth` {`md5` | `sha`} `auth-password`] [`priv` `des56` `priv-password`]} [`access` {`ipv6` `ipv6-aclname` | `aclnum` | `aclname`}]
no `snmp-server user` `username` `groupname` {`v1` | `v2c` | `v3`}

| | |
|--|---|
| | |
| <code>username</code> | " " |
| <code>groupname</code> | " " |
| <code>v1</code> <code>v2c</code> <code>v3</code> | SNMP <code>v3</code> <code>v1</code> <code>v2c</code> |
| <code>encrypted</code> | <p>16 <code>md5</code> <code>sha</code> 20</p> <p>16 <code>md5</code> <code>sha</code> 20</p> |
| <code>auth</code> | <code>auth</code> |
| <code>md5</code> | <code>md5</code> <code>sha</code> <code>sha</code> |
| <code>auth-password</code> | 32 <code>auth</code> |
| <code>priv</code> | <code>des56</code> 56 <code>DES</code> |
| <code>priv-password</code> | 32 <code>auth</code> |
| <code>aclnum</code> | MIB <code>ipv4</code> NMS |
| <code>aclname</code> | MIB <code>ipv4</code> NMS |
| <code>ipv6-aclname</code> | ipv6 MIB <code>ipv6</code> NMS |

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| ö | 3 Ö | 3 | |
| | | show snmp user | SNMP |

1.20 snmp-server view

| | | | | |
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| ð | Ô | | | |
| | <i>view-name</i> | | “ | Â |
| | <i>oid-tree</i> | | MIB | MIB Â |
| | include | | MIB | Â |
| | exclude | | MIB | Â |

| | | | |
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| ð | } Ô | } | |
| | | show snmp view | SNMP |

1-14

2 RMON

2.1 rmon alarm

MIB 4 3 Å no Å Å

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

no rmon alarm *number*

| | | |
|---|---|---|
| ö | Ô | |
| | <i>number</i> | - Å 1~65535 |
| | <i>variable</i> | Å ÿ 1~255 Å OID ^
ÿ entry.integer.instance Å ".instance
1.3.6.1.2.1.2.1.10.1~ |
| | <i>interval</i> | Å ÿ 1 2147483647 ÿ |
| | absolute | ÿ Å Å |
| | delta | ÿ Å Å Å |
| | rising-threshold <i>value</i>
<i>event-number</i> | ÿ <i>value</i> Å ÿ Å <i>event-number</i>
<i>value</i> Å -2147483648~+2147483647
<i>event-number</i> Å 1~65535 |
| | owner <i>ownername</i> | <i>ownername</i> <i>ownername</i> ÿ 1~64
Å a |

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ö Ô RGOS Å variable ãabsolute/delta ãowner ã
interval ãrising-threshold/falling-threshold ã event
a Å Å

ö Ô ÅÅ MIB 4 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
```

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

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2.2 rmon collection history

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

no rmon collection history *index*

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|--------------|---------------|
| | |
| <i>index</i> | л л ' 1~65535 |

owner *ownername*

| | |
|-------------------------------|---|
| owner <i>ownername</i> | <i>ownername</i> <i>ownername</i> ì 1~64
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```
Ruijie(config)# interface fast-Ethernet 0/1
```

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

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| | |
|-------------|-----------------------------------|
| 3 | |
| rmon | collection history index [|

```
"ifInNUcastPkts is too much " owner zhangsan
```

| | | | |
|---|---|--|---|
| 3 | Ô | 3 | |
| ø | | rmon alarm <i>number variable interval</i> { absolute delta } rising-threshold <i>value</i> [<i>event-number</i>]
falling-threshold <i>value</i> [<i>event-number</i>] [owner <i>ownername</i>] | ¶ |

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2.5 show rmon alarm

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show rmon alarm

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```
Ruijie# show rmon alarm
rmon alarm table:
        index: 10,
        interval: 30,
        oid = 1.3.6.1.2.1.2.2.1.12.6
        sampleType: 2,
        alarmValue: 0,
        startupAlarm: 3,
        risingThreshold: 20,
        fallingThreshold: 10,
        risingEventIndex: 1,
        fallingEventIndex: 1,
        owner: zhangesan,
        stats: 1,
```

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

| | |
|----------------------------------|--|
| [event-number] [owner ownername] | |
|----------------------------------|--|

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2.6 show rmon event

show rmon event

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```
Ruijie# show rmon event
rmon event table:
      index = 1
      description = ifInNUcastPkts
      type = 4
      community = rmon
      lastTimeSent = 0 d:0 h:0 m:0 s
      owner = zhangsan
      status = 1
```

