RG-S5750-28GT-S

RGOS 10.4(2b11)


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' Courier New ˘ ˘ 5 Л˘
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' ҳ ^ ҳ ҳ ┼ ~

[ ] ' [ ] ┼ ˘ ҳ ┘ Â

{ x | y | ... }' ÿ ч ┘ Â

[x | y | ...]' ÿ ч ┘ a Â

//' ┤ ий Â

3.

```
Ruijie# s?
*s=show  show  start-chat  start-terminal-service
```

ɹ ʒ ʒ a ˘ /ʅ ʒ Â ˘ EXEC

ЮO ɹ ”sv” ʒ ʒ ”**show version**” '

```
Ruijie# s?
```

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1.1.2 privilege

ঽ ঽ ˘ ┘Л Ю **privilege** ঽ Â
ঽ **no** ┘Л ঽ ѝ Â

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

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

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

˘ 1 CLI ˘ ⅃几ひ **reload** re¦ **3.59 0 Td( )Tj/C2_0 1 E3 30013 Tc 0**

ЛЬЮ ˘ EXEC Ю ३ ⅃'

```
Ruijie# show aliases exec
exec mode alias:
h                   help
p                   ping
s                   show
u                   undebug
un                  undebug
```

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alias	३ ⅃

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2.1

2.1.1 disable

ЮЎ æ ˘ ϡ disable Â

disable [*privilege-level*]

privilege-level	

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2.1.2 enable

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2.1.3 enable password

a ৶ ৡˇ ৡ **enable password** Â ৡ **no** ৡ Â

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

Password	EXEC ৡ Â
Level	Â
0|7	ৡ ╗ ˇ 0 ╗ ˇ 7 ╗ Â
encrypted-password	ৡ Â

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╗ Â
ʒ ЊЖ ЮЎ
Â 1 26 Â
Â ʒ ↙Л↻ ˘ Â ѝ ʒ ǂ Â

╗ ˘ Л ʒˇ a ~ EXEC Â a ╗ ʒ Â ↙ ʒ Â

ЮЎ ʒ ѝ pw10Ў

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

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enable secret	ʒ Â

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2.1.4 enable secret

a ↙ ʒˇ ʒ **enable secret** Â ʒ **no** ʒ Â

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

no enable secret

Secret	EXEC ʒ Â
Level	Â
0|5	ʒ ╗ ˘ 0 ╗ ˘ 5 ╗ Â
encrypted-password	ʒ Â

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ϡ

ϡ‡ ѝ password security ϡ ч Âpassword ѝ ╗ ϡ˘ ϟ ѝ 15 ϡ Âsecurity ϡ ѝ ╗ ϡ˘ ϟЛ∪ ѝ 0˙ 15 ϡ Â ˘ ϟ ϟ Л∪Э ч ϡ˘ password ϡ a Â 15 password ϡ˘ ˘ ╠ ѝ security ϡ’ 15 password ϡ security ϡ ϟ˘ ’ ϡ Л∪╗ ˘ password ϡ ╗ ˘ security ϡ ╗ Â

Ю ϡ ѝ pw10ґ

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

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enable password	a ϟ ϡ Â

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2.1.5 enable service

б ┗^ SSH Server/Telnet Server/Web Server/Snmp Agent˜ ˘ Ю˘ ϟЛ∪ ϡ **enable service** ϡ'

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

ssh-sesrver	б SSH Serveř ϡ ϟ IPv4 ┗’
telnet-server	б Telnet Serveř ϡ ϟ IPv4 ┗’
web-server	б Http Serveř ϡ ϟ IPv4 ┗’
snmp-agent	б Snmp Agentˇ ϡ ϟ IPv4 ┗’

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ҙ б Â **no enable service** ҙ Â

Ю ҙ’ enable service ssh-sesrver, SSH Server

```
line tty 1 16
transport input all
no exec
end
```

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

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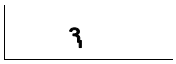
2.1.7 ip http authentication

Http Server Web



Web **no ip http authentication**

14C04B35251>Tj2614C000 T303>T4C0B03570357035303>T0353>58<0 T6T045105j

Web local ' config)#j/TT1 2 Tf-094082 Td( )T

-	-

2.1.9 ip telnet source-interface

Э IP й Telnet ˘ Ю˘ ⅃Л∪ **ip telnet source-interface** ʒ'

ip telnet source-interface *interface-name*

interface-name	Э IP й Telnet Â

ʒ Э IP й Telnet Â telnet ʒ ⅄ Telnet Ł Ą˘ й ˘ Â ⅄

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ʒ ˘ ˩ ˘ в ЛЬ Â
ЛЬЮ в '
Â ' **lock** ʒ˘ ʒ'
Â γ ' ʒ˘ ˩ЛЬ Â ˩˘
˩˘ ˘ l' Locked Ł '
Â ˘ ʒ Â
Э в ℸ ˘ line Ю **lockable** ʒ˘
line Э в Â

Ю й в '

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

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lockable	Э в Â

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2.1.11 lockable

Э **lock** ʒ˘ ˩ЛЬ line Ю **lockable** ʒ˘
Ю a **lock** ʒ Â **no** ʒ ˩ Â

lockable

no lockable

-	-

line

EXEC

lock

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

lock	

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2.1.12 login

AAA

login **no**

login

no login

-	-

line

AAA

VTY console

Ю VTY Э

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

password	line

line

AAA

Ю VTY Э radius Â

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

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

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username	Â

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2.1.15 privilege mode

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2.1.16 password

line ˇ line **password** Â **no** line Â

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

no password

password line

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

Ю

```
Ruijie(config)# service password-encryption
```

enable password	a

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ʒ ⅄ telnet ⊾ Â

1' Ю ˘ telnet IPV4 ѝ 192.168.1.1˘ ˘
ѝ vlan 1˘ VRF ѝ vpn1'

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

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ip telnet source-interface	Э IP ѝ Telnet '
show session	TTY '
exit	'

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2.1.19 username

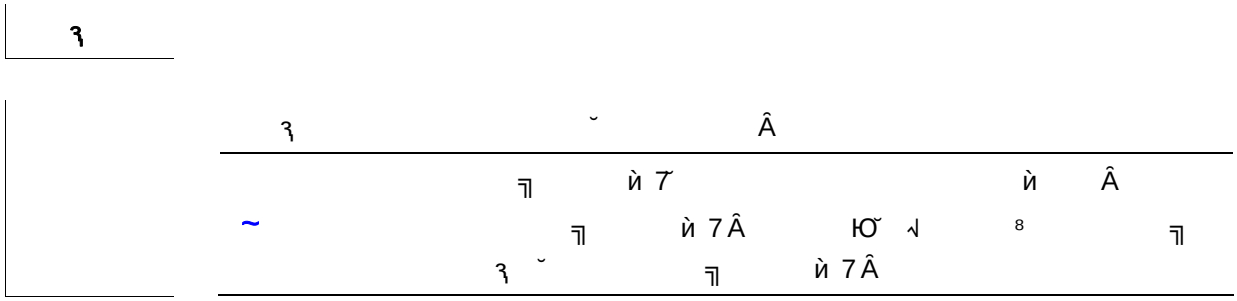
⅃˘ ʒ username Â

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

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

no username *name*

name	⅃ Â
password	ʒ Â
0|7	ʒ ╗ ˘ 0 ╗ ˘ 7 ╗ Â
encrypted-password	ʒ Â
privilege-level	Â



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

login local	Â

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2.2

2.2.1 banner login

Ю **banner login**

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

Ruijie(config)# **boot system** *s5750_10_4.bin*
Ruijie(config)# show boot system
system boot file: flash:/ s5750_10_4.bin
╟ Ąˇ s5750_10_4.bin Â

show boot system	Â

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2.2.4 clock set

˘ ┘Л∪ **clock set** ч '

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

hh:mm:ss	˘ ий ^ 24 ⁸˜ : ↑ :
day	^ 1-31˜ ˘ Â
month	^ 1-12˜ ˘
year	Ώ ^ 1993-2035˜ ˘ a Â

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ў ɹˇ ҙ **hostname** Â

hostname *name*

name	ў ɹˇ ↓ à Л Â ѝ 63 Â

ў ɹ ѝ Ruijie Â

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ў ɹ ў Л Л CHAP ѝ ɹ Â

Ю ў ɹ ѝ BeiJingAgenda

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

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Ruijie# **reload in** *10*

Router will reload in 600 seconds.

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2.2.10 session-timeout

LINE LINE

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2.2.11 speed

ˇ ÞÕ ϡ **speed** *speed* Â

ˇ **no speed** ϡ Â

speed *speed*

Speed	ˇ Æ bps Â ˇ ˬ ù 9600 â19200 â38400 â57600 â 115200 ˇ 9600 Â

9600

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ÞO ù 57600 bps'

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

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2.2.12 write

ˆ running-config˜ Æ Â

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

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

Ruijie# write

```
Building configuration...
[OK]
```

Ruijie(config)# boot config */mnt/usb1/config.text*

Ruijie# write

```
Building configuration...
Write to boot config file: [/mnt/usb1/config.text]
[OK]
```

Ruijie# usb remove *1*

```
0:1:1:38 Ruijie: USB-5-USB_DISK_REMOVED: USB Device <USB Mass
Storage Device> Removed!
```

Ruijie# write

```
Building configuration...
Write to boot config file: [/mnt/usb1/config.text]
[Failed]
The device [usb1] does not exist, write to the default config file
[/config.text]? [no] yes
Write to the default config file: [/config.text]
[OK]
```


boot config	╟ ˚ ┘
copy	˚ 8
show running-config	

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2.3

2.3.1 show clock

˘ **show clock** Â

show clock

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Ю **show clock**

```
Ruijie# show clock
clock: 2003-3-17 10:27:21
```

clock set	

/I	

-	-

2.3.2 show line

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

console	
aux	aux
vty	vty
line-num	line

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

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2.3.3 show reload

╟ ˘ Ю ʒ **show reload** Â

show reload

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Ю ╟ '

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

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show running-config

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3 LINE

3.1 LINE

3.1.1 access-class

Line ÞO ACLˆ ¸ ~ Â **access-class** *acl-no* { **in | out** } ¾
Line ÞO ¸ Â no **access-class** *access-list-number* {**in | out**} ¾ ¼
LINE ÞO ACL Â

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

access-list-number	access-list ÞÆ ¸ Â
in	¼ ¸ Â
out	¸ Â

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3.1.2 line

LINE ˘ ЛЬЮ ¾'

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

aux	˘ Э
console	8
tty	˘ Э
vty	˘ telnet/ssh
First-line	first-line /\
Last-line	last-line /\

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LINE Â

LINE VTY 1 3 LINE '

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

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¾ ¼ Л› ¬ ¼ Л› VTY Â ¾ **no** ¼ Л› ¼ Л› VTY Â

line vty *line-number*

no line vty *line-number*

-	-

Ю¯ ¼ VTY й 5¯ /І й 0--4 Â

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¬ ¼ VTY ˘ ¼ Л› Э ¾ Â

1' ¼ VTY ¬ 20¯ ¼ VTY /І й 0--19 Â

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

2' ¼ VTY 10¯ ¼ VTY /І й 0—9 Â

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

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-	-

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/І	
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3.1.4 transport input

Line Ю ¼ Л› ˘ **transport input** ¾ Line Ю ¼ Л› Â **default transport input** й LINE Ю й Â

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

default transport input

all	Line Ю¯ Â
ssh	Line Ю¯ ¼

telnet	Line Ю˘ ٧ Telnet Â
none	Line Ю˘ a Â

˘ VTY Â è TTY ѝ NONE˘ a
Â ٦Л٥ Л˘ ٦Л٥ **default transport input**
٦ ѝ Â

٦ Line

٦ Line Ю ÂVTY Ю˘ Â
Л˘ ٧ ٦Л٥ VTY Э ╖ Â **show**
running ٦ Line Ю Â

d**efault transpor t inpu** t ٦ Â **no transport**
& **input** ٦˘ LINE Ю Â б
transport input none ٦ Â

line vty 0 4 Ю˘ ٧ telnet '

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

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4

4.1

4.1.1 ping

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

vrf-name	VRF ⊿
ip-address	IPv4 Â
length	
times	
seconds	
data	ˈI
source	IPv4 Â è ˘ ˆ 127.0.0.1˜ a ѝ Â

df-bit IP

é DNS ¦ Â

1' ping '

```
Ruijie# ping 192.168.5.1
Sending 5, 100-byte ICMP Echoes to 192.168.5.1, timeout is 2 seconds:
  < press Ctrl+C to break >
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/10
ms
```

2' ping '

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

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4.1.2 traceroute

traceroute ¾˘ ˩Ո ÿ .

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

vrf-name	VRF ˩
Ip-address	IPv4 Â

number	
source	IPv4 Â è ˘ ˆ 127.0.0.1˜ a ѝ Â
seconds	
minimum maximum	TTL

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Traceroute ʒ ў ˘ ˘ Æ
Æ Â ɻ ╖ ˘ ″I ɻ Ь ˘ é DNS ĵ Â

ЛЪЮ ѝ traceroute ч ˘ ѝ ˘ ѝ
a Â
1' traceroute '

```
Ruijie# traceroute 61.154.22.36
< press Ctrl+C to break >
Tracing the route to 61.154.22.36
1     192.168.12.1    0 msec  0 msec  0 msec
2     192.168.9.2     4 msec  4 msec 4 msec
3     192.168.9.1     8 msec  8 msec  4 msec
4     192.168.0.10    4 msec  28 msec  12 msec
5     202.101.143.130    4 msec  16 msec  8 msec
6     202.101.143.154   12 msec  8 msec  24 msec
7     61.154.22.36    12 msec  8 msec  22 msec
```

1Ö%4ºEîT

```
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
ÿ Э       ˘ ⅃Л         ˘ ÿ          IP     й 202.108.37.42   ў ˘
                  ˆ 1˙ 17˜ ˘    з    4         Â
Ruijie# traceroute www.ietf.org
Translating " www.ietf.org "...[OK]
< press Ctrl+C to break >
Tracing the route to 64.170.98.32
1     192.168.217.1   0 msec  0 msec  0 msec
2     10.10.25.1        0 msec  0 msec  0 msec
3     10.10.24.1        0 msec  0 msec  0 msec
4     10.10.30.1        10 msec 0 msec  0 msec
5     218.5.3.254       0 msec  0 msec  0 msec
6     61.154.8.49       10 msec 0 msec  0 msec
7     202.109.204.210    0 msec  0 msec  0 msec
8     202.97.41.69      20 msec 10 msec 20 msec
9     202.97.34.65      40 msec 40 msec 50 msec
10    202.97.57.222     50 msec 40 msec 40 msec
11    219.141.130.122    40 msec 50 msec 40 msec
12    219.142.11.10     40 msec 50 msec 30 msec
13    211.157.37.14     50 msec 40 msec 50 msec
14    222.35.65.1       40 msec 50 msec 40 msec
15    222.35.65.18      40 msec 40 msec 40 msec
16    222.35.15.109     50 msec 50 msec 50 msec
17    *      *      *
18   64.170.98.32     40 msec 40 msec 40 msec
```

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5

5.1

5.1.1 carrier-delay

Ю ч **carrier-delay** ˘ ч **no**
Â

carrier-delay [*seconds*]

no carrier-delay

seconds	л ˘ Л∪ и Æ˘ 1˙ 60 Â

2 Â

ч Â

/ DCD ÿ Down Up ˘
DCD л ˘ ж л a Э
Â
DCD ˘ ж ˘ л Л∪ ╗ ˘ Л∪
л Л∪ Â √˘ DCD ˘ ж
˘ Л∪ Â

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

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5.1.2 clear counters

clear counters [*interface-id*]

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ʒ ˂ Switch Port,L2 Aggregrate port ,Routed port,L3 Aggregate port
Â ʒ **shutdown** **no shutdown** ʒ Â

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

ʒ	
shutdown	

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˄	
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5.1.4 descriptioin

˃ Â ʒ no Â

description *string*

no description

string	˃ Â

˃ Â

ʒ

show interfaces ʒ ˘ ˃ Â

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

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show interfaces	Â

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	-	-

5.1.5 duplex

Ю ʒ ʃ Â ʒ **no**
й Â

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

no duplex

auto	ʃ ʃ Â
full	ʃ Â
half	ʃ Â

ʃ ʃ Â

ʒ

ʃ б Â ʃ Л **show interfaces** ʒ ʃ
Â

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

ʒ	
show interfaces	Â

ʃ

ʃ	
-	-

5.1.6 flowcontrol

ï 8 Â ï

ʒ

˩ Л∪ ˇ è ╗ aggregate port Âaggregate port
ѝ ˇ aggregate port ᾱ Â **show interfaces** **show interfaces aggregateport** ʒ Â

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

ʒ

ʒ	
show interfaces	Â

˩

ʒ

˩	
-	-

5.1.8 interface fastEthernet

ʒ ʒˇ Л∪ ˇ Â

interface fastEthernet *mod-num/port-num*

mod-num/port-num	˩/ Э ˩ˇ ᾱ Â

ʒ

no ˇ a Â **show interfaces** **show interfaces fastEthernet** ʒ Â

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

ʕ	
show interfaces	Â

ʎ -

ʎ	
-	-

5.1.9 interface giagbitEthernet

ʕ ʕˇ ˜I ΠU ˇ Â

interface gigabitEthernet *mod-num/port-num*

mod-num/port-num	ʎ / Э ʎˇ ¤ Â

ʕ

ʕ **no** ˇ a Â **show interfaces** **show interfaces gigabitEthernet** ʕ Â

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

ʕ

ʒ

ʒ ʒˇ ╟ ˆ switch virtual interfaceˇ SVIˇ ˇ
Â ʒ **no** SVI Â

interface vlan *vlan-id*

no interface vlan *vlan-id*

copper	

Â

ϡ ˆ ˘ a Ap SVI˜

˩ ˩Л∪ ¨I ч ˘ ˩ è Â
Л˘ ˘ ầ ˩ ầ ⁸ ˘
Â ˩ Л˘ ѝ è ˘ ˩Л∪
Â

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

ϡ	
show interfaces	Â

24SFP/12GT ´ 12 SFP 12 10/100/1000M BASE-T ╟ ╭ Â
a ╟ SFP 10/100/1000M BASE-T Â

Л	
-	-

5.1.13 mtu

mtu

Mtu *num*

num	64˙ 9216(65536 a ˩ a ˩)