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| 3 | |
| rmon event <i>number</i> [log] [trap community]
[description <i>description-string</i> [owner 7
<i>ownername]</i> | |

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2.7 show rmon history

show rmon history

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```
Ruijie# show rmon history
rmon history control table:
```

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2.8 show rmon statistics

show rmon statistics

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```
Ruijie# show rmon statistics
```

```
ether statistic table:
```

```

    index = 1
    interface = FastEthernet 0/1
    owner = zhangsan
    status = 0
    dropEvents = 0
    octets = 1884085
    pkts = 3096
    broadcastPkts = 161
    multiPkts = 97
    crcAlignErrors = 0
    underSizePkts = 0
    overSizePkts = 1200
    fragments = 0
    jabbers = 0
    collisions = 0
    packets64Octets = 128
    packets65To127Octets = 336
    packets128To255Octets = 229
    packets256To511Octets = 3
    packets512To1023Octets = 0
    packets1024To15180Octets = 1200

```

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3 NTP

3.1 debug ntp

NTP Â

debug ntp

no debug ntp

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Ruijie(config)# debug ntp

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3.2 no ntp

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no ntp

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```
Ruijie(config)# no ntp
```

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

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3.3 ntp access-group

NTP E } no A

```
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*

$$\ddot{O} \qquad \hat{O}$$

| | |
|---------------------------|--|
| | |
| peer | NTP ℓ
˘ ^ ~ Â |
| serve | NTP ℓ a б
˘ Â |
| serve-only | NTP ℓ Â |
| query-only | NTP ℓ Â |
| <i>access-list-number</i> | IP л' й 1 99 1300 1999 |
| <i>access-list-name</i> | IP " Â |

ò ô ю NTP

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$$\ddot{\theta} \quad \hat{\theta} \quad \text{NTP} \quad \mathbb{E} \quad \hat{A}$$

NTP Â

NTP 𐌺 𐍂 𐍄 𐍆

5 и $\hat{A}$ 5 и peer à serve à serve-only à query-only $\hat{A}$

 $\hat{A}$ $\hat{A}$
$$\ddot{\theta} + \hat{\theta} = \frac{1}{\mu} \frac{d}{dt} \left(\mu \dot{\theta} \right)$$

2 d

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

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

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ö Ô md5 71 key-id 1 76 ntp
 trusted-key key-id 51 Å
 3 1024 4 Å

ö Ô 76Ю ID 5 6
 Ruijie(config)# ntp authentication-key 6 md5 woooooop

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

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3.6 ntp disable

ntp disable NTP 71 Å

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 76 3 NTP Å

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| ✓ IP |
|------|

ö Ô 76Ю NTP
 Ruijie(config)# no ntp disable

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3.7 ntp master

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 й Л NTP й Â
ntp master [stratum]
no ntp master

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| | | stratum | й 1 15' а
й 8 Â |

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Ruijie(config)# ntp master 12

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3.8 ntp server

й NTP NTP Л Â
ntp server ip-addr [version version] [source if-name] [key keyid][prefer]
no ntp server ip-addr

| | | | |
|---|---|---------|---------------------|
| ö | Ô | | |
| | | ip-addr | NTP Л IP IPv4 IPv6' |

| | |
|----------------|--------------------------|
| <i>version</i> | ^ 1 ~ NTP ^ 1-3~ NTPv3 ' |
| <i>if-name</i> | ^ 1 ~ NTP ^ Ъ ~ ' |
| <i>keyid</i> | ^ 1 ~ Ъ Ё ¶ |
| <i>prefer</i> | ^ 1 ~ Ё и Prefer Ё |

ö Ô NTP Ё Â

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 * ^ ~ Ю prefer *
 NTP Ю и IP 1 Ь NTP
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ö Ô ЬЮ Э и NTP server Â

IPv4 ' Ruijie(config)# ntp server 192.168.210.222

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

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| no ntp | NTP Ё ¶ Â |

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3.9 ntp synchronize

NTP * Â

ntp synchronize

no ntp synchronize

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ö Ô ЬЮ NTP *
 Ruijie(config)# ntp synchronize

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| | | ntp server | NTP 𐀀 𐀁 |

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3.10 ntp trusted-key

ID 𐀀 𐀁

ntp trusted-key key-id

no ntp trusted-key key-id

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| | | key-id | ID 𐀁 |

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ö Ô NTP 𐀀 𐀁 ID a 𐀀

𐀁

ö Ô 𐀀 𐀁

```
Ruijie(config)# ntp authentication-key 6 md5 woooooop
Ruijie(config)# ntp trusted-key 6
Ruijie(config)# ntp server 192.168.210.222 key 6
```

| | | | |
|---|-----|------------------------|---------|
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| | | ntp authenticate | 𐀁 |
| | | ntp authentication-key | NTP 𐀁 |
| | | ntp server | NTP 𐀀 𐀁 |

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3.11 ntp update-calendar

NTP 𐀀 𐀁 𐀁 𐀀 𐀁 𐀀 𐀁

𐀀 𐀁

ntp update-calendar

no ntp update-calendar

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Ruijie(config)# ntp update-calendar

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3.12 show ntp status

NTP

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show ntp status

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Ruijie# show ntp status

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4 SNTP

4.1 sntp enable

3 SNTP ¶ 3 no 5 —Disable ^

sntp enable
no sntp enable

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| | | - | - |

õ Ô SNTP Disable

õ 3 Ô

õ Ô **show sntp** 3 SNTP ^

õ Ô Ruijie(config)# sntp enable

| | | | |
|---|-----|------------------------------|------|
| õ | 3 Ô | 3 | |
| | | show sntp | SNTP |
| | | clock update-calendar | * |
| | | clock set | |

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4.2 sntp interval

3 SNTP Client NTP/SNTP Server ^

sntp interval seconds
no sntp interval

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| | |
|---|-------------|
| ✓ | sntp enable |
|---|-------------|

ð Ô Ruijie(config)# sntp interval 3600

| | | | |
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| ð | Ô | 3 | |
| | | sntp enable | SNTP |
| | | show sntp | SNTP |
| | | clock update-calendar | * |

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4.3 sntp server

3 SNTP Server SNTP NTP ¼ Server / ¼ internet
 ð NTP Server Â
sntp server ip-address
no sntp server

| | | | |
|---|---|------------|---------------|
| ð | Ô | | |
| | | ip-address | NTP/SNTP ¼ IP |

ð Ô NTP/SNTP ¼

ð 3 Ô

ð Ô **show sntp** 3 SNTP

ð Ô Ruijie(config)# sntp server 192.168.4.12

| | | | |
|---|---|-------------|------|
| ð | Ô | 3 | |
| | | show sntp | SNTP |
| | | sntp enable | SNTP |

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4.4 show sntp

3 SNTP Â
show sntp

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ö Ô **show sntp** 3 SNTP

ö Ô Ruijie# show sntp

```
SNTP state      : Enable
SNTP server     : 192.168.4.12
SNTP sync interval : 60
Time zone      : +8
```

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

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5 SPAN

5.1 monitor session

SPAN *session-number* *interface-id* *interface-id* *encapsulation* *switch* *mac* *source mac-addr* *destination mac-addr* *both* *rx* *tx* *acl* *name* *no*

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

ö

Ô

| <i>session_number</i> | SPAN <i>session-number</i> |
|--|---|
| source interface <i>interface-id</i> | <i>interface-id</i> <i>encapsulation</i> <i>switch</i> <i>mac</i> <i>source mac-addr</i> <i>destination mac-addr</i> <i>both</i> <i>rx</i> <i>tx</i> <i>acl</i> <i>name</i> |
| destination interface <i>interface-id</i> | <i>interface-id</i> <i>encapsulation</i> <i>switch</i> <i>mac</i> <i>source mac-addr</i> <i>destination mac-addr</i> <i>both</i> <i>rx</i> <i>tx</i> <i>acl</i> <i>name</i> |

```

Ruijie(config)# monitor session 1
                                +
                                gigabitEthernet 1/1
                                gigabitEthernet 1/8

```

```

Ruijie(config)#

```

```

Ruijie#

```

5.2 show monitor

```

show monitor [session session_number]

```

```

Ruijie# show monitor

```

```

Ruijie#

```

```

Ruijie#

```

```

Ruijie#

```



```
Ruijie(config)# monitor session 2 remote-destination
```

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

| | | |
|--------------|---|---|
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| show monitor | | A |

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6.2 remote-span

3 VLAN 3 7 A no 3 7 A

[no] remote-span

no remote-span

| | | |
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| | - | - |