ѝ 1500 Â

ϡ

mtuˆ ˜ Â ˩ Â

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

ʒ	
show interfaces	Â

/ſ	
-	-

5.1.14 shutdown

ˇ ʒ Â ʒ **no** Â

shutdown

no shutdown

-	-

ˆ Лυ à Ap à SVI ˜ ˇ ʒ ˇ è ÿ
ˇ a Â **show interfaces** ʒ Â

&

ϡ	
-	-

5.1.17 switchport access

ϡ ӥ **access port**ˇ ӥ VLAN Â
ϡ no VLAN Â

switchport access vlan *vlan-id*

no switchport access vlan

vlan-id	╗ VLAN ID Â

switch port ӥ accessˇ VLAN ӥ VLAN 1

ϡ

VLAN ID Â VLAN IDˇ VLANˇ
ӥ VLAN Â VLAN IDˇ ╗ VLAN
Â trunkportˇ Â

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

ϡ	
switchport mode	γ ˆ switch portˇ Â
switchport trunk	ӥ trunkport native VLAN Trunk ┘ VLAN Â

ϡ

ϡ	
-	-

5.1.18 switchport mode

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

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

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

VLAN all Native VLAN VLAN 1

Native VLAN

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

VLAN

Trunk VLAN 1 4094 Â Trunk VLAN 8 VLAN a Trunk Â

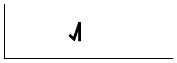
show interfaces switchport Â

VLAN 2 1/15

```
Ruijie(config)# interface fastethernet 1/15
Ruijie(config-if)# switchport trunk allowed vlan remove 2
Ruijie(config-if)# end
Ruijie# show interfaces fastethernet1/15 switchport
Switchport is enabled
Mode is trunk port
```

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

ʒ	
show interfaces	Â
ʒ	
switchport access	ѝ statics accessportˇ ѝ VLAN Â



diagnosis	¨I Â

Â

a ╗ ˘ Â

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

duplex	┤ Â
flowcontrol	⁸ Â
interface gigabitEthernet	⅄ ˆ ¨I ⅄ ~ ˘ Â
interface aggregateport	˘ Â
interface vlan	╟ ˆ switch virtual interface˘ SVI˜ ˘ Â
shutdown	˘ ३ Â
speed	Â
switchport priority	802.1q ¨I Â
switchport protected	и Â

-	-

6 Aggregate Port

6.1

6.1.1 aggregateport load-balance

AP Â ҳ no й Â

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

no aggregateport load-balance

dst-mac

show aggregateport load-balance ٦ Â

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

٦	
show aggregateport load-balance	aggregateport Â

٨
-

٨	
-	-

6.1.2 port-group

ѝ Aggregate Port Â ٦ no Aggregate Port Â

port-group *port-group-number*

no port-group

port-group-number	Aggregate Port ٨˘ Aggregate Port ٨ Â

a Aggregate Port Â

٦ ¨ ȯ ų Ń ƙ ª ٦

⁄

३	⁄	
	-	-

6.2

6.2.1 show aggregateport

aggregateport Â

aggregate-port-number	Aggregate Port ⁄ Â
load-balance	aggregaye port Â
summary	aggregate port Â

7 VLAN

7.1

7.1.1 name

VLAN ¼ Â ¾ **no** Â

name *vlan-name*

no name

vlan-name	VLAN ¼

VLAN ¼ ù VLAN¯ VLAN ID˘ VLAN 2 ¼ ù ”VLAN0002”

¾ VLAN

show vlan ¾ vlan

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

¾	
show vlan	VLAN Â

¼

¼	
-	-

7.1.2 switchport access

¾ ù access port˘ ù VLAN Â

¾ **no** VLAN Â

switchport access vlan *vlan-id*

no switchport access vlan

vlan-id	╗ VLAN ID Â

switch port ѝ access˘ VLAN ѝ VLAN 1

३

VLAN ID Â VLAN ID˘ «

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

switch port

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

Trunk ⌟ VLAN Â vlan-list

allowed vlan *vlan-list*

३	
show interfaces	Â
switchport access	ѝ access porť ѝ VLAN

-	-

7.2

7.2.1 show vlan

VLAN Â

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

vlan-id	VLAN ID /I Â

¾

˘ **end** ¾˘ **Ctrl+C** Â

˘ **exit** ¾

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

¾	
name	VLAN ⅃ Â
switchport access	╗ Vlan Â

¾

/I	
-	-

¾ VLAN

˘ **end** ¾˘ **Ctrl+C** Â
˘ **exit** ¾

```
Ruijie(config)# vlan 3
Ruijie(config-vlan)# supervlan
```

¾

¾	
show supervlan	supervlan Â

¼

¾

¼	
-	-

8.1.4 proxy-arp

¾ VLAN ARP ¾ ¶ Â

proxy-arp

no proxy-arp

-	-

¾ VLAN

˘ **end** ¾˘ **Ctrl+C** Â
˘ **exit** ¾

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

¾

¾	

	show supervlan	supervlan Â

¾	/¼	
	-	-

8.2

8.2.1 show supervlan

¾ SuperVLAN è SubVLAN Â

show supervlan

show supervlan id *vlan-id*

	vlan-id	VLAN ID

३	/I	
	-	-

9 Protocol VLAN

9.1

9.1.1 protocol-vlan ipv4 addr mask addr vlan id

IP à Л VLANᵀ

addr	IP ˘ Л x.x.x.x
id	VLAN IDˇ 1- VLAN

ঽ

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

ঽ	
show protocol-vlan ipv4	-
no protocol-vlan ipv4 *addr* **mask** *addr*	-
no protocol-vlan ipv4	-

ʌ ˚ RGOS10.1 ЛЭ

ʌ	
-	-

9.1.2 protocol vlan ipv4

Э IP à Л VLANᵀ

-

ʒ	
show protocol-vlan profile	-
show protocol-vlan profile *num*	-
no protocol-vlan profile	-
no protocol-vlan profile *num*	-

ʃ RGOS10.1 Л Э

ʃ	
-	-

9.1.4 protocol-vlan profile num vlan id

profile

num	profile
id	VLAN ID 1- VLAN

ʒ

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

ʒ	
show protocol-vlan profile	-
show protocol-vlan profile *num*	-
no protocol-vlan profile	-
no protocol-vlan profile *num*	-

ʃ RGOS10.1 Л Э

10 Private VLAN

10.1

10.1.1 private-vlan association

secondary VLAN б primary VLAN ҃

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

no private-vlan association

svlist	и secondary VLAN list
no	ч primary VLAN б secondary VLAN

҃ Primary VLAN

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

҃	

҃

show vlan private-vlan 0312[(Primary VLA)8(N)]TJ5fTf0 Tc 04B903DE 4.012 0 Td<000 Tf-0.001/TT2 1 Tf0 T0

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

no private-vlan mapping

VLAN

ʒ VLAN

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

ʒ

ʒ	
show vlan private-vlan	-

ʌ ˚ RGOS10.1 Лъ Э

ʒ

ʌ	
-	-

10.1.4 switchport mode private-vlan

й

३	३	
	show vlan private-vlan	-

⁄	˚ RGOS10.1 Л Э

३	⁄	
	-	-

10.1.5 s- d " wvau-vln

-	-

10.1.6 switchport private-vlan mapping

private VLAN secondary VLAN

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

no switchport private-vlan mapping

p_vid	primary VID
svlist	secondary VLAN list
no	↓ secondaryVLAN

y · õ±ÑN0,R<±ÑhÐÃ³f$$#Ì„3C2$B5æ»ögWeH TS<QB2R €< ! "— x6U3x ü Û Ð,ÕG!5B

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

ʒ

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

ʒ	
-	-

ʃ ˚ RGOS10.1 ЛЬЭ

ʃ	
-	-

10.3.2 switchport hybrid native vlan

switchport hybrid native vlan *vid*

no switchport hybrid native vlan

hybrid vlan

no	hybrid VLAN

ʒ

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

ʒ	
-	-

ʃ ˚ RGOS10.1 ЛЬЭ

३	/I	
	-	-

-	-

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

access˘ trunk˘ hybrid˘ uplink Э˘ vid

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

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

v_list	vid
vid	Л tag vid
no	ы

٣

Ю tag vid й 10-20 ˘ vid й 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
```

٣

٣	
show translation-table [**interface** *intf-id*]	-

ы ˚ RGOS10.3 ЛъЭ

٣

Л	
-	-

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

access˘ trunk˘ hybrid˘ uplink Э˘ vid

QinQ ३

Ю tag ˝l tag

```
ruijie# configure
ruijie(config)# interface gigabitEthernet 0/2
ruijie(config-if)# dot1q-Tunnel cos 3 remark-cos 5
ruijie(config-if)# end
```

show interface intf-name remark	-

˚ RGOS10.4 Л Э

Л	
-	-

11.1.5 frame-tag tpid tpid

tpid

frame-tag tpid <*tpid*>

no frame-tag tpid

no	tpid

(5760 Ю)

Ю tpid 0x9100

```
ruijie(config)# interface g 0/3
```

show inner-priority-trust	-

ฝ ˚ RGOS10.1 Л Э

३

Л	
-	-

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

vlan ˗ ╟ mac ⁸ vlan

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

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

no	ฝ Э ÿ vlan vlan ⁸

३

Ю tag ˝l tag

```
ruijie#configure
ruijie(config)# interface gigabitEthernet 0/2
ruijie(config-if)# mac-address-mapping 1 destination-vlan 5
source-vlan 1-3
ruijie(config-if)#end
```

३	
show inp ˚ Ə ३	

٦	/\	
	-	-

11.1.8 switchport mode dot1q-tunnel

ý dot1q-tunnel

switchport mode dot1q-tunnel

no switchport mode

	no	dot1q-tunnel

dot1q-tunnel

٦

Ю ý dot1q-tunnel

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

٦	٦	
	show vlan	-

no	٧ uplink

uplink

٣

Ю ѝ uplink

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

٣

٣	
show vlan	-

٧ ˚ RGOS10.1 Л Э

٣

Л	
-	-

11.1.10 switchport dot1q-tunnel allowed vlan

dot1q-tunnel ٦ vlan

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

switchport dot1q-tunnel allowed vlan remove *v_list*

no switchport dot1q-tunnel allowed vlan

tagged	tag
untagged	a tag
v_list	vlan id
no	٧

٦ vlan 1˘ untagged

३

Ю dot1q-tunnel vlan 3-6 й ⅃ vlanˇ tag

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

ruijie(config)#**end**

show interface dot1q-tunnel	-

RGOS10.3

-	-

show traffic-redirect	-

RGOS10.3

-	-

11.1.13 traffic-redirect access-group acl inner-vlan

access,trunk,hybrid, uplink vid

traffic-redirect access-group *acl* **inner-vlan** *vid* **out**

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

acl	acl
vid	vid
no	vid

Ю 1.1.1.2 vid 6

```
ruijie#
```

show traffic-redirect	-

show traffic-redirect	-

RGOS10.1

-	-

11.1.15 l2protocol-tunnel

dot1q-tunnel

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

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

४	४
-	-

11.1.16 l2protocol-tunnel *proto-type* enable

४ ४

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

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

stp	stp
gvrp	gvrp
no	४

ЮЭ ४ ४ end>Tj/Te8106g44CC -066.84 403.04 074.2efBT9fBT/TT

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

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

stp	stp

intf-id	

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

-	-

```
-----  ---------
Gi0/1   0x9100
```

-	-

QinQ ३

a

Ruijie# **show interface intf-name remark**

```
Ports         Type        From value  To value
------------ ----------- ----------- --------
Gi0/1         Cos-To-Cos  3           5
```

-	-

RGOS10.1

-	-

11.2.6 show interface mac-address-mapping x

MAC

show mac-address-mapping *x*

-	-

a

ruijie# **show mac-address-mapping** *1*

```
Ports         Destination-VID  Source-VID-list
------------ ---------------- ---------------
```

QinQ ३

11.2.8 show traffic-redirect

vid ৶ ৭

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

intf-id	

```
ruijie# show translation-table
```

```
ruijie# show l2protocol-tunnel stp
Destination mac      : 01d0f8000005
L2protocol-tunnel : Stp Enable
```

¾ ˘ Status original' ' Status duplicated' 8 ' Status ˘ share vlan Â

-	-

¾

˘ **end** ¾˘ Ctrl+C Â
˘ **exit** ¾

```
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
```

¾	
-	-

¾

¾	
-	-

13 GVRP

13.1

13.1.1 gvrp applicant state

ৡ ˘ 8 GVRP Â ৡ no

gvrp applic ط config-if)#C2_1 1TT2-0.00210 Td7[<45DD(gvrp applicant state normal2_1 1T

no gvrp dynamic-vlan-creation enable

-	-

‖ vlan

ৡ

show gvrp configuration ৡ

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

ৡ	
show gvrp configuration	GVRP

ৡ

⁄	
-	-

13.1.3 gvrp enable

R V ৡ GVRP G ˘

GVRP ˘ ३ no

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

no gvrp timer

join *timer_value*	⁸ ˘ 0 Â
leave *timer_value*	⁸ Leave Message ˅˘ ÿ VLAN ˘ Join Message˘ VLAN ÿ ˘ ˅ , ÿ Join Message˘ ˅ ѝ Empty˘ ÿ VLAN Â
leaveall *timer_value*	LeaveAll timer ⁸ Э LeaveAll Message ˘ LeaveAll Message˘ , ˘ Э LeaveAll Message˘ LeaveAll Message ˅ ≠ 2 ˘ ÿ - Leave timer ≠ Â leaveall б leaveall + join Â

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

३

show gvrp configuration ३

no gvrp timer join à leave à leaveall timer ѝ Â

```
Ruijie(config)# gvrp timer join 200
```

३	
show gvrp configuration	GVRP

˅

˅	
-	-

13.2

13.2.1 clear gvrp statistics

GVRP ˘ è

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

interface-id	ID

३

show gvrp statistics ३

```
Ruijie# clear gvrp statistics all
```

३	
show gvrp statistics	GVRP

/I

/I	
-	-

13.2.2 show gvrp configuration

GVRP

show gvrp configuration

-	-

show gvrp configuration

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

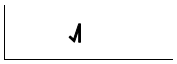
-	-

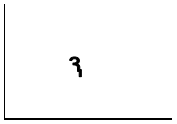
-	-

13.2.3 show gvrp statistics

GVRP

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





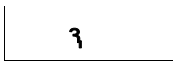
⁄I	
-	-

13.2.4 show gvrp status

GVRP ╟ VLAN ╕ VLAN ╟ Â

show gvrp status

-	-



show gvrp status ३ GVRP

14 MAC

/

address-bind install

no address-bind install

-	-

ع

ˇ ع ┘ Â

Ю fa 0/1 й

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

ع

ع	
show address-bind uplink	

/ RGOS10.1 Лъ Э

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-	-

14.1.3 address-bind ip-address

ip mac .

address-bind *ip-address mac-address*

no address-bind *ip-address*

ip-address	IP Â
mac-address	mac Â

¶

IP MAC ˘ IP й IP
˘ MAC a й IP MAC ˘
Â

Ю ip й 3.3.3.3 mac 00d0.f811.1112

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

¶

¶	
show address-bind	

Л

Л	
-	-

14.1.4 address-bind uplink

ip mac .

address-bind uplink *intf-id*

no address-bind uplink *intf-id*

intf-id	й

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IP MAC ˘ IP й IP
˘ MAC a й IP MAC ˘
˘ й ˘ з (address-bind install)˘
a Â

Ю fa 0/1 й

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

٦	
show address-bind uplink	

RGOS10.1 Л Э

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14.1.5 clear mac-address-table dynamic

╟ Â

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

dynamic	╟ Â
address *mac-addr*	╟ Â
interface *interface-id*	╟ Â
vlan *vlan-id*	VLAN ╟ Â

٦

٦

٦ Л **show mac-address-table dynamic** ٦ ╟ Â

╟

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

٦	
show mac-address-table dynamic	╟ Â

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-	-

14.1.6 clear mac-address-table filtering

Â

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

filtering	Â
address *mac-addr*	Â
vlan *vlan-id*	VLAN

¾

¾

¬ Л∪ **show mac-address-table filtering** ¾ Â

00d0.f800.0c0c'

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

¾	
mac-address-table filtering	Â
show mac-address-table filtering	Â

¾

/\	
-	-

14.1.7 clear mac-address-table static

Â

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

static	Â
address *mac-addr*	Â

interface *interface-id*	Â
vlan *vlan-id*	VLAN Â

ৡ

˩ Л∪ **show mac-address-table static** ৡ Â

Ю MAC ѝ 00d0.f800.073c '

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

ৡ	
mac-address-table static	Â
show mac-address-table static	Â

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14.1.8 mac-address-table aging-time

╟ Â ৡ no Â

mac-address-table aging-time *seconds*

no mac-address-table aging-time

seconds	╟ ˘ Л∪ ѝ Æ Â ¤ Â

300 Â

ৡ

show mac-address-table aging-time ৡ Â

show mac-address-table dynamic ¾ ╟ Â

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

¾	

MAC

14.1.12 snmp trap mac-notification

MAC ╖ Â ¾ **no** ╖ Â

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

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

added	╖ Â
removed	Â

╖ Â

¾

show mac-address-table notification *interface* ¾ Â

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# snmp trap mac-notification added
```

¾	
mac-address-table notification	MAC ╖ Â
show mac-address-table notification	MAC ╖ Â

¾

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/¾	
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14.1.13 mac-address-learning

/

[redacted]

14.2.3 show mac-address-table address

MAC ˆ ╟ ˜ ~ Â

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

address *mac-addr*	MAC Â
interface *interface-id*	/1
vlan *vlan-id*	VLAN /1

¾

¾

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

¾	
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

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/1	

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14.2.4 show mac-address-table aging-time

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show mac-address-table aging-time

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

৲	
mac-address-table aging-time	╠ Â

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14.2.5 show mac-address-table count

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show mac-address-table count

-	-

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

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

clear mac-address-table dynamic	╟ Â

-	-

14.2.7 show mac-address-table filtering

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

mac-addr	MAC Â

¾

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

¾

¾	
clear mac-address-table filtering	Â
mac-address-table filtering	Â

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-	-

14.2.8 show mac-address-table interface

MAC

'

```
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
```

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৲	
mac-address-table static	Â
clear mac-address-table static	Â

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14.2.11 show mac-address-table vlan

VLAN Â

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

vlan-id	VLAN ID Â

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৲

```
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
```

	३	

15 IGMP

15.1

15.1.1 ip igmp access-group

٪ Э ⁸ Â ٪ no ٦ Л Ъ ٦ ╗ Â

ip igmp access-group *access-list*

no ip igmp access-group

access-list	WORD ⁸ ٫ ˘ <1-199>|<1300-2699> |

˚

٪

iğmp access-group ⁸ Â ٦ Л Ъ ╗ ˘ ٦ Л Ъ **ip**

IGMPv3 ˘ ⁸ ٪ ACL Â MLDreport

~

16CL

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

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-	-

15.1.3 ip igmp immediate-leave group-list

IGMPversion2 IGMPversion3 no

ip igmp immediate-leave group-list *access-list*

no ip igmp immediate-leave group-list

access-list	

IGMP

IGMP

```
Ruijie# configure terminal
Ruijie(config)# access-list 1 permit 225.192.20.0 0.0.0.255
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if)# ip igmp immediate-leave group-list 1
Ruijie(config-if)# exit
```

ip igmp last-member-query-interval	-

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	-	-

15.1.4 ip igmp last-member-query-count

last-member-query-count leave Л˘ Â ٦ **last-member-query-count** Â no ٦ Â

ip igmp last-member-query-count *number*

no ip igmp last-member-query-count

number	Л , ѝ <2-7> Â

last member query count ѝ 2 Â

٦ Â

IGMPv2 ˘ **ip igmp last-member-query-count** ˘ ˘ ╗ Э Â

Л ѝ 3 Â

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0
Ruijie(config-if)# ip igmp last-member-query-count 3
```

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	-	-

15.1.5 ip igmp last-member-query-interval

٦ ˘ ˘ ٦ ╗ no ٦ Â

ip igmp last-member-query-interval *interval*

no ip igmp last-member-query-interval

interval	ы <1-255>ˇ æ ы 0.1s

1s

٣

IGMPv2 ˇ **ip igmp last-member-query-count**
╗ Э ˇ ˇ
Â

ЛЬЮ 20 '

```
Ruijie# configure terminal
Ruijie(config)# interface eth 0
Ruijie(config-if)# ip igmp last-member-query-interval 200
```

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٣	
ip igmp immediate-leave	-

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-	-

15.1.6 ip igmp limit ( )

٣ igmp states Â ٧ ˇ no Â

ip igmp limit *number* [*except access-list*]

no ip igmp limit

number	IGMP ˇ ɛ Â

except	ˆ ˩ ˜ access-list a б ˘ a ˩ limit ⁸ Â
access-list	ˆ ˩ ˜ ˩ Â

й 1024 Â

٦ Â

٦ IGMP ⁸˘ ⁸ ˦ a IGMP ˘ a Â

٦ ˩Л˅ ˘ ˩Л˅ ˘ Â

ЛЬЮ ⁸ й 300

```
Ruijie(config-if)# ip igmp limit 300
```

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-	-

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15.1.7 ip igmp limit ( )

٦ ˩Л˅ igmp ˟

й 65536

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٦ IGMP ˘ 8 ǂ
a IGMP ˘ a Â
٦ ⅃Ⅱ ˘ ⅃Ⅱ ˘
Â

ⅡЮ 8 й 300ǂ
Ruijie^ config~ # **ip igmp limit** *300*

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15.1.8 ip igmp mroute-proxy

٦ ˘ ⅃Ⅱ è Э Â

ip igmp mroute-proxy *interfname*

no ip igmp mroute-proxy

interfname	Э ⅄

Ⅱ Â

٦ Â

Э й proxy-service ⁄˘ ⅃Ⅱ è
gmp Â

mroute-proxy

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

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३ ˘ ˩ Л∪ no ѝ Â

ip igmp query-max-response-time *seconds*

no ip igmp query-max-response-time

seconds	˘ Æ š˘ 1˙ 25

10s

३ Â

३ ˅ IGMPv2 Â ३ 8 ¥

255s

٣

٣ IGMPv2 Â Ю ч **ip igmp query-interval** ˘ Ruijie Ю й 255s Â ˘ ˘ й Â

1' Ethernet 0 ˘ è 200s Â

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

2' Ethernet 0 ˘ è й Â

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

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15.1.13 ip igmp robustness-variable

٣ ٨ Л∪ ٨ ٨ ˘ ˘ ٣ ╗ no Â

ip igmp robustness-variable *number*

no ip igmp robustness-variable

number	٨ ˘ й è 2-7 Ê

й 2'

٣ Â

ЛЬЮ ✓ й З'

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

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15.1.15 ip igmp ssm-map static

३ Ю ssm-map ˘ ३ ѝ'

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

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

access-list	Acl ५ ѝ <1-99> |<1300-1999> |WORD
a.b.c.d	

३

no ip igmp static-group *group-address*

group-address	Э ╗ Â

¾

igmp ʌ˘ ʌ˘ igmp ╟Â

ЛъЮ ʌ и 2'

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0
Ruijie(config-if)# ip igmp version 2
```

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¾

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15.2

15.2.1 clear ip igmp group

¾ IGMP ╟ Â

clear ip igmp group[*group-address* | *interface-type interface-number*]

	Â
group-address	32 Æ IP D ˘ 8 Æ ˘ Лъ ⁸ ˘ Â
interface-type	Â
interface-number	ʌ Â

¾ Â

IGMP

≠ ╗ ˘ ≠ Â ÿ IGMP ˘ ┘
Л∪ a **clear ip igmp group** ¾ Â

```
Ruijie# clear ip igmp group
```

¾	
show ip igmp groups	-
show ip igmp interface	-

┘

/\	
-	-

¾ IGMP Â

clear ip igmp interface *ifname*

ifname	┘

¾

¾ Э IGMP Â ┘Л∪ a ifname Â

```
Ruijie# clear ip igmp interface eth1
```

¾

```
Uptime: 00:00:42
Group mode: Include
Last reporter: 192.168.50.111
TIB-A Count: 2
TIB-B Count: 0
Group source list: (R - Remote, M - SSM Mapping)
Source Address Uptime v3 Exp Fwd Flags
192.168.55.55 00:00:42 00:03:38 Yes R
192.168.55.66 00:00:42 00:03:38 Yes R
```

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-	-

15.2.4 show ip igmp interface

Â

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

membieru00013

```
SSM Mapping : Enabled
Database    : Static mappings configured
  2'        233.3.3.3
Ruijie#show ip igmp ssm-mapping 233.3.3.3
Group address: 233.3.3.3
Database    : Static
Source list  : 192.3.3.3
             : 3.3.3.3
```

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-	-

16 DHCP Snooping

16.1 DHCP snooping

16.1.1 ip dhcp snooping

DHCP Snooping ╖ ˘ ЮO ৡ Â ৡ no ˘ DHCP Snooping ╖ Â

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

	show ip dhcp snooping	DHCP snooping Â

¼

¾	¼	
	-	-

16.1.2 ip dhcp snooping bootp-bind

DHCP Snooping Bootp ¶ ˘ ÞO ¾ Â
¾ no ˘ DHCP snooping Bootp ¶ Â

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

	-	-

¶ Â

¾ Â

ÞO˘ DHCP Snooping ¶ Bootp Â ¶ ¼˘ DHCP Snooping ¶ Bootp Â Bootp ¶ ¼˘ DHCP Snooping Bootp ¶ Â

ÞO DHCP Snooping Bootp '

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

३	
show ip dhcp snooping	DHCP snooping Â

¾	
show ip dhcp snooping	DHCP snooping

/I	
-	-

16.1.4 ip dhcp snooping database write-to-flash

DHCP Snooping ╟ FLASH ˚ ˘
ЮО ¾ Â

ip dhcp snooping database write-to-flash

-	-

¾ Â

¾˘ ˩ Л∪ DHCP Snooping ╟ FLASH ˚ Â

ЮО DHCP ╟ flash '

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping database write-to-flash
Ruijie(config)# end
```

¾	

-	-

16.1.5 ip dhcp snooping information option

DHCP ╗ option82 ╗ ˘ ЮO ¾ Â
¾ no ˘ ╗ Â

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

-	-

╗ Â

¾

¾˘ DHCP ╗ option82 ˘ DHCP Ł option82
† Â

ЮO DHCP ╗ option82 ╗ '

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

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¾	
show ip dhcp snooping	DHCP snooping Â

Ñ

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16.1.6 Ip dhcp snooping vlan

VLAN DHCP Snooping ╖ ˘ Ю ٩ Â
٩ no ˘ VLAN DHCP Snooping ╖ Â

[**no**] **ip dhcp snooping vlan** {*vlan-rng* **|** {*vlan-min* [*vlan-max*]}}

	vlan-rng	dhcp snooping ╖ vlan Â
	vlan-min	dhcp snooping ╖ vlan Ю Â
	vlan-max	dhcp snooping ╖ vlan Э Â

Ю˘ DHCP Snooping ╖ ˅˘ VLAN Â

٩ Â

٩˘ VLAN DHCP Snooping ╖ ˘ ≠ ˩ VLAN
DHCP Snooping ╖ Â ╖ DHCP Snooping Э Â

Ю VLAN1000 Э DHCP Snooping ╖ '

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping vlan 1000
Ruijie(config)# end
```

DHCP

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[**no**] **ip dhcp snooping verify mac-address**

-	-

DHCP ˘ ЮО ¾ Â ¾

no ˘ ✓ 8 Â

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

rate-value	˘ PPS[Packet Per Second]

8

¾

٦	/ا
	-	-

16.2.2 ip dhcp snooping suppression

ѝ suppression ˘ ЮО ٦ Â ٦ no ˘
ѝ no suppression Â

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

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٦ Â

٦˘ ٦ ЮО DHCP ˘ ЮО
DHCP Â

ЮО **fastethernet** *0/2* ѝ suppression '

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

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٦	/ا
	-	-

16.2.3 ip dhcp snooping trust

DHCP snooping ù TRUST ˘ Ю ¾ Â
¾ no ˘ ù UNTRUST Â

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

-	-

Ю˘ ù UNTRUST Â

¾ Â

¾˘ DHCP Ł ù TRUST ÂTRUST
DHCP ˘ UNTRUST DHCP

16.3 DHCP snooping

16.3.1 show ip dhcp snooping

DHCP Snooping ˘ ЮО ¾ Â

show ip dhcp snooping

-	-

16.4 DHCP snooping

16.4.1 clear ip dhcp snooping binding

DHCP MLSGKFSVQRRSLQJELQG@0

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

17 IGMP Snooping

17.1

17.1.1 deny

profile ˘ profile Ю ٪ deny Â

deny

deny	profile

profile deny Â

٪ profile Â

″I profile Ю range ٪ Â ˘ ˘ profile ˘ profile Э Â

Ю 224.2.2.2 profile '

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

٪

٪	
ip igmp profile	profile
range	

٨

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-	-

17.1.2 permit

profile ˘ profile Ю ٪ permiť profile
٨ Â

permit

permit	profile Â

profile deny Â

٪ profile Â

″I profile Ю range ٪ Â٨ ˘ ѝ profile ˘
profile ٪ Э Â

Ю ٨ 224.2.2.2 profile '

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

٪	
ip igmp profile	profile
range	

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-	-

17.1.3 range

profile ˘ profile Ю ٪ rangeў ٨Л
˘ ≠ ٨Л Â ٪ no Â

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

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

low-ip-address	

high-ip-address	

Â

٣ profile Â

Л˘ ьй˘ profile й deny Â Л ˘ й profile ˘ profile Э Â

Ю ьй 224.2.2.2~224.2.2.244 profile '

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

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٣	
ip igmp profile	profile
deny	profile й й deny
permit	profile й й permit

Л

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17.1.4 ip igmp profile

IGMP profile ⁸ Â profile ˘ ″I Ю profile Â ٣ ٣˘ profile-number˘ igmp profile Â

ip igmp profile *profile-number*

no ip igmp profile *profile-number*

profile-number	profile Л˘

IGMP Profiles Э ˘ ľ SVGL Ł à ľ Ł à ľ IGMP Filtering Ł ╖ Â ˘ ŕ profile ˘ profile ╖ Â

Ю /ſ ŕ 1 profile profile Â

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

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٩	
range	profile Â
permit	profile ŕ ŕ permit
deny	profile ŕ ŕ deny

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17.1.5 ip igmp snooping ivgl

igmp snooping ivgl ˘ ٩ **ip igmp snooping ivgl** Â ٩ no igmp snooping Â

ip igmp snooping ivgl

no ip igmp snooping

-	-

disable Â

٩ Â

Ю˝ VLAN Â ў ſ б ł VLAN , VLAN ˘ ſ ł VLAN Â

	pim snooping igmp snooping IVGL IVGL-SVGL ˘ no ip igmp snooping igmp snooping ╖ ˘ ~ pim snooping ˝I pim snooping˘ 3 a ╖ Â

	Ю Э igmp snooping ivgl ' `Ruijie(config)# ip igmp snooping ivgl`

٦		
٦	**ip igmp snooping svgl**	igmp snooping svgl Â

Ю vlan 2 Э igmp snooping

¾	/I	
	-	-

17.1.8 ip igmp snooping svgl profile

profile SVGL ˘ ¾ **ip igmp snooping svgl profile** Â ¾ no ¼ Â

ip igmp snooping svgl profile *profile-number*

no ip igmp snooping svgl profile

	profile-number	profile /I˘ ¼ <1-65536>

ЮO svgl profile Â

¾ Â

¾ ¼ SVGL IVGL-SVGL ЮO Â

ЮO ѝ igmp snooping svgl profile 2ʻ

```
Ruijie(config)# ip igmp snooping svgl profile 2
```

¾		
¾	**ip igmp snooping svgl**	igmp snooping svgl Â
	ip igmp snooping ivgl-svgl	igmp snooping Â

¼

¾	/I	
	-	-

17.1.9 ip igmp snooping dyn-mr-aging-time

╟ ¯ Â

ip igmp snooping dyn-mr-aging-time *time*

no ip igmp snooping dyn-mr-aging-time

time	╟ ˜ ¸˘ ↓ <1-3600> Â

300s

¾ Â

╟ è IGMP PIM
Hello ˘ ÿ Â ╟ ˜
Ю˘ ↓ Л∪ ¾ ╟ ˘ ˘
↓ ╗ Â

Ю ╟ ˜ и 100s˙

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

¾	

ÿ ў IP IGMP
˘ ÿ Â ˥˘
IP IGMP ˘ a ̈Ą Â Э˘
Ю ˩ ˘ ˩ Л ╖ Л Â

Ю Э igmp snooping fast-leave'

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

٦	
-	-

˥

˥	
-	-

17.1.11 ip igmp snooping query-max-response-time

query ˥ ╖ ˘
╖ ˘ и ˘ Â

ip igmp snooping query-max-response-time *time*

no ip igmp snooping query-max-response-time

time	╟ ˗ Â

10s

٦ Â

ʁ }

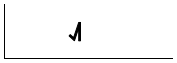
Ю ╟ ˉ й 100s

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


-	-

17.1.12 ip igmp snooping suppression enable

igmp snooping Report ẓ Ḥ š Ó H



Л	
-	-

17.1.14 ip igmp snooping vlan mrouter interface

б è ,

¦ **ip igmp snooping vlan mrouter interface** Â ¦ no Â

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

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

vid	vlan id Â
interface-id	id

Â

Ë D Ï Ï ò « ¡ Â

17.1.15 ip igmp snooping vlan mrouter learn pim-dvmrp

╟ IGMP Query/Dvmrp/PIM Hellp ˘ Л∪ ╟ ˘
३ **ip igmp snooping vlan mrouter learn** Â ३ no ∨ ╟
˗ Â

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

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

vid	vlan id Â

Ⅱ Â

३ Â

M

igmp snooping ЮЎ ˘ a ↙

IGMP Â ip-ąpi**ip igmp snoopin** **p s** ɔ**Mcn**

profile-number	profile /I˘ ↓ <1-65536>

Â

٪ Â

IGMP Profile ЮЎ IGMP Report ˘
╕ IGMP Profile Â ˘ ╕ ˘
/ / Â "I profile˘ / filter Â

Ю "I 0/1 Э profile 1'

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

٪	
ip igmp profile	profile

↓

/	
-	-

17.1.18 ip igmp snooping max-groups

╟ ╕ , ٪ **ip igmp snooping max-groups** ٪ Â ٪ no ↓ ⁸ Â

ip igmp snooping max-groups *number*

no ip igmp snooping max-groups

number	и <0 – 1024>

a ↓ ⁸ Â

٪ Â

⌐ ˘ Э˘ ╟ ⌐

debug igmp-snp event

debug igmp-snp packet

debug igmp-snp msf

debug igmp-snp warning

undebug igmp-snp

undebug igmp-snp event

undebug igmp-snp packet

undebug igmp-snp msf

undebug igmp-snp warning

	IGMP Snooping

event

18 MSTP

18.1

18.1.1 bpdu src-mac-check

bpdu mac Â ৲ Л৩ ३ no bpdu mac

৸ Â

bpdu src-mac-check *H.H.H*

no bpdu src-mac-check

H.H.H	৲ mac ঌ bpdu Â
no	bpdu Â

8 RSTP BPDU BPDU 8 Â

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

interface-id	

Â

¾

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

¾	
show spanning-tree interface	STP Â

/I	
-	-

18.1.3 spanning-tree

MSTP MSTP MSTP Â ¾
no spanning-tree no ¾ 8
a spanning tree Â

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

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

forward-time *seconds*	Â
hello-time *seconds*	BPDU Â
max-age *seconds*	BPDU Â

spanning-tree Â

ʒ Â

forward-time à hello-time à max-age Ь ˘ è

è ч Â Ь 8 '

2*(Hello Time+1.0snd) <= Max-Age Time <= 2*(Forward-Delay – 1.0snd)

a ˚ ≠ a ╖ Â

1' spanning-tree ╖ '

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

2' BridgeForwardDelay'

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

ʒ

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

ʃ

ʒ

ʃ	
-	- VSDQJ0À QJpDWUV

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

ȝ	
show spanning-tree interface	STP Â

/ı
-

/ı	
-	-

18.1.5 spanning-tree bpdufilter

BPDU filter Â ȷ ȷ ȝ enabled disabled
BPDU filter Â

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

enabled	BPDU filter Â
disabled	BPDU filter Â J ʃ ă ơ

-	-

18.1.6 spanning-tree bpduguard

BPDU Guard Â ⅃Ո ३ enabled disabled
BPDU Guard Â

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

enabled	BPDU Guard Â
disabled	BPDU Guard Â

Â

३ Â

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

३	
show spanning-tree interface	STP Â

⅄

/I	
-	-

18.1.7 spanning-tree compatible enable

MSTI ˇ Ո б è

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¾

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

¾	
-	-

¼

¾	
-	-

18.1.8 spanning-tree guard loop

Э loop guard Â ¾ no loop guard Â loop guard ╖ ˘ a bpdu ┘ Â

spanning-tree guard loop

no spanning-tree guard loop

-	-

loop guard ╖ Â

¾ Â

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

३	
-	-

४

३	
-	-

18.1.9 spanning-tree guard none

Э guard Â ३ no

root guard Â ¾ no root guard Â root guard ¶
˘ Æ ¿ Â

spanning-tree guard root

no spanning-tree guard root

-	-

root guard ¶ Â

¾ Â

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

¾

¾	
show spanning-tree interface	STP

¼

¾

¼	
-	-

18.1.12 spanning-tree loopguard default

loop guard Â ¾ no loop guard Â loop guard ¶
˘ a bpdu ¬ Â

spanning-tree loopguard default

no spanning-tree loopguard default

-	-

loop guard ¶ Â

¾

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

¾

¾	
-	-

ʃ

ʒ	ʃ	
	-	-

18.1.13 spanning-tree max-hops

Ю ʒ ʃ Л Ъ BPDU ^ Max-hops Count˜ ˇ
BPDU Region ʃ ʃ ˇ Instance Â no
ʃ Л Ъ ʒ Â

spanning-tree max-hops *hop-count*

no spanning-tree max-hops

hop-count	BPDU ʃ Л Ъ ˇ й 1 · 40

hop-count й 20

ʒ

Region ˇ Root Bridge BPDU Hot Count ˇ ÿ Root Bridge ˇ
ˇ Hop Count 1˜ й 0 BPDU ˇ
Hops й 0 BPDU Â
ʃ max-hops Instance Â

Ю MST Instance Max-hops й 10ʹ

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

≠ ʃ Л Ъ **show spanning-tree mst** ʒ Э

ʒ	
show spanning-tree g	

18.1.14 spanning-tree mode

ЮO ৡ STP Â no ⌟ Л Â

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

no spanning-tree mode

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

MSTP

ৡ .

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

ৡ	
show spanning-tree	

⌟

⌟	
-	-

18.1.15 spanning-tree mst configure

ЮO ৡ ⌟ Л MST ˘ MSTP Region Â no ⌟ Л
ৡ ЮO ˆ name à revision à vlan map˜ Â

spanning-tree mst configuration

no spanning-tree mst configuration

-	-

instance vlan Vlan Instance 0 Â
name ѝ Â
revision ѝ 0 Â

३ .

˘ end ३˘ Ctrl+C Â
˘ exit ३ Â
MST Л˘ ↓ Л Л ЛЬЮ ३ '
instance *instance-id* v**lan** *vlan-range*' Vlan ╗ MST Instance Â
instance-id

cost

Instance 3 ѝ 400 Ю'

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# spanning-tree mst 3 cost 400
```

≠ ⅃Л **show spanning-tree mst interface interface-id** ٪ Э

٪

٪	
show spanning-tree mst	MSTP Â
spanning-tree mst port-priority	″I
spanning-tree mst priority	ѝ instance ″I

⅄

٪

⅄	
-	-

18.1.17 spanning-tree mst port-priority

Ю ٪ ⅃Л a ⅄ Instance Л a ⅄ ″I ˘ Region Â no ⅃Л ٪ Â

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

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

Instance-id	Instance ⅄˘ ѝ 0 64
priority	″I ˘ ⅄ 0 16 32 48 64 80 96 112 128 144 160 176 192 208 224 240 16 ˘ ѝ 16 Â

Instance-id ѝ 0

priority ѝ 128

٪ .

Region ˘ ″I ″I Â ″I ˩ ˘ Л
/I Â

Ю Instance 20 Gigabitethernet 1/1 ″I ѝ 10
```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# spanning-tree mst 20 port-priority 0
```
˩Л **show spanning-tree mst instance interface** *interface-id* ֽ Э
Â

ֽ

ֽ	
show spanning-tree mst	MSTP Â
spanning-tree mst cost	
spanning-tree mst priority	a ˩ Instance ″I

˩

ֽ

/I	
-	-

18.1.18 spanning-tree mst priority

Ю ֽ ˩Л Instance ″I Â no ˩Л ֽ
Â

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

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

instance-id	Instance /I˘ ѝ 0 64
priority	″I ˘ ˩ 0, 4096,8192, 12288, 16384, 20480, 24576, 28672, 32768, 36864, 40960, 45056, 49152,53248, 57344 61440 Â 16 ˘ ѝ 4096 Â

instance-id ѝ 0

ֽ *priority* ѝ 32768

.

Ю Instance 20 ″I й 8192ʻ

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

↓Л↻ **show spanning-tree mst instance interface interface-id** ३ Э Â

३	
show spannir	G!5B Ä

	show spanning-tree interface	STP Â

no spanning-tree portfast bpdufilter default

-	-

BPDU filter

¾ Â

BPDU Filter ˇ a ≠ a BPDU Â **show spanning-tree** ¾ Â

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

¾	
show spanning-tree interface	STP Â

18.1.24 spanning-tree reset

spanning-tree ѝ Â ३ no Â

spanning-tree reset

-	-

¾

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

¾	
-	-

¼

¾	
-	-

18.1.26 spanning-tree tc-protection

tc- protection Â ¾ no tc- protection Â

spanning-tree tc- protection

no spanning-tree tc- protection

-	-

tc- protection Â

¾ Â

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

¾	
-	-

¼

¾	/I	
	-	-

18.1.27 spanning-tree tc-protection tc-guard

tc- guard Â ¾ no tc- guard Â tc-guard ¶ ˘ tc Â

spanning-tree tc-protection tc-guard

no spanning-tree tc-protection tc-guard

	-	-

tc- guard Â

¾ Â

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

¾	¾	
	-	-

/I

¾	/I	
	-	-

18.1.28 spanning-tree tx-hold-count

STP TxHoldCount ˘ BPDU Â ¾ no Â

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

no spanning-tree tx-hold-count

tx-hold-count	TxHoldCount Â ÿ 1 10 Â

3 Â

¾ Â

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

¾	
show spanning-tree	MSTP Â

¼

¼	
-	-

18.2

18.2.1 show spanning-tree

Â

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

summary	MSTP instance è Â
Inconsistentports	block Â
forward-time	BridgeForwardDelay Â
hello-time	BridgeHelloTime Â
max-age	BridgeMaxAge Â
max-hops	instance Â

tx-hold-count	TxHoldCount Â
pathcost method	Â

३ Â

```
Ruijie#
```

link-type	linktype

¾ Â

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

¾	
spanning-tree bpdufilter	BPDU filter Â
spanning-tree portfast	portfast Â
spanning-tree bpduguard	BPDU guard Â
spanning-tree link-type	a “ ”Â

/ſ	
-	-

18.2.3 show spanning-tree mst

ÞO ¾ ˩ ſ∪ MST ˇ Instance Â

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

configuration	mst
instance-id	*Instance /ſ*
interface-id	/ſ

Instance Â

¾ .

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

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

/I	
-	-

19 SPAN

19.1

19.1.1 monitor session

SPAN ^ ~ ^ ~ . ٣ no
Â

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

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

no monitor session all

session_number	SPAN ٨ Â
source interface *interface-id*	Â *interface-id* ٨˘ ٧ ٸ ˘ a ٧ Л٥ ٸ SVI Â
destination interface *interface-id*	Â *interface-id* ٨˘ ٧ ٸ ˘ a ٧ Л٥ ٸ SVI Â
mac source *mac-addr*	MAC
mac destination *mac-addr*	MAC
both **acl** *name*	٧ Â **acl** *name/id*
rx	٧ Â
tx	٧ Â
all	
switch	٦٦ ˘ ٸ a

٣

switch port à routed port AP ٧ Л٥ ٸ ÂSPAN a

Â ৶ Л৬ SPAN disabled port Э˘ ˘ SPAN a
Э Â
a ৵ Â
˘ a ˘ Â
show monitor ৡ ৶ Л৬ SPAN Â

~ Â session 1 ´ ˘ ´ SPAN
৵ session 1 Â

Ю SPAN ' 1 Â ″I ˘
″I 1 ˘ Л gigabitEthernet 1/1 ⁸
gigabitEthernet 1/8 Â

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

ৡ

¾

Ю **show monitor** ¾ SPAN 1

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

¾

¾	
monitor session	SPAN ˆ ~ ˆ ~ Â

Ñ

¾

Ñ	
-	-

20 RSPAN

20.1

20.1.1 monitor session

RSPAN ˆ ˜ à ˆ ˜ ৶ Â
ৡ no à ৶ Â

'

monitor session *session_num* {

	show vlan	Vlan Â

¼		
¾	¼	
	-	-

21 ERSPAN

21.1

21.1.1 monitor session

ERSPAN Â ¾ no Â

monitor session *session_num* {**erpsan-source** }

session-num	/\

¾

ˇ **end** ¾ˇ Ctrl+C Â

ˇ **exit** ¾ Â

1'

```
Ruijie(config)# monitor session 2 erpsan-source
```

¾

¾ R2901A75 Tw24 Td[(se)fB5B004C>56>]T7>]52>174C>5A>-25T0 1 T84C>50>]527>]T>]TJ2_0 >]527>

E

	-	-

no shutdown

ERSPAN

end moni[TT0 1 -2TT03E47>5T05 /05FC2_0/05 /05FC24503

1'

```
Ruijie(config)# monitor session 2 erspan-source
Ruijie(config-mon-erspan-src)
```

/I	

64

¾ ERSPAN

˘ **end** ¾˘ Ctrl+C Â
˘ **exit** ¾ Â

1'

```
Ruijie(config)# monitor session 2 erspan-source
Ruijie(config-mon-erspan-src)#ip ttl 65
```

¾

¾	
show monitor	Â

Ñ

¾

Ñ	
-	-

21.1.7 ip dscp

IP dscp

ip dscp *dscp-value*

dscp-value	IP dscp

0

¾ ERSPAN

˘ **end** ¾˘ Ctrl+C Â
˘ **exit** ¾ Â

1'

```
Ruijie(config)# monitor session 2 erspan-source
```

Ruijie(config-mon-erspan-src)#ip dscp 56

¾	
show monitor	Â

/I	
-	-

22 IP

22.1

22.1.1 ip address

ֳ IP ˇ ˩ Л∪ no IP Â ֳ Ю'

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

Â γ ˘ ǂ Â IP ⅃Ⅱ
˘ IP Â ˘ IP Â
Â ч ⅄ ˘ ⅃Ⅱ ˘
IP ˘ Â a ч ч
Ⅱ Э Â

ⅡЮ ˘ ў IP ѝ 10.10.10.1˘ ѝ 255.255.255.0 Â

```
ip address 10.10.10.1 255.255.255.0
```

ȝ

ȝ	
show interface	Â

⅄ γ Э˘ ⅃ Ь IP ˘ з а γ ˘ secondary
Â

ȝ

⅄	
-	-

22.1.2 ip unnumbered

ȝ ⅄ ˘ ѝ ⅄ ⅄˘ Э IP ˘
⅃Ⅱ IP Â ⅃Ⅱ no ⅃ Â

ip unnumbered *interface-type interface-number*

no ip unnumbered *interface-type interface-number*

interface-type	Â
interface-number	⅄ Â

Ю˘ ⅄ Â

ȝ Â

⅄ ⅃ ╟ IP ˘ aǂ IP ˘ ⅄ ѓ
IP Â ⅄ IP ˘ IP ѝ IP
Â ⅄ ≠ IP ˘ ᾱ ⅄
Â ⅄ ˘ ⅡЮ ⁸'

Â Л∪ a /ſ Â

Â SLIP àHDLC àPPP àLAPB àFrame-relay ˘ ⊣ Л∪ /ſ Â

˘ ⊣ /ſ Â X.25 a

/ſ Â

Â a ping ȝ /ſ ˘ ѝ /ſ IP Â

SNMP ⊣ Л∪ /ſ Â

Â a /ſ ╟ Â

ЛυЮ ˘ ѝ /ſ ˘ ѝ FastEthernet 0/1 Â

IP Â

```
ip unnumbered fastEthernet 0/1
```

ȝ	
show interface	Â

⊣ ȝ γ Э a Â

/ſ	
-	-

ȝ

22.2

22.2.1 arp

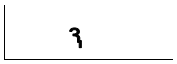
ȝ˘ ⊣ Л∪ ARP ă ╗ IP MAC Â ȝ no ⊣ Л∪ MAC Â

arp [**vrf** *name*] *ip-address MAC-address type*

no arp [**vrf** *name*] *ip-address*

vrf *name*	VRF ˘ name VRF ⊥ Â

ip-address



Â

RGOS ARP ă ˘ 32 Æ IP

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

-	-

⁄

३	⁄	
	-	-

22.2.4 arp retry times

३˘ ⊣ Л∪ arp ˘ ⊣ IP ˘ ARP
Â ३ no ⊣ Л∪ 5 ARP Â

arp retry times *number*

no arp retry times

22.2.5 arp timeout

ARP ă ש ARP ˘ ⅄ Л∪ ֽ Â ֽ no ⅄ Л∪ Â

arp timeout *seconds*

no arp timeout

seconds	˘ Л∪ ѝ Æ˘ 0-2147483

ѝ 3600 Â ! 'ɸg288,UG(5,Ñ**2** ‘ ﻡ

5 ,€

no

no arp unresolve

number	ARP ˘ ɻ ѝ < 1-8192 > Â ѝ 8192

ARP ă ɻ Л 8192 Â

ʒ Â

ARP ˘ з ɻ ˘ ɻ Л ʒ 8 Â

ЛЮ ˘ ѝ 500 Â
`arp unresolved 500`

ʒ	
-	-

ɻ

ɻ	
-	-

ʒ

22.2.7 ip proxy-arp

Э ʒ ARP ╖ ˘ ɻ Л **ip proxy-arp** ʒ Â ʒ no ɻ Л ʒ ARP ╖ Â

ip proxy-arp

no ip proxy-arp

-	-

10.2(3) ɻ (10.2(3)) ˘ Ь ʒ ARP ʒ ARP Â

ʒ Â

ֽ ARP ╖ ┘Л ╠ ў ˇ è IP MAC
Â ARP ˇ ARP IP б IP a
┘ ˇ IP ˇ ARP ˇ
MAC ѝ Л MAC ÂЛЭ ֽ ARP ╖ Â

ЛЮ ˇ Л FastEthernet 0/1 ֽ ARP ╖ Â

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

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22.3 IP

22.3.1 clear arp-cache

ÿ ARP ă ╠ ARP ˇ ֽ clear arp-cache Â

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

trusted	┘ ARP
vrf *vrf_name*	VRF ╠ ARP
ip	IP ˇ IP ARP ˇ **trusted** ┘ ARP ˇ ѝ ╠ ARP
mask	mask ѝ ˇ ARP ˇ IP Ѓ; trusted ┘ ARP ˇ ╠ ARP Â
interface *interface-name*	╠ ARP

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

1' ARP

```
clear arp-cache
```

2' 1.1.1.1

```
clear arp-cache 1.1.1.1
```

3' SVI1 ARP

```
clear arp-cache interface Vlan 1
```

arp	ARP

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mask	IP ARP ; trusted ˘ ˩ ˩ ARP ˘ ˩ ARP Â
static	arp Â
mac-address	mac ARP Â

2' ЛЬЮ show arp 192.168.195.68

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

3' ЛЬЮ **show arp** 192.168.195.0 255.255.255.0

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

4' ЛЬЮ **show arp** *001a.a0b5.378d*

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

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22.3.3 show arp counter

ARP arp Â

show arp counter

ЛЬЮ й **show arp counter**

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

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22.3.4 show arp detail

ARP Â

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

interface-type interface-number	Ь γ ARP
ip	ip ˘ ip ARP
ip mask	ip mask ARP
mac-address	mac ARP
static	arp
complete	╟ arp

ЛЬЮ ѝ **show arp detail**

```
Ruijie# show arp detail
```

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

ARP ă Ю'

IP Address	б IP Â
MAC Address	б IP Â
Type	ARP à ╟ à ┘ à Â
Age	ARP æ¦ Â
Interface	б IP Ь Â
Port	б ARP γ Â

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	10.4	10.4

22.3.5 show arp timeout

╟ ARP

show arp timeout

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ЛЬЮй **show arp timeout** '

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

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22.3.6 show ip arp

ˆ ARP˜ ğ ˇ ¾Â

show ip arp

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22.3.7 show ip interface

⅋ ⅃ Л∪ IP Â ⅋ Ю'

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

Interface-type	
Interface-number	Л

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⅃ ˘ RGOS Â ⅃
RGOS ˚ ⅃Л∪ Â ÿ ⅃ ⅃ и a ⅃ ˘ RGOS
˚ ÿ Â
⅃ ˘ ⅃ ˘ Ґ UP Ł'
⅃ ˘ Ґ UP Ł Â
a ⅄ ˘ ⅃ a ˘ и Â

ЛЬЮ и **show ip interface** Â

```
Ruijie# show ip interface FastEthernet 0/1
IP interface state is: UP
IP interface type is: BROADCAST
IP interface metric is: 0
IP interface MTU is: 1500
IP address is:
192.168.5.133/24 (primary)
IP address negotiate is: OFF
Forward direct-boardcast is: ON
ICMP mask reply is: ON
Send ICMP redirect is: ON
Send ICMP unreachabled is: ON
DHCP relay is: OFF
Fast switch is: ON
Route horizontal-split is: ON
```

```
Help address is: 0.0.0.0
Proxy ARP is: ON
Outgoing access list is not set.
Inbound access list is not set.
```

Ю'

IP interface state is:	˩ ˘ è ˚ ѝ “UP” Â
IP interface type is:	˘ ˘ Â
IP interface MTU is:	MTU Â
IP address is:	IP Â
IP address negotiate is:	IP Â
Forward direct-boardcast is:	Â
ICMP mask reply is:	ICMP Â
Send ICMP redirect is:	ICMP Â
Send ICMP unreachabled is:	ICMP a ˩ Â
DHCP relay is:	DHCP Â
Fast switch is:	IP ╖ Â
Route horizontal-split is:	˟ ˘ ѝ Â
Help address is:	helper IP Â
Proxy ARP is:	ʒ ARP Â
Outgoing access list is	Â
Inbound access list is	Â

ʒ

22.4.1 ip default-gateway

γ Э ˘ ع **ip default-gateway** Â ع no Â

ip default-gateway

no ip default-gateway

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ع

a ˘ Â

ل **show ip redirects** ع Â

ЛЬЮ ˘ й 192.168.1.1 Â

```
ip default-gateway 192.168.1.1
```

ع	
show ip redirects	˘ γ Â

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23 DHCP

23.1 DHCP

23.1.1 bootfile

ᏂᏋ DHCP ╟ ˚ ˩˘ DHCP ৡ **bootfile** Â ৡ **no** ˩ Ո ˩ ᏂᏋ Â

bootfile *file-name*

no bootfile

23.1.2 client-identifier

DHCP DHCP **client-identifier** **no**

client-identifier *unique-identifier*

no client-identifier

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

DHCP

MAC 00d0.f822.33b4 GigabitEthernet 0/1 0100.d0f8.2233.b467.6967.6162.6974.4574.6865.726e.6574.302f.31 01

67.6967.6162.6974.4574.6865.726e.6574.302f.31 GigabitEthernet0/1 RFC1700 Address Resolution Protocol Parameters DHCP

MAC 00d0.f822.33b4 DHCP

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

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

¼

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¼	
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23.1.3 client-name

Ħ DHCP ¼ ˘ DHCP ¾ **client-name** Â ¾ no DHCP ¼ Â

client-name *client-name*

no client-name

client-name	Ħ DHCP ¼ Â ¼ Ո ASCII Â ¼ a ¼ ¼˘ Ħ river ù DHCP ¼ ˘ a Ħ ù river.i-net.com.cn Â

Ħ ¼ Â

DHCP Â

¼ DHCP Ħ ˘ ¼ Ո ¾ Ħ DHCP ¼ Â ¼ a ¼ ¼ Â

ՈЮ ˘ Ħ river ù ¼ Â
`client-name river`

¾	
host	Ħ IP Â DHCP Â
ip dhcp pool	Ħ DHCP ¼ ˘ DHCP Â

¼

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23.1.4 default-router

Ⱨ DHCP ˇ DHCP ٪ **default-router** Â ٪ **no** ⅃ Л∪ Ⱨ Â

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

no default-router

ip-address	Ⱨ IP Â Â
ip-address2…ip-address8	ˆ ⅃ ˜ ⅃ Л∪ 8 Â

Ⱨ Â

٪ DHCP Â

Ю˝ DHCP ÿ DHCP Ł ÂDHCP Ł
ѝ IP ˇ б† ⅃ Â

ЛЮ ˇ Ⱨ 192.168.12.1 ѝ Â

```
default-router 192.168.12.1
```

٪	
ip dhcp pool	Ⱨ DHCP ⅄ ˇ DHCP Â

⅄

⅄	
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23.1.5 dns-server

Ⱨ DHCP DNS Ł ˇ DHCP ٪ **dns-server** Â ٪ **no** ⅃ Л∪ DNS Ł Ⱨ Â

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

no dns-server

ip-address	DNS IP

DHCP

type	DHCP ˚ ˇ Â Â ethernet Â ieee802 Â 1ˆ 10M ethernet˜ Â 6ˆ IEEE 802˜

˚ Â

ˇ ˚ ˇ ˙ ethernet Â

¾ DHCP Â

DHCP ˇ Â ¾ Â

ЛъЮ ˇ ˙ ethernet MAC 00d0.f838.bf3d Â

```
hardware-address 00d0.f838.bf3d
```

¾	
client-identifier	DHCP ˆ Л Ω ˜ Â
host	IP Â DHCP Â
ip dhcp pool	DHCP ˇ DHCP Â

Л	
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23.1.8 host

DHCP ў IP ˇ DHCP ¾ **host** Â ¾ **no** Â DHCP IP Â

host *ip-address* [*netmask*]

no host

ip-address	⌧ DHCP ў IP Â
netmask	⌧ DHCP ў Â

⌧ ў IP Â

٪ DHCP Â

⌧ DHCP ⊾ IP Â A
ѝ 255.0.0.0 B ѝ 255.255.0 C ѝ
255.255.255.0 Â
ѵ DHCP ⌧ ˘ ѵ Л Ъ ٪ Â

ЛЪЮ ˘ IP ѝ 192.168.12.91 ѝ 255.255.255.240 Â

```
host 192.168.12.91 255.255.255.240
```

٪	
client-identifier	⌧ DHCP ˆ Л Ъ Ѽ ⁸ ~ Â
hardware-address	⌧ DHCP ˚ Â
ip dhcp pool	⌧ DHCP ѧ ˘ DHCP Â

ѵ

ѵ	
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23.1.9 ip address dhcp

Л Ъ DHCP IP ˘ ٪ **ip address dhcp** Â
٪ **no** ѵ Л Ъ ѵ Â

ip address dhcp

no ip address dhcp

-	-

a DHCP IP Â

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RGOS ˚ DHCP ˘ IP ˘ DHCP Ł
' 1˜ DHCP 1˜ ' 2˜ DHCP 3˜ ل Э '
3˜ DHCP 6˜ DNS Ł ' 4˜ DHCP 15˜ ў ا ا' DHCP
44˜ WINS Ł Â

ЛЪЮ ˘ FastEthernet 0 ╟ IP Â

```
interface fastEthernet 0
ip address dhcp
```

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٪	
dns-server	ЊЖ DHCP DNS Ł
ip dhcp pool	ЊЖ DHCP ا ˘ DHCP Â

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23.1.10 ip dhcp excluded-address

ЊЖ IP ˘ DHCP Ł a è† DHCP ˘ ٪ **ip dhcp excluded-address** Â ٪ **no** ل Лъ ا ЊЖ Â

ip dhcp excluded-address *low-ip-address* [*high-ip-address*]

no ip dhcp excluded-address *low-ip-address* [*high-ip-address*]

low-ip-address	IP ˘ IP IP Â
high-ip-address	IP Â

DHCP Ł † IP Â

३ Â

IP ˘ DHCP ६ ĭ DHCP IP Â
३ ৲ Л৬ ѝ ў IP ˘ ĭ DHCP Â

ЛЬЮ ˘ ping ѝ 3 Â

```
ip dhcp ping packets 3
```

٩	
clear ip dhcp conflict	DHCP ă Â
ip dhcp ping timeout	DHCP Ь ping Â ping ˘ ┘ ' ă Â
show ip dhcp conflict	DHCP Ь ˚ ˘ ă Â

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23.1.12 ip dhcp ping timeout

DHCP Ь ping ă ˘ ˘ ٩

ip dhcp ping timeout Â ٩ **no** ┘Л Â

ip dhcp ping timeout *milli-seconds*

no ip dhcp ping timeout

milli-seconds	DHCP Ь ping ˆ Л ˜ Â ٨ ѝ 100 10000 Â

ѝ 500 Â

٩ Â

ЊЖ ping Â

ЛЬЮ ˘ ping ѝ 600ms Â

```
ip dhcp ping timeout 600
```

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

-	-

23.1.13 ip dhcp pool

DHCP DHCP **ip dhcp pool** Â **no** DHCP Â

ip dhcp pool *pool-name*

no ip dhcp pool *pool-name*

pool-name	Â mypool 1 Â

ip dhcp excluded-address	¼ DHCP ¸ a ¹ IP Â
networkˆ DHCP˜	¼ DHCP / Â

¿

¾	/	
	-	-

23.1.14 lease

¼ DHCP ¸ ¹ ˇ DHCP ¾ **lease** Â ¾ **no** Â

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

no lease

days	¼ ˇ Л и æ Â
hours	ˆ ¿ ˜ ¼ ˇ Л и æ Â ¼ ¼ Â
minutes	ˆ ¿ ˜ ¼ ˇ Л¹ и æ Â ¼¹ ¼ Â
infinite	¼ 8 Â

и Â

¾ DHCP

ˇ DHCP Â DHCP ¸ ˇ a ¿ Â

ЛЬЮ ˇ DHCP и 1 Â

```
lease 0 1
```

ЛЬЮ ˇ DHCP и 1¹ Â

```
lease 0 0 1
```

٦	
ip dhcp pool	⊮ DHCP ˇ DHCP Â

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23.1.15 netbios-name-server

DHCP NETBIOS WINS ˇ DHCP ٦
netbios-name-server Â ٦ no WINS Â

netbios-name-server *ip-address* [*ip-address2…ip-address8*]

no netbios-name-server

ip-address	⊮ WINS IP Â Â
ip-address2…ip-address8	ˆ ˜ 8 WINS Â

⊮ WINS Â

DHCP

⊮ WINS ˇ DHCP WINS
ˇ Ю WINS Â

ЛЮ ˇ й DHCP WINS 192.168.12.3 Â

```
netbios-name-server 192.168.12.3
```

٦	
ip address dhcp	DHCP IP Â
ip dhcp pool	⊮ DHCP ˇ DHCP Â

٦	/I	
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23.1.16 netbios-node-type

Ыж DHCP ў NetBIOS ˘ DHCP ٦
netbios-node-type Â ٦ **no** ٨Л NetBIOS Â

netbios-node-type *type*

no netbios-node-type

type	Ыж NetBIOS ˘ ч Â Ыж ў 0~FF Ώ ⁸ ˘ ٨ ٨Л Ю ' Â ٦ b-node' Â ٦ p-node' Â ٦ m-node' Â ⁸ ٦ h-node Â Ыж'
	Â b-node '
	Â p-node '
	Â m-node '
	Â h-node Â

Ыж NetBIOS Â

٦ DHCP Â

DHCP NetBIOS ' 1 Broadcast ˘
NetBIOS ٨ ' 2 Peer-to-peer ˘ WINS Ь
NetBIOS ٨ ' 3 Mixed ˘ ″I ٨ ˘ ٨
б WINS Ь ٨ ' 4 Hybrid ˘ ″I WINS
Ь NetBIOS ٨ ˘ ˘ NetBIOS ٨
Â
Ю Й Â WINS Ь
˘ й ' WINS Ь ˘ й Â NetBIOS
й Hybrid Â

ЛЬЮ ˘ DHCP NetBIOS ѝ Â
`netbios-node-type h-node`

٪	
ip dhcp pool	ЬѪ DHCP ˛ ˘ DHCP Â
netbios-name-server	DHCP NETBIOS WINS ˛ Ь

˄

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23.1.17 network DHCP

ЬѪ DHCP /ı ˘ DHCP ٪ **network** Â ٪ **no** ˩ЛЬ ЬѪ Â

network *net-number net-mask*

no network

net-number	DHCP IP /ı Â
net-mask	DHCP IP Â ЬѪ ˘ ѝ Â

ЬѪ /ı Â

٪ DHCP Â

ЬѪ è ˘ ѝ DHCP Ь ˩ſ

ЛЬЮ ˘ Ⱨ DHCP Л й 192.168.12.0 й 255.255.255.240 Â

```
network 192.168.12.0 255.255.255.240
```

३	
ip dhcp excluded-address	Ⱨ DHCP Ł a ↑ IP Â
ip dhcp pool	Ⱨ DHCP ɹ ˘ DHCP Â

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

IP Â

```
option 19 hex 1
```

2' ЛЬЮ ˘ ȝ 33 Ⱨ˜ DHCP

˘ DHCP ч '

1˜ 172.16.12.0˝ 192.168.12.12'

2˜ 172.16.16.0˝ 192.168.12.16 Â

```
option 33 ip 172.16.12.0 192.168.12.12 172.16.16.0 192.168.12.16
```

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ȝ	
ip dhcp pool	Ⱨ DHCP ȷ ˘ DHCP Â

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23.1.20 service dhcp

Э DHCP Ŀ ȝ ˘ ȝ **service dhcp** Â ȝ **no** ȷ Л DHCP Ŀ ȝ Â

service dhcp

no service dhcp

-	-

DHCP Ŀ ȝ Â

ȝ Â

DHCP Ŀ ȷ Л ╟ ĭ IP ˘ DNS Ŀ à Â DHCP ȷ Л DHCP è Ŀ ˘ DHCP DHCP ˘ DHCP Â Э ȷ DHCP ╖ è ╖ ă ˘ é ˘ Л Â

ЛЬЮ ˘ DHCP Ŀ Â

service dhcp

३	
show ip dhcp server statistics	DHCP ╘ Â

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23.2

23.2.1 clear ip dhcp binding

DHCP ˘ **clear ip dhcp binding** ३ Â

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

*	DCHP Â

[redacted]

ѝ Â

३

[redacted]

३ ᴻ DHCP ╟ ˘ DHCP ᴝ Л∪ **no ip dhcp pool** ३ Â

ЛЬЮ ˘ IP ѝ 192.168.12.100 DHCP Â

```
clear ip dhcp binding 192.168.12.100
```

[redacted]

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23.2.2 clear ip dhcp conflict

DHCP ă ˘ **clear ip dhcp conflict** ৡ Â

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

*	DCHP ă Â
ip-address	IP ă Â

ѝ Â

ৡ Â

DHCP ┺ ă ping ˘ DHCP ă
ˆ ARP˜ Â **clear ip dhcp conflict** ┘Л ă Â

ЛЬЮ ˘ ă Â

```
clear ip dhcp conflict *
```

ৡ

ৡ	
ip dhcp ping packets	⅏ DHCP ┺ ↑ ˘ ă ping Â
show ip dhcp conflict	DHCP ┺ ↑ ˘ ă Â

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23.2.3 clear ip dhcp server statistics

Æ DHCP ┺ ˘ **clear ip dhcp server statistics** ३ Â

clear ip dhcp server statistics

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DHCP ┺ ˘ DHCP à ╟ à ˘
DHCP Â**clear ip dhcp server statistics**
३ ┘Л ˘ ÿ Â

ЛЬЮ ˘ DHCP ┺ Â

```
clear ip dhcp server statistics
```

३	
show ip dhcp server statistics	DHCP ┺ Â

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23.2.4 debug ip dhcp client

DHCP Client ˘ **debug ip dhcp client** ३ Â

debug ip dhcp client

no debug ip dhcp client

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३ Â

	ৡ dhcp client ᒻ ў ˘ Л Â
	ЛЬЮ ˘ Э dhcp Â `debug ip dhcp client`

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23.2.5 debug ip dhcp server

DHCP Server ˘ **debug ip dhcp server** ৡ Â

debug ip dhcp server

no debug ip dhcp server

-	-

	ৡ dhcp server ў ˘ Л Â
	ЛЬЮ ˘ Э dhcp ᒻ Â `debug ip dhcp server`

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3	/1	
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23.2.7 show ip dhcp binding

DHCP ˘ EXEC ¾ **show ip dhcp binding** Â

show ip dhcp binding [*ip-address*]

ip-address	ˆ ˩ ˜ ˫ IP Â

ѝ Â

¾ Â

ЊЖ IP ˘ Â ЊЖ IP ˘ ˫ IP Â

ЛЬЮ ѝ **show ip dhcp binding** Â

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

ЊЖ ЮÂ

IP address	˚ DHCP IP Â
Client-Id/Hardware address	DHCP client identifier ˚
Lease expiration	ÂInfinite 8’ IDLE ˘ ˩ DHCP ў ╟ Â
Type	Â Automatic ╟˚ ’ Manual ˚ Â

¾	
clear ip dhcp binding	DHCP

˫

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23.2.8 show ip dhcp conflict

DHCP ┗ ă ˘ EXEC ৡ **show ip dhcp conflict** Â

show ip dhcp conflict

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23.2.9 show ip dhcp server statistics

DHCP ┗ ˘ EXEC ৡ **show ip dhcp server statistics** Â

show ip dhcp server statistics

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ѝ Â

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ৡ ┘Л∪ DHCP ┗ Â

Л∪Ю ѝ **show ip dhcp server statistics** ৡ Â

```
Ruijie# show ip dhcp server statistics
Address pools           4
Automatic bindings      4
Manual bindings         0
Expired bindings        0
Malformed messages 2
Message                 Received
BOOTREQUEST             216
DHCPDISCOVER            33
DHCPREQUEST             25
DHCPDECLINE             0
DHCPRELEASE             1
DHCPINFORM              150
Message                 Sent
BOOTREPLY               16
DHCPOFFER               9
DHCPACK                 7
DHCPNAK                 0
```

Ⱶ Ю Â

Address pools	
Automatic bindings	╟ Â

DHCP ३

DHCP Relay

DHCP Relay option dot1x ╖ ˘ ⅃Л Ъ ⅋ Â ⅋ no ╖ Â

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

-	-

⅋

⅋ ″I DHCP ╖ ˘ ⅄ 802.1x Â

ЛЪЮ ˘ DHCP Э option dot1x ╖ Â

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

⅋	
service dhcp	DHCP
ip dhcp relay information option dot1x access-group *acl-name*	option dot1x acl

⅄

⅄	AÈ â
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24.1.3 ip dhcp relay information option dot1x access-group

DHCP Relay option dot1x ACL˘ ⅃Л Ъ ⅋ Â ⅋ no DHCP Relay option dot1x ACL Â

[**!**] **ip dhcp relay information option dot1x access-group** *acl-name*

ip dhcp relay information option dot1x	DHCP option dot1x ╖

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-	-

24.1.4 ip dhcp relay information option vpn

DHCP Relay DHCP Relay Aware VRF ╖ ˘ ┘Л∪ ¾ Â
¾ no ╖ Â

-	-

¾

╖ option82 option dot1x a ă Â

ЛυЮ ˘ DHCP Э DHCP Relay Aware VRF ╖ '

```
Ruijie# configure terminal
Ruijie(config)#Ip dhcp relay information option vpn
```

¾	

ʒ / Â

Ь Э ⅃Л 20 DHCP Â
DHCP Ю DHCP Relay DHCP
DHCP DHCP Relay Э
a Â
vrf a ⅃ Â
a vrf a vrf a vrf
⅃ ⅃ vrf Â

ЛЮ ч
1 192.168.1.1’
2 vrf й dep1 192.168.2.1’

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

ʒ

ʒ	
service dhcp	DHCP Â

⅄

ʒ

⅄	
-	-

24.1.7 service dhcp

Э DHCP ℼ ⅃Л ʒ Â ʒ no
ℼ Â

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

-	-

DHCP DHCP DHCP DHCP
DHCP DHCP Â

ЛЬЮ DHCP Â

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

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

-	-

25 DNS

25.1

25.1.1 ip domain-lookup

╟ DNS ┘ Â ৡ no DNS ┘ ╖ Â

ip domain-lookup

no ip domain-lookup

ƶ	
-	-

й DNS ┘ ╖ Â

ৡ

ৡ й DNS ┘ ╖ ˘ ৡˇ ╟ DNS ┘ Â

ip name-server {*ip-address*}

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

ip-address	˩ ˪ IP

˩ ˪ Â

ৡ Â

╗ DNS Server IP/IPv6 Â ৡˇ ╗ DNS Server Â
ÿ Server ˬ ˩ ˇ ˥ Server DNS ˇ
ѝ Â
6 ˪ Â DNS Server ˇ ip-address ipv6-address
ˇ ˬ ˪ ˇ DNS ˪ Â

```
Ruijie(config)# ip name-server 192.168.5.134
```

ৡ	
show hosts	DNS Â

˥

˥	
-	-

25.1.3 ip host

ৡ ў ˩ CÉ!"Q6$ÐÃ~ÁBÃ@

٦

ў ˘ ٦Л **no ip host host-name ip-address** ٦ Â

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

٦

٦	
show hosts	DNS Â

٨

٦

٨	
-	-

25.2

25.2.1 clear host

╟ ў ١ ă ˘ ٦Л ٦ Â

clear host [*host-name*]

host-name	٦Л ╟ ў ١ ă Â“*” ٦ ╟ ў ١ ă Â

٦

ў ١ ă ˘ ч ' 1˜ ip host '
2˜ DNS ╟ ˜ Â ٦˘ DNS ╟ ˜ ў ١ Â

ЛЬЮ ˘ ў ١-IP ă ╟ ˜ Â
`clear host *`

	-	-

26 SNTP

26.1

26.1.1 sntp enable

٩ SNTP ╖ ˘ ٩ **no** ѝ —Disable Â

[**no**] **sntp enable**

-	-

SNTP Disable

٩

show sntp ٩ SNTP

```
Ruijie(config)# sntp enable
```

٩	
show sntp	SNTP
clock update-calendar	˚ ل ˚
clock set	˚

ل ˚ RGOS10.0 Л Э

٨	
-	-

26.1.2 sntp interval

٩ SNTP Client NTP/SNTP Server ل Â

sntp interval *seconds*

no sntp interval

seconds	˩ ˘ Æ ѝ ľ Ł ѝ 60 --65535 Â

ѝ 1800s

३

show sntp SNTP SNTP

```
Ruijie(config)#
```

sntp enable	SNTP
show sntp	SNTP

RGOS10.0

-	-

27 NTP

27.1 NTP

27.1.1 no ntp

ntp ⅄ Ⅎˇ б Ⅎ ⅄ ˇ ntp Â

no ntp

-	-

Ю NTP Ⅎ Â

ʒ Â

Ю NTP ╖ ˇ ⅄ NTP Ⅎ NTP ᵹˇ NTP ╖ Â

ЛЬЮ ˇ NTP Ⅎ Â

no ntp

ʒ	
ntp server	NTP Ⅎ

⅄

/\	
-	-

27.1.2 ntp access-group

NTP Ⅎ ᵹ ˇ ʒ no ⅄ ᵹ Â

ntp access-group { **peer** | **serve** | **serve-only** | **query-only** }*access-list-number* | *access-list-name*

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

peer	NTP Ь ⁸ ˘ ≠ б ˩ ˆ ˜ Â
serve	NTP Ь ⁸ ˘ а б ˩ Â
serve-only	NTP Ь Â
query-only	NTP Ь ⁸ Â
access-list-number	IP ⁸ /ı’ ѝ 1˙ 99 1300˙ 1999
access-list-name	IP ⁸ ˩ Â

Ю NTP ⁸ Â

ʒ Â

NTP Ь ⁸ Â ˘
NTP ⁸ Â
˘ NTP Ь ÿ ⁸ ⁸ ך
˘ Лυ ך ѝ Â ך ѝ peer à serve à serve-only à query-only Â

~	⁸ ╖ Â Э ך ˘ б ⁸ Â
	⁸ ˘ Â ⁸ ˘ Â

ЛυЮ 1 /ı à ⁸
˩ ’ ⁸ 2 /ı Â

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

ʒ	
ip access-list	IP ⁸ Â

˩

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	-	-

27.1.3 ntp authenticate

NTP Ł NTP ¸ Â

ntp authenticate

no ntp authenticate

	-	-

	Ю NTP ¸ Â
¾	Â
	¸˘ a ˙ ╕ Â ¸˘ ˙ è ˘ ˙ Ł ╕ Â **ntp authentication-key** à **ntp trusted-key** Â

	è ѝ ˙˘ ¸ Â
	`ntp authentication-key 6 md5 wooooop`
	`ntp trusted-key 6`
	`ntp authenticate`

¾		
¾	**ntp authentication-key**	
	ntp trusted-key	Â

˙

¾	/Ì	
	-	-

27.1.4 ntp authentication-key

й NTP Ł NTP Â

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

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

key-id	ID’
key-string	’
enc-type	ˆ ˩ ˜ ╗ ˇ 0 ╗ ˇ 7 ╗ ’

Â

ʒ Â

ˇ md5 ╗ ˇ key-id ˇ ˩

Л∪ **ntp trusted-key** key-id й Â

Э й 1024 ˇ Ł Â

ЛЮ ID й 6

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

ʒ	
ntp authenticate	ˢ
ntp ^ ! ‘ ŏ ˇ ę r	**a**

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Ю ˩ЛЦ ˩ NTP Â

ϡ Â

Ю˝ Э ˩ NTP ˩ЛЦ ˘
ℸ ˘ ˩ЛЦ Э NTP Â

IP ˘ ѐ
~
Э ϡ Â

ЛЦЮ ˘ NTP Â
`no ntp`

ϡ	
-	-

˩

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-	-

27.1.6 ntp master

й NTP ў ˆ ˩ ~ ˘ й ѐ ˩ Â ϡ
no й ˩ NTP ў Â

ntp master *[stratum]*

no ntp master

stratum	˘ й 1˙ 15̓ a й 8 Â

a NTP ў ℸ Â

ϡ Â

Ю б ⅄ Â

б ⅄ ˘ ⅄Л ʒ

⅄ ˘ ѝ è ⅄ Â

˘ а б è ⅄ Â

ʒ Â ѝ ў ˆ è	
æ ~ ⅄ Â	
⅄ ʒ˘ ⅄	
⅄ а Â	
⅄ ˘ ʒ ÿ б ⅄ ˘ ⅄	
╟ Л è а Â	

ЛЮ ⅄ ˘ è ѝ 12 Â

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

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27.1.7 ntp server

ѝ NTP NTP ┗ Â

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

no ntp server *ip-addr*

ip-addr	NTP ┗ IP ˘ IPv4’
version	ˆ ⅄ ~ NTP ˆ 1-3~ ˘ NTPv3 ,
if-name	ˆ ⅄ ~ NTP ˆ Ь ~ ’
keyid	ˆ ⅄ ~ б ┗ ╗
prefer	ˆ ⅄ ~ ┗ ѝ Prefer ┗

NTP ┗ Â

Â

Ł ˘ ل Ł Э й 20 Â
б Ł ╖ ˘ ″I ╖ Л∪ ˘ Л
й Ł ˘ ل∪ Ł ╖ ˘ б Ł ╖
Ł ل ╖ б
ل ^ ~ Ю″ ″I prefer ل
NTP Ą Ю″ й IP ل
Л∪ NTP Ł Â

Л∪Ю ˘ Э й NTP server Â
IPv4 ' Ruijie(config)# **ntp server** *192.168.210.222*

no ntp	NTP Ł╖ Â

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27.1.8 ntp synchronize

NTP ل

ntp synchronize

no ntp synchronize

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NTP б Ł ل й 8 ˘ Л й ł ل ˘
╠ ل ˘ ل ˘ ل∪ ҂ Â

ЛЬЮ ˘ NTP ⅄ Â

```
Ntp synchronize
```

ntp server	NTP Ь ⅄

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27.1.9 ntp trusted-key

ID й

ntp trusted-key *key-id*

no ntp trusted-key *key-id*

key-id	ID Â

Ю Â

Â

NTP ⅂ ⅄ ˘ ID ˘ a
˘ Лυ ,

ЛЬЮ ˘ й Ь Â

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

ntp authenticate	8 Â
ntp authentication-key	NTP Â

ntp server	NTP ┗ Â

ϻ

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ϻ	
-	-

27.1.10 ntp update-calendar

NTP ÿ ϻ ˚ Â ϡ
no ϻ ˚ ╖ Â

ntp update-calendar

no ntp update-calendar

-	-

˚ ╖ Â

ϡ Â

╖ ϻ⁄υ NTP ÿ ϻ ˚
Â ˚ æ Ю Ÿ ╟ Â
Ю NTP ˚ Â ⁄˘ NTP б
ϻ ╖ ≠ ϻ ˚ Â

⁄υЮ NTP ˚ '
Ruijie(config)# **ntp update-calendar**

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27.2

27.2.1 debug ntp

NTP Â

debug ntp

no debug ntp

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NTP ╖ ˘ ┘Л ३ ˘ Â

ЛЬЮ ˘ NTP Â

```
debug ntp
```

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27.2.2 show ntp status

NTP Â

show ntp status

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NTP Ł ˘ NTP ˘ ╗ ↙ Ł
٦ a Â

ЛЬЮ ˘ NTP Â
show ntp status

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28 FTP Server

28.1

28.1.1 debug ftpserver

FTP ┗ ˘ ३ no Â

debug ftpserver

no debug ftpserver

-	-

Â

३ Â

debug ftpserver ३ ┘Л FTP ┗ Â

1' ЛЬЮ ┗ '

```
Ruijie# debug ftpserver
FTPSRV_DEBUG:(RECV)   SYST
FTPSRV_DEBUG:(REPLY)  215 RGOS Type: L8
FTPSRV_DEBUG:(RECV)   PORT 192,167,201,82,7,120
FTPSRV_DEBUG:(REPLY)  200 PORT Command okay.
```

2' ЛЬЮ ┗ '

```
Ruijie# no debug ftpserver
```

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28.1.2 ftp-server enable

FTP Ł ˘ ʒ no FTP Ł Â

ftp-server enable

no ftp-server enable

-	-

й Â

ʒ Â

FTP Ł ˘ FTP ⌟ Л Ъ б ˘ ˚ Э Ю Â

~ ⌟ ʒ **ftp-server topdir** ʒ FTP
FTP Ł Э ˚ Â

1' ЛЪЮ ╠ FTP Ł ⁸ syslog '

```
Ruijie(config)# ftp-server topdir /syslog
Ruijie(config)# ftp-server enable
```

2' ЛЪЮ FTP Ł '

```
Ruijie(config)# no ftp-server enable
```

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-	-

28.1.3 ftp-server password

FTP Ł ˘ ʒ no ⌟ Â

28.1.4 ftp-server topdir

no ftp-server timeout

time	ˆ Æ' ˆ ' ' 1-3600˜

ѝ 30ˆ Â

ʒ Â

FTP Â ˆ ˜˜

FTP Ł Ɉ ѝ ˘ б Â

FTP ÿ Э FTP Л Ю

FTP Â Ł FTP ʒ Ł Лˆ

˜ ˚ Л˜ ÿ 0 ' Ю ʒ

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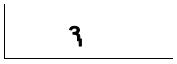
ı Â



३ Â

ʒ Â

FTP Ł ˘ '
Â Ł ╟
Â ⁸ ˆ IP à Port˜
Â ˆ ў ╟ ╟ ˘ Л IP à Port˜
Â ˚
Â Ł ȷ à ˆ ˜
Â Ł
Â

ЛЮ FTP Ł '

```
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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29 UDP-Helper

29.1

29.1.1 ip forward-protocol

३ UDP Â ३ **no** ৸ UDP ╖ Â

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

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

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

UDP Â

३

UDP-Helper ╖ ˘ 69,53,37,137,138,49 UDP ˘ a ⁄ ˘ Â

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

udp-helper enable	UDP
ip forward-protocol	UDP

-	-

29.1.2 ip helper-address

UDP Â no UDP
Â

ip helper-address *address*

no ip helper-address *address*

address	UDP 20 Â

UDP Â

20 Â Â UDP-Helper UDP Â Â

no ip helper-address Â

Ю UDP Â :

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

ip forward-protocol	UDP

¼

¾	¼	
	-	-

29.1.3 udp-helper enable

udp-helper enable ¾ ╟ UDP ╖ Â **no udp-helper enable** ¾ UDP ╖ Â

ÞÖ UDP Â

udp-helper enable

no udp-helper enable

	-	-

UDP

¾

UDP-Helper ╖ ˘ 69,53,37,137,138,49 UDP Â

ÞO ╟ UDP ╖ '

```
Ruijie(config)# udp-helper enable
```

¾		
	ip forward-protocol	UDP

¼

¾	¼	
	-	-

30 SNMP

30.1

30.1.1 no snmp-server

SNMP ٪ ٣ ˘ ٪ **no snmp-server** Â

no snmp-server

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SNMP ٪ ٣

٪

٪ SNMP ٪ Ŀ Â

Ю SNMP ٪ Ŀ'

```
Ruijie(config)# no snmp-server
```

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30.1.2 snmp-server chassis-id

SNMP ل˘ ٪ **snmp-server chassis-id** Â ٪ no ы Â

snmp-server chassis-id *text*

no snmp-server chassis-id

text	/I ˘ ˩ Л Â

/I 60FF60

ʒ

SNMP /I /I˘ Л Â /I ˩ Л
show snmp ʒ Â

Ю SNMP /I и 123456:

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

ʒ	
show snmp	SNMP

˩

/I	
-	-

ʒ

30.1.3 snmp-server community

SNMP ˘ ʒ **snmp-server community** Â ʒ no ˩ SNMP Â

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

no snmp-server community *string*

string	˘ NMS SNMP ʒ Â
view-name	˩ ˘ Â
ro	NMS MIB ˩ ˩ ˘ a Â
rw	NMS MIB ˩ ˩ ˩ Â

aclnumber	ʌ 1-99˜ ˘ ˘ MIB ipv4 NMS Â
aclname	ɻ ˘ ˘ MIB ipv4 NMS Â
ipaddr	NMS ˘ MIB NMS Â

ѝ ɬ

ʒ

ʒ ѝ SNMP ʒ ˥ ʒ˘ à
MIB NMS Â
SNMP ʒ ˥ ˘ **no snmp-server** ʒ ɻ Â

Ю 8 MIB ˘ ɬ ѝ 192.168.12.1 NMS
MIB '

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

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ʒ	
access-list	Ѭ

ʌ

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ʌ	
-	-

30.1.4 snmp-server contact

SNMP ˘ ʒ **snmp-server contact** Â ʒ no SNMP

ù Â

ʒ

Ю SNMP ù i-net800@i-net.com.cn '

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

ʒ	
show snmp-server	SNMP
no snmp-server	SNMP ʒ ℼ

ʃ

ʃ	
-	-

30.1.5 snmp-server enable traps

SNMP ў ╟ NMS Trap ˘ Y˚ ˘
ʒ **snmp-server enable traps** Â ʒ no SNMP NMS ў ╟
Trap Â

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

no snmp-server enable traps

snmp	SNMP Y˚ Â

Ю˘

ʒ

ʒ б ʒ **snmp-server host** ˘ Â

Ю ў ╟ SNMP Y˚ '

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

ʒ	
snmp-server host	SNMP ў

/ʃ	
-	-

30.1.6 snmp-server group

ل ˘ Â

ЮO SNMP

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¾	¼	
	-	-

30.1.9 snmp-server packetsiz

[8] SNMP ˘ ¾ **snmp-sever packetsize** Â ¾ no Â

snmp-server packetsize *byte-count*

no snmp-server packetsize

	byte-count	˘ ÿ 484 17876 Â

1500

¾

Ю SNMP ѝ 1492'

```
Ruijie(config)# snmp-server packetsize 1492
```

¾	¾	
	snmp-server queue-length	SNMP

¼

¼	¼	
	-	-

30.1.10 snmp-server queue-length

˘ ¾ **snmp-server queue-length** Â

snmp-server queue-length *length*

length	˘ ÿ 1 1000 Â

10

ʒ

˘ ˩ Л∪ ʒ 8
Â
й 4 Â

Ю й 4 '
Ruijie(config)# **snmp-server queue-length** *4*

ʒ	
snmp-server packetsize	SNMP

˩

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30.1.11 snmp-server system-shutdown

SNMP ℸ ˘ ʒ **snmp-server system-shutdown** Â
ʒ no ˩ SNMP ℸ Â

snmp-server system-shutdown

no snmp-server system-shutdown

-	-

SNMP ℸ

ʒ

٣ SNMP ٦ ˘ RGOS reload/reboot Л∪ NMS
Â

Ю SNMP ٦ '
Ruijie(config)# **snmp-server system-shutdown**

٣

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-	-

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-	-

30.1.12 snmp-server trap-source

SNMP ˘ ٣ **snmp-server trap-source** Â ٣ no
Â

snmp-server trap-source *interface*

no snmp-server trap-source

interface	й SNMP

SNMP ÿ ˘ IP й Â

٣

Ю˘ SNMP ÿ ˘ IP й ˘ й
˘ ٦Л∪ ٣ IP й SNMP Â

Ю Л∪ 0 IP й SNMP '
Ruijie(config)# **snmp-server trap-source fastethernet** 0

٣

٣	
snmp-server enable traps	ў ╟
snmp-server enable host	NMS ў

ʃ

ʒ	ʃ	
	-	-

30.1.13 snmp-server trap-timeout

Ћ ˘ ʒ **snmp-server trap-timeout** Â ʒ
no Â

snmp-server trap-timeout *seconds*

no snmp-server trap-timeout

seconds	˘ Æ ѝ ˘ ʅ ' 1 – 1000 Â

30

ʒ

Ю ѝ 60 '

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

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

ʃ

ʒ	ʃ	
	-	-

30.1.14 snmp-server user

SNMP ˘ ३ **snmp-server user** Â ३ no Â

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

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

username	ﻝ Â
groupname	ﻝ
v1	**v2**	**v3**	SNMP Â
encrypted	ﻯ Â ˘ Л Â Л ˘ 16 ⁸ Â MD5 ﻯ 16 ˘ SHA ﻯ 20 ÂЛ ч Â ╗ Â
auth	Â
md5	MD5 Â**sha** SHA Â
auth-password	३ ˆ a 32 ˜ Â ३ Â
priv	Â**des56** 56 Æ DES ╗ Â
priv-password	ﻯ ╗ ३ ˆ a 32 ˜ Â ३ ╗ Â
aclnum	Л˘ ˘ MIB ipv4 NMS Â
aclname	ﻝ ˘ ˘ MIB ipv4 NMS Â

Â

३

Ю snmpV3 ˘ md5 ˘ DES ╗ '

```
Ruijie(config)# snmp-server user user-2 mib2user v3 auth md5
authpassstr priv des56 despassstr
```

३	
show snmp user	SNMP

/I	
-	-

30.1.15 snmp-server view

SNMP ˘ ३ **snmp-server view** Â ३ no Â

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

no snmp-server vie w *view-name* [*oid-tree*]

view-name	⅃ Â
oid-tree	MIB ˘ MIB Â
include	MIB Â
exclude	MIB Â

default ˘ MIB Â

Ю ˘ MIB-2 ˆ oid ѝ 1.3.6.1˜ '

३	

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30.1.16 snmp trap link-status

ê ¾ Ì Â

30.2

30.2.1 show snmp

SNMP ˘ ¾ **show snmp** Â

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

-	-

¾

show snmp ¾ SNMP '
show snmp mib snmp mib '
show snmp user snmp '
show snmp view snmp '
show snmp group snmp '
show snmp host '

ÞO SNMP '

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

```
0 Get-request PDUs
0 Get-next PDUs
0 Set-request PDUs
0 SNMP packets output
0 Too big errors (Maximum packet size 1500)
0 No such name errors
```

31 RMON

31.1

31.1.1 rmon alarm

MIB ٧ ٣ Â no ٧ Â

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

no rmon alarm *number*

-	-

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RGOS ˚ ˘ Л∪ ˘ variable à absolute/delta à owner à interval à rising-threadhold/falling-threadhold è event ˘ a ˘ Ю Y ˚ Ą˘ ’

Л∪Ю ˘ MIB ٧ ifInNUcastPkts.6 Â

```
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
```

٣

31.1.2 rmon collection history

Л∪ ¾ Â **no** ↓ Â

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

no rmon collection history *index*

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RGOS ˚ ˘ Л∪ ˘ owner ðbuckets Л∪ interval ˘ a ˘ Ю Ą˚ ’

Л∪Ю ˘ ↓Л∪ Л∪ 1 Â

```
Ruijie(config)# interface fast-Ethernet 0/1
Ruijie(config-if)# rmon collection history
```

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३

ЛЬЮ

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

¾	
rmon event *number* [**log**] [**trap** *community*] [*description-string*]	¶ Y˚

¼

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31.2.3 show rmon history

Â

show rmon history

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ЛЬЮ ˘ '

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

३

३	
rmon collection history *index* [**owner** *ownername*] [**buckets** *bucket-number*] [**interval** *seconds*]	╕ 8

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३

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-	-

31.2.4 show rmon statistics

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show rmon statictics

-	-

ЛЬЮ

```
Ruijie#  show rmon statistics
Statistics : 1
Data source : Gi1/1
DropEvents : 0
Octets : 1884085
Pkts : 3096
BroadcastPkts : 161
MulticastPkts : 97
CRCAlignErrors : 0
UndersizePkts : 0
OversizePkts : 1200
Fragments : 0
Jabbers : 0
Collisions : 0
Pkts64Octets : 128
Pkts65to127Octets : 336
Pkts128to255Octets : 229
Pkts256to511Octets : 3
Pkts512to1023Octets : 0
Pkts1024to1518Octets : 1200
Owner : zhangsan
```

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

3	/1	
	-	-

32 TCP

32.1 TCP

32.1.1 ip tcp path-mtu-discovery

TCP (PMTU) ╗ ˘ Ю **ip tcp path-mtu-discovery** Â ˘ ৡ ╗ **no**

show tcp pmtu	TCP PMTU

৶	৶ Â

ৡ	৶
	RGOS 10.4 RGOS 10.4 Â

32.2 TCP

32.2.1 show tcp pmtu

TCP PMTU ˘ Ю ৡ'

show tcp pmtu

ৡ Â

TCP PMTU ˘ ৸Л৳ show tcp pmtu ৡ Â

show tcp pmtu ৡ Ю'

```
Ruijie# show tcp pmtu
No.      Local Address          Foreign Address       PMTU
[1]      2002::1.18946          2002::2.23            1440
[2]      192.168.195.212.23     192.168.195.112.13560  1440
```

Ю'

No.	৶
Local Address	б ৶ Â ৶ “.” ৶ ৶ Â “2002::2.23” б “192.168.195.212.23” “23” ৶ Â

Foreign Address	б ʌ Â ʌ “.” ʌ ʌ Â “2002::2.23” б “192.168.195.212.23” “23” ʌ Â
PMTU	PMTU

ȝ	
Ip tcp path-mtu-discovery	TCP PMTU ╗

ʌ ʌ Â

ʌ	
10.4	ȝ

33 RIP

33.1

33.1.1 auto-summary (RIP)

RIP ╠ ╥ ˘ ٦ **auto-summary** Â ٦ **no** ╠ ╥ Â

auto-summary

no auto-summary

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╠ ╥ Â

٦ Â

RIP ╠ ˘ ˘ ╠ Â
RIPv1 RIPv2 Ю ╠ Â
RIP ╠ ╥ ˘ Â ˘
a ˘ ⅃Л Â
˘ ў ЛЮ '
Â ' RIP ˘ ″I ’
Â γ ' RIP ˘ ˘ ’
Â Ь ' ⅃ έ ˘ a ⅄ ⅄ ˘
╠ ╥ Â ⅄ RIPv2 ˘ ⅃Л ╠
╥ ˘ RIPv1 ╠ Â

& ˘ Л٥ ٦ Â

ч	
version	Ьж RIP ˚ Â v1 v2 ч ˘ л v1&v2 Â

л

л	
-	-

33.1.2 bfd all-interfaces (RIP)

RIP BFD ˘ RIP Ю **bfd all-interfaces** Â ч no Â

bfd all-interfaces

no bfd all-interfaces

ч Â

RIP Э ╠ BFD ╖ л˘ й RIP (RIP)
BFD ˘ BFD ˘ RIP ˘ а Ѝ б
Â

й RIP BFD

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

33.1.3 default-metric (RIP)

¶ RIP ˘ ¶ **default-me** , **no**
Â

default-metric *metric-valu*

no default-metric

metric-value	˘ 16 R	6 Â *metric-value* a ¶ Â
	¶ 1 Â	
¶		

¶ ¶ **redistribute** ¶
˘ RIP ˘ a ¶ 8 a ˘
Â ˘ ¶ †

redistribute	ÿ ĺ ∧ Â

∧

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∧	
-	-

33.1.4 default-information originate (RIP)

RIP ˘ ↓ Л∪ ३ **default-information originate** ३˘ ३ **no** ∨ Â

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

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

always	^ ↓ ~ RIP ˚ ˘ a Â
metric *metric-value*	^ ↓ ~ ˘ *metric-value* ∨ ' 1-15 Â
route-map *map-name*	^ ↓ ~ route-map ↓ , route-map

’ metric и 1 Â

३

˘ RIP a ˘ **default-information originate** ३ ˘ Â **always** ˘ RIP a ˘

RIP ¾ ˘ ¾ RIP a ¨Ą ¯
Â
~
ip default-network ˘ ÿ
default-information originate ¾ RIP Â

˘ ˘ RIP Â

ЛЬЮ ˘ RIP й 160, ÿ 192.168.12.1 ˝
й 123

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

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33.1.6 distribute-list in

Â ˘ Â

ЛЬЮ ˘ RIP ÿ Fastethernet 0/0 ˘ ⁸ ˘ ↓
172.16 Â

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

¾	
access-list	Ⱶ Â
prefix-list	Ⱶ Â

↓

¾	
-	-

33.1.7 distribute-list out RIP

⁸ ˘ Л ˘ ¾ **distribute-list out** Â
¾ **no** Ⱶ Â

distribute-list {[*access-list-number* | *name*] | **prefix** *prefix-list-name*} **out** [**interface** | [**bgp | connected | isis** [*area-tag*] **| ospf** *process-id* **| rip | static**]]

no distribute-list {[*access-list-number* | *name*] | **prefix** *prefix-list-name*} **out** [**interface** | [**bgp | connected | isis** [*area-tag*] **| ospf** *process-id* **| rip | static**]]

access-list-number	*name*	Â ↓ ˘ ↓ Л Â
prefix *prefix-list-name*	Â
interface	(↓) ↑ ˘ ⁸ ↓ Â
bgp	(↓) ↑ ˘ ⁸ ↓ ÿ bgp Â

connected	(˧) ˀ ˘ ⁸ ˧ ÿ Â
isis [*area-tag*]	(˧) ˀ ˘ ⁸ ˧ ÿ isis ˘ *area-tag* ɛ isis Â
ospf *process-id*	(˧) ˀ ˘ ⁸ ˧ ÿ ospf ˘ *process-id* ɛ ospf Â
rip	(˧) ˀ ˘ ⁸ ˧ rip Â
static	(˧) ˀ ˘ ⁸ ˧ ÿ Â

⁸ Â

ʒ Â

ʒ a ˧ ˘ ⁸ , ˘ ⁸ ˧ , è ˘ ⁸ ˧ Â

ЛЬЮ ˘ 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
```

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ʒ	
access-list	ЬЖ Â
prefix-list	ЬЖ Â
redistribute	ˀ Â

33.1.8 exit-address-family

˘ Ю **exit-address-family** ٦ Â

exit-address-family

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٦ Â

Ю ٦ Â

٦ ┘Л∪ ѝ **exit** Â

Л∪Ю ˘ '

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

٦	
address-family	Â

/

/	
-	-

33.1.9 ip rip authentication key-chain

RIP ˘ RIP ˘ ٦ **ip rip authentication key-chain** Â ٦ **no** Â

ip rip authentication key-chain *name-of-keychain*

no ip rip authentication key-chain

Â

¶ Â

key chain ¶
Ы a RIP Â
RIPv1 a RIP ˘ л RIPv2 Â

ЛЬЮ ˘ Serial 0 RIP ˘ й ripchain Â

```
Ruijie(config)# interface serial 0/0
Ruijie(config-if)# ip rip authentication key-chain
ripchain
```

¶	
ip rip authentication mode	Ы RIP Â
ip rip authentication text-password	RIP ˘ RIP Â л RIPv2 RIP Â
ip rip receive version	RIP Э RIP Â
ip rip send version	RIP Э RIP Â
key chain	˘ Â

¶ л

л	
-	-

33.1.10 ip rip authentication mode

Ы RIP ˘ ¶ **ip rip authentication mode** Â ¶ **no** RIP Â

ip rip authentication mode

text	RIP й Â
md5	RIP й MD5 Â

й Â

٩ Â

RIP ˘ RIP ˘ RIP
˘ RIP Â
˘ ˘ ˘
˘ a й Â ˩ ˘ MD5 ˘
˘ ˘ ≠ a й Â
RIPv1 a RIP ˘ ˩ RIPv2 Â

ЛЬЮ ˘ Serial 0 RIP й MD5 Â

```
Ruijie(config)# interface serial 0/0
Ruijie(config-if)# ip rip authentication mode md5
```

٩

no ip rip authentication text-password

password-string	˘ 1· 16 Â

Â

¾ Â

RIP ˘ ˩ Л Ъ ¾ ˘ ≠ ˩ Л Ъ
˩ ˘ Л ″I Â
RIPv1 a RIP ˘ ˩ RIPv2 Â

ЛЪЮ ˘ Serial 0 RIP ˘ и ruijie Â a

˘ Л∪ RIP Ю BFD ѝ Â

ч Â

″I Ю **bfd all-interfaces** ч Â
Л ∪ ˘ **ip rip bfd** ч BFD ˘ ≠
Л ∪ RIP Ю ч **bfd all-interfaces** б RIP
BFD ˘ **ip rip bfd disable** BFD ╖ Â

ч	
router rip	╟ RIP Â
bfd all-interfaces	RIP BFD Â

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33.1.13 ip rip default-information

RIP ˘ ч **default-information** Â ч **no** Л Â

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

no ip rip default-information

only	˘ a è
originate	˘ ≠ è
metric *metric-value*	˘ Л ' 1-15

٦ Â

ٍ ٨ ˘ ÿ Â ٨
Ю **ip rip default-information** RIP **default-information**
originate˘ ٨ Â

~ ٨ **ip rip default-information˘** RIP a Ą ˉ
Â

ЛЬЮ ˘ ethernet0/0 Э ˘ ٨ Â

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

٦

ЛЬЮ ˘ Fastethernet 0/0 RIP Â

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

¶

¶	
ip rip send enable	RIP
passive-interface	RIP ╟

Л

¶

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33.1.15 ip rip receive version

ЊЖ RIP Э RIP ˘ ¶ **ip rip receive version** Â ¶ **no** Â

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

no ip rip receive version

1	^ ┘ ~ ┘ RIPv1 Â
2	^ ┘ ~ ┘ RIPv2 Â

и ┘ ¤ **version** ¶ Â

¶ Â

¶	
version	RIP Â

/I	
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33.1.16 ip rip send enable

RIP Э RIP ˘ ¶ **ip rip send enable**Â
¶ **no** RIP Э RIP Â

ip rip send enable

no ip rip send enable

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-	-

33.1.17 ip rip send supernet-routes

RIP Э RIP ˘ **ip rip s end supernet-routes** Â **no** RIP Э RIP Â

ip rip send supernet-routes

no ip rip send supernet-routes

RIP

RIPv1 RIPv2 ˘ ˘ RIPv1 ˘ ÿ Â ЛŭЮ˝ RIPv2 **no** Â

& RIPv2 ˘ 8 Â

ЛЬЮ ˘ Fastethernet 0/0 RIP Â

```
Ruijie(config)# interface fastethernet 0/0
Ruijie(config-if)# no ip rip send supernet-routes
```

RIP ˘ ʒ **ip rip receive**
Â

ṡ **=ľ** ’

no ip rip split-horizon

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ЮЎ Ў Э Â

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Л IP ЭЎ Ў Ў
ё ЛЦ Â Ў Л ЛЦ ÿ Ў
Ў ѝ Â
^ à X.25 ~ Ў Ў Л Ў
Ў a Â ЮЎ Л Ў Â
IP Ў ≠ Ў Â
RIP Ў Ў Â a
Ў Ў Л ЛЦ show ip rip Â Л **neighbor**
Â Нж Ў a Л RIP Ў Â

ЛЦЮ Ў Fastethernet 0/0 RIP Ў ╖ Â

```
Ruijie(config)# interface fastethernet 0/0
Ruijie(config-if)# no ip rip split-horizon
```

Â	
neighborˆ RIP˜	Нж RIP IP Â
Validate-update-source	RIP Â

Л

ip-address	IP
ip-network-mask	ù IP

RIP ╟

¾ Â

¾ **ip rip summary-address** Ю ÂRIP ╟
Â ◄ Â

&	¾	a ˘	a
	Â		

ЛЬЮ ˘ RIPv2 ╟ Â ˘ FastEthernet 1/0
Л 172.16.0.0/16 Â

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

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¾	
auto-summary	RIP ╟

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33.1.21 ip rip v2-broadcast

RIP version 2 Лъ Э ˘ ◄Лъ ¾
ip rip v2-broadcast ¾ Â ¾ **no** Â

ip rip v2-broadcast

no ip rip v2-broadcast

- ٦B	"Ĵdy[&Ä Tc - 2.979 0 Td(R)Tj/CT1

ы ↓ ¤ **version** ٦ Â

٦ Â

٦ ˘ ↓ЛU **vesion** ٦ Â ٦ ↓ RIP
ы˘ ↓ЛU ↓ RIPv1 RIPv2 Â ٦ a
ы ↓ ¤ version Â

ЛUЮ ˘ Fa
!56sg2ĵR–'8D&Nô"@R–sgBA–Và."Ag6QAP"dR1r71D$VtBsg2#2Ѵ¼

¦ Â

ˇ ˩ Л ˩ *network-number* *wildcard*
б RIP Â
wildcard ˇ RGOS ˇ
б RIP Â
˩ RIP Ьж ˇ ˩ Л RIP ˇ
RIP Â

ЛЬЮ ˇ Ьж б RIP ч /˘ 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
```

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-	-

˩

/	
10.4(1)	╗ *wildcard*

33.1.23 neighbor (RIP)

Ьж RIP IP ˇ ˩ Л **neighbor** Â ¦ **no** Ьж Â

neighbor *ip-address*

no neighbor

ip-address	IP Â Â

Ьж Â

٩

RIPv1 IP ˆ 255.255.255.255˜ ˘ RIPv2
ˆ 224.0.0.9˜ Â a Э ˘
ل ˘ ل Л **passive-interface** ѝ
╠ ˘ Л ل Ю Â ٩ a RIP
Â passive ˘ Л ≠ a Â

٩ Â ЛЮ ˘ Ю RIP ل 192.168.1.2 Â

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

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٩	
passive-interface	ѝ passive

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25˘ ˘ Ю ٦ Â
˘ æ ˘ æ ٦ a
˘ Â ˘ **output-delay** ٦ ╗
˘ æ Â

ЛЬЮ ˘ RIP й 30

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

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33.1.26 passive-interface

٨ Э ╗ ˘ ٦ **passive-interface** ٦ Â
٦ **no** ╗ Â

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

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

default	й passive
interface-type interface-num	б /\

Ю˘ й passive Â

٦ Â

passive-interface default ٦ й passive ˘ ٨Ъ **no**
passive-interface *interface-type interface-num* ٦ й passive Â
й passive Л˘ a Ą RIP ˘ Ў RIP
Â Э ٨Ъ neighbor ٦ Â
[8] ˘ ٦ ip rip send enable ip

rip receive enable ⁸ Â

ЛЬЮ й passive ˘ Л ethernet0/0 й passive

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

¶	
ip rip receive enable	RIP
ip rip send enable	RIP

Л

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-	-

33.1.27 redistribute RIP

ƒ ˘ Ю **redistribute** ¶ Â Ч ƒ ˘ ¶ **no** Â

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

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

Ч

metric *metric-value*	↑ metric˘ metric-value metric ˘ ↓ ' 1-16
route-map *route-map-name*	↑

ЮЎ
↑ OSPF˘ ↑ ’
↑ ISIS˘ ↑ level-2 ’
è ЮЎ ↑ ’
↑ Л metric ѝ 1’
a route-map Â

٦ Â

٦ ↑ RIP Â
↑ ˘ ↑ ˘
ѝ a ↓ a ↓ ÂRIP ˘ OSPF
˘ ↓ Â ↑ ˘
˘ ↑ Â
↑ **isis** ˘ a level ˘ ↓ ↑ level-2 ˘
↑ ˘ level ˘ ↑ level Â ˘
ѝ ˘ ↓ level 1, level 2 ˘ ѝ level-1-2 Â
↑ **ospf** ˘ a match ˘ ↑ ospf ’
Л match ѝ match ˘ ↑ ↓ ¬
↑ ’ no ٦ match ѝ Â

~ ↑ ٦ a è RIP ˘ RIP˘ **default-information originate** ٦ Â

ЛЬЮ ٦ ↑ RIP
```
Ruijie(config-router)# redistribute static
```

٦	
default-metric *metric*	↑
default-information originate	RIP

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33.1.28 router rip

RIP ˘ ֽ **router rip** Â ֽ
no RIP Â

router rip

no router rip

-	-

RIP Â

ֽ Â

RIP ˘ Ⱨ Л Â Э ╟ ˘
async default routing Â

ЛЬЮ ˘ RIP ˘ Â

```
Ruijie(config)# router rip
Ruijie(config-router)#
```

ֽ	
network (**RIP**)	Ⱨ RIP Л Â

Л

Л	
-	-

33.1.29 timers basic

update	˘ Л∪ Âupdate Ⱨ ˘ ˘ invalid flush Æ Â 30 Â
invalid	˘ Л∪ ˘ ÿ Âinvalid Ⱨ ⅃ ѝ Â ѝ Ь ˘ ˘ ⅃ ѝ ˘ invalid ’ invalid ˘ Æ Â Invalid ѝ 180 Â
flush	˘ Л∪ ˘ ÿ RIP invalid

-	-

33.1.30 validate-update-source

RIP ˘ ˘ ֽ

validate-update-source Â ֽ **no** Â

validate-update-source

no validate-update-source

-	-

Â

ֽ Â

˩ Л∪ RIP ˘ Â ѝ RIP
˘ ˩ ˩ IP Â
Э ֿ ˘ RIP ˘ a
ֽ **validate-update-source** Â
˥ ip unnumbered ˘ RIP a ˘ a
ֽ **validate-update-source** Â

ЛЬЮ ˘ Â

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

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

ֽ

˥

˥	
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33.1.31 version (RIP)

Ыѫ RIP ѵ˘ ֽ **version** Â ֽ **no** Â

version {**1** | **2**}

no version

1	Ыѫ RIP ѵ и 1 Â
2	Ыѫ RIP ѵ и 2 Â

ֿ Л RIPv1 RIPv2 ˘ ֿ RIPv1 Â

ֽ Â

Ыѫ RIP ѵ Â ֿ Л **ip rip receive version** à **ip rip send version** ֽ˘ RIP Ыѫ Â

ЛЬЮ ˘ RIP ѵ и 2 Â

```
Ruijie(config)# router rip
Ruijie(config-router)# version 2
```

ֽ	
ip rip receive version	Ыѫ RIP Э RIP Â
ip rip send version	Ыѫ RIP Э RIP Â
show ip rip	**rip** Â

ֿ

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33.2

33.2.1 show ip rip

RIP ˘ **show ip rip** Â

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

vrf *vrf-name*	ˆ ˩ ˜ VRF RIP

৭ à à Â

˩ RIP Ь à ⍞ à ⍞ à rip
à rip б à metric б distance Â
VRF˝ VRF ˩ VRF-id

1' ЛЬЮ ˘ RIP ˘ à Â

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

2' ЛЬЮ ˘ vrf˝ RIP '

```
Ruijie(config-router)# sh ip rip vrf 1
VRF 1  VRF-id:1
Routing Protocol is "rip"
Sending updates every 30 seconds
```

```
Invalid after 180 seconds, flushed after 120 seconds
Outgoing update filter list for all interface is: not set
Incoming update filter list for all interface is: not set
Default redistribution metric is 1
Redistributing:
Default version control: send version 1, receive any version
Routing for Networks:
Distance: (default is 120)
```

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33.2.2 show ip rip database

RIP ˘ **show ip rip database** Â

show ip rip database [**vrf** *vrf-name*] [*network-number network-mask*] [**count**]

vrf *vrf-name*	^ ¶ ~ VRF RIP
network-number	^ ¶ ~ ¶ Â
network-mask	Â ¶ ˘
count	^ ¶ ~ RIP Œ Œ Â M

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

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¾	
show ip rip	Â

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33.2.3 show ip rip external

RIP ¦ ˘ **show ip rip external** ¾ Â

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

bgp | connected | isis | ospf | static	^ ˩ ~ ¦

vrf *vrf-name*	ˆ ˩ ˜ VRF RIP
process-name	ISIS ˩
<1-65535>	OSPF ˥

v r ŧ ت v r ŧ ت ü

vrf *vrf-name*	ˆ ˩ ˜ VRF RIP

ৡ à à Â

ৡ RIP ˘ a RIP ˘ a Â

ЛЬЮ ˘ RIP Â

```
Ruijie# show ip rip interface
FastEthernet 1/0 is up, line protocol is up
  Routing Protocol: RIP
    Receive RIPv2 packets only
    Send RIPv2 packets only
    Passive interface: Disabled
    Split horizon: Enabled
    V2 Broadcast: Disabled
    Multicast registe: Registed
    Interface Summary Rip:
    Not Configured
    Authentication mode: Text
    Authentication key-chain: ripk1
    Authentication text-password: ruijie
    Default-information: only, metric 5
    IP interface address:
      192.168.64.100/24, next update due in 14 seconds
      2.2.1.1/24, next update due in 24 seconds
        neighbor 2.2.1.6, next update due in 3 seconds
        neighbor 2.2.1.77, next update due in 13 seconds
      2.2.2.57/24, next update due in 16 seconds
        RIP б BFD ╟˘ ѫ ≠ ╕ BFD :
Ruijie#show ip rip interface
VLAN 1 is up, line protocol is up
  Routing Protocol: RIP
    Receive RIPv1 and RIPv2 packets
    Send RIPv1 packets only
    Receive RIP packet: Enabled
```

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

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show ip rip

ЛЬЮ ˘ RIP Â

```
Ruijie# show ip rip peer
Peer 192.168.3.2:
  Local address: 192.168.3.1
  Input interface: GigabitEthernet 0/2
  Peer version: RIPv1
  Received bad packets: 3
  Received bad routes: 0
  BFD session state up
```

show ip rip	

-	-

34 OSPF

34.1

34.1.1 area

ш ˘ ֯ **no** OSPF ш Â

area area-id

no area area-id

area-id	OSPF ш /ı Â ш /ı ˩ Ո ⁸ ˘ ≠ ˩ Ո IP Â

OSPF ш Â

֯ Â

˩ Ո ֯ no ˘ OSPF ш ш ˘

area authentication à **area default-cost** à **area filter-list** à **area nssa** ш ֯ Â

ЮО ЮЎ OSPF ш '

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10.4(1)	ৡ

authentication

OSPF ש ˘ ৡ **area authentication** Â ৡ **no** SPF ש Â

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

a *area-id* **authentication**

ip ospf authentication-key	¤ OSPF ¢ Â
ip ospf message-digest-key	¤ OSPF MD5 ¢ Â
area virtual-link	¤ Â

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¢	
-	-

34.1.3 area default-cost

¤ STUB ¥ NSSA ^ OSPF ~ ˇ
¢ **area default-cost** Â ¢ **no** Â

area *area-id* **default-cost** *cost*

no area *area-id* **default-cost**

ʒ	
area stub	OSPF ш ѝ Â
area nssa	OSPF ш ѝ NSSA ш

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34.1.4 area filter-list

ABR Э ˇ ʃ Л area filter-list ʒ a ʃ ш ш ˝ Â

area *area-id* **filter-list** [**access** *acl-name*| **prefix** *prefix-name*] [**in** | **out**]

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

area-id	ш ʃ Â
acl-name	acl ʃ
prefix-name	prefix-list ʃ
access | **prefix**	prefix list ACL
in | **out**	˚ | ш

ʒ Â

ʒ ʃ ABR ш ˜ Э Â
ABR Э a ʃ ш ˝ ˚ ˇ ʒ Â

ЛЬЮ ʒˇ area 1 ʃ ˝ 172.22.0.0/8 ш Â

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

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34.1.5 area nssa

OSPF ش ى NSSA ً ٹ **area nssa** Â ٹ **no** NSSA ش NSSA ش Â

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

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

area-id	NSSA ش ش ا Â
¸ **no-redistribution**	^ ل ~ NSSA ABR ً ل ٹ ش a NSSA ش ً ل ∏ Э Â
¸ **default-information-originate**	^ ل ~ 7 LSA NSSA ش ً ل NSSA ABR ASBR Э Â
¸ **metric** *value*	^ ل ~ LSA metric ً ل ' 0-16777214
¸ **metric-type** <*1-2*>	^ ل ~ LSA ى E-1 E-2
¸ **no-summary**	^ ل ~ nssa (ABR) summary LSAs ً Type-3 LSA ً Â

ЊЖ NSSA ش Â

ٹ Â

default-information-originate Type-7 LSA ً NSSA ABR ASBR Э ً ABR Э ً Type-7 LSA ً ASBR Э (ل ≠ a ABR) ً Type-7 LSA Â

no-redistribution ASBR Э OSPF redistribute ٹ è

a NSSA ш Â NSSA ASBR ABR Ą˘
٦ Л NSSA Â
ий NSSA ш ^ LSA˜ ˘ ٦ Л ABR Э
no-summary ˘ ABR NSSA ш summary LSAŝ Type-3 LSA˜ Â
٨ **area default-cost** NSSA ш ABR Э Â ٹ
ш NSSA ш Â Ю˘ NSSA
ий 1 Â

ЛюЮ ˘ ш 1 ий ˘ ш Â

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

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area default-cost	Ьж NSSA ^ OSPF ˜ Â

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34.1.6 area range

OSPF ш ˘ ٹ **area range** Â ٹ **no** ˘ **no** б **cost** ٦ Л ˘ a Â

area *area-id* **range** *ip-address net-mask* [**advertise** | **not-advertise**] [**cost** *cost*]

no area *area-id* **range** *ip-address net-mask* [**cost**]

area-id	OSPF ш ٨ Âш ٨ ٦ Л ⁸ ˘ ≠ ٦ Л IP Â

ש Â

Ὼ Â

б RFC1583 ˘ RFC1583 ˘

cost

OSPF

꠸ OSPF ˘ ३ **area virtual-link** Â ३ **no**
ꠇ Â

dead-interval ' 40 '

hello-interval ' 10 '

retransmit-interval ' 5 '

transmit-delay ' 1 '

a '

è Â

ҳ Â

OSPF ˘ ш б ˘ ˘

˘ Â ч ш

ˆ ABR˜ ˘ ч ABR ⅄ ш й ш Â ˆ Stub Area˜

NSSA a й ш Â ≠ ⅄ Л è ш Â

router-id й OSPF ˘ a router-id ˘ **show ip ospf**

neighbor ҳ Â ⅄ Л Loopback Â

area virtual-link ҳ ⅄ Ⱶ ˘ ш OSPF

˘ ҳ **area authentication** Â

1' ЛЮ ˘ Л ш 1 й ш ˘ б 2.2.2.2 Â

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 172.16.0.0 0.0.15.255 area 0
Ruijie(config-router)# network 172.16.17.0 0.0.15.255area 1
Ruijie(config-router)# area 1 virtual-link 2.2.2.2
```

2' ЛЮ ˘ Л ш 1 й ш ˘ б 1.1.1.1 Â

ш 10 ш ˘ OSPF ˘ й MD5 Â

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 172.16.17.0 0.0.15.255area 1
Ruijie(config-router)# network 172.16.252.0 0.0.0.255area 10
Ruijie(config-router)# area 0 authentication message-digest
Ruijie(config-router)# area 1 virtual-link 1.1.1.1
message-digest-key 1 md5 hello
```

ҳ

ҳ	
area authentication	OSPF ш Â
show ip ospf	OSPF ˘ Â

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34.1.10 bfd all-interfaces (OSPF)

OSPF BFD ˘ OSPF Ю **bfd all-interfaces** Â ¾ no Â

bfd all-interfaces

no bfd all-interfaces

ЛЬЮ ˘ rfc 2328 Â

```
Ruijie(config)# router  ospf 1
Ruijie(config-router)# no commpatible rfc1583
```

ৡ	
show ip ospf	ospf

ʒ Â

redistribute **default-information** ʒ ˘ OSPF ╟ ↓ и ASBR
ˆ ˜ Â ASBR a ╟ ˘ OSPF
Â ASBR ˘ **default-information originate**
ʒ Â
always ˘ OSPF a ˘
Â a ˘ ˘ ↓ Л
show ip ospf database OSPF ˘ и 0.0.0.0
Â OSPF **show ip route** ʒ˘ ↓ Л
Â
˘ ↓ **default-information originate** ʒ Ж a
ʒ **default-metric** Â
OSPF ч ˘ 1 ↓˘ 2
a ↓ Â ч ˘ ↓ ˘ 1
2 ″I ˘ Л **show ip route** ↓ 1 Â
STUB ш a ↓ Л Â

ЛЬЮ ˘ OSPF ˘ OSPF ˘
и 1˘ и 50 Â

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

ʒ

ʒ	
show ip ospf database	OSPF Â
show ip route	IP Â
redistribute	↑ è Â

↓

ʒ

И	
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34.1.14 default-metric

OSPF ʈ ˘ ʒ **default-metric** Â ʒ **no** Â

default-metric *metric*

no default-metric

metric	ЊЖ OSPF ʈ ˘ ˩ ' 1-16777214 Â

ѝ 20 Â

ʒ Â

default-metric ʒ б **redistribute** ʒ ˘ ˩ Л∪ ʈ Â

default-metric ʒ ˘ Л∪ **default-information originate** OSPF a Â

ЛЬЮ ˘ OSPF ʈ ѝ 50 Â

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

ʒ

ʒ	
redistribute	ʈ è Â
show ip ospf	ospf Â

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34.1.15 discard-route

discard ╗ ˘ no ⅄ Л∪ discard ╗ Â

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

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

internal	╗ Ш ¢ area range discard Â
external	╗ ¢ summary-address discard Â

╗ discard Â

¢ Â

˘ / ⅄ a ˘ ⅄ ╗ Â и ˘ ABR ASBR ╗ discard Â ╟ ˘ з a Â

ЛЬЮ ˘ ╗ area range discard Â

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# no discard-route internal
```

¢	
area range	OSPF Ш Â
summary-address	OSPF Â

/	
-	-

34.1.16 distance ospf

a ⅄ OSPF

distance {*distance* | **ospf** { **intra-area** *distance* | **inter-area** *distance* | **external** *distance* }}

no distance [**ospf**]

access-list-number | *name*

	bgp | connected | isis ¸ [area-tag] | **ospf** process-id | **rip** | **static**	

й ˘ Â

ҙ Â

distribute-list out б **redistribute route-map** ҙ ˘ ÿ è ĭ OSPF ˘ a ĭ ˘ б **redistribute** ҙ Â ACL prefix-list a ˘ ACL , a Ą prefix-list Â

-	-

Ю˝ MIB /ﾊ OSPFv2 Э Â

३ Â

OSPFv2 MIB OSPFv2 ˘ Л∪ SNMP OSPFv2 ˘
ﾍ Â Ю˝ OSPFv2 MIB /ﾊ OSPFv2 Э˘
Â
SNMP OSPFv2 ˘ ﾍ Л∪ ३ MIB
Э Â

ЛЬЮ ˘ SNMP /ﾊ ѝ 100 OSPFv2 '

Ruijie(config)# **router ospf** *100*

Ruijie(config-router)# **enable mib-binding**

३	

[**LsdbApproachOverflow | LsdbOverflow | MaxAgeLsa | OriginateLsa**] | **retransmit** [**IfTxRetransmit | VirtIfTxRetransmit**] | **state-change** [**IfStateChange | NbrRest artHelperStatusChange | NbrStateCha nge | RestartStatusChange | VirtIfStateC hange | VirtNbrRestartHelperStatusChange | VirtNbrStateChange**]]

error	б error traps ˘ ↲ Л Ю error traps ' **IfAuthFailure** **IfConfigError** **IfRxBadPacket** **VirtIfAuthFailure** **VirtIfConfigError** **VirtIfRxBadPacket**
lsa	б lsa traps ˘ ↲ Л Ю lsa traps ' **LsdbApproachOverflo w** LSA Э ‡ **LsdbOverflow** LSA Э **MaxAgeLsa** LSA **OriginateLsa** LSA
retransmit	б retransmit traps ˘ ↲ Л Ю retransmit traps ' **IfTxRetransmit** Э **VirtIfTxRetransmit** Э
state-change	б state-change traps ˘ ↲ Л Ю state-change traps ' **IfStateChange** ↲ **NbrRestartHelper StatusChange** GR ↲ ’ **NbrStateChange** ↲ **RestartStatusChan ge** GR Restarter ↲ ’ **VirtIfStateChange** ↲ **VirtNbrRestartHelp er StatusChange** GR ↲ **VirtNbrStateChang e** ↲

traps Â

٦ Â

٦ ٦ ٦ **snmp-server** ٦ ٨ ˝I **snmp-server enable traps ospf** ˝Ą enable traps Л∪ Л˘ ospf trap Â

٦ a ٦ MIB ٨ a ٦ ٦ TRAP Â

ЛυЮ ˘ OSPFv2 100 TRAP '

```
Ruijie(config)# router ospf 100
Ruijie(config-router)# enable traps
```

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٦	
show ip ospf	OSPF
enable mib-binding	OSPFv2 MIB
snmp-server enable traps ospf	OSPF TRAP

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10.4(1)	٦

34.1.21 gip ospf authentication

٦ ˘ **no** ٦ Л∪ ѝ Â

ip ospf authentication [**message-digest** | **null**

ˇ ш Э ¤ ˇ
ѝ **null** ˙ [8] ѝ a , Э ш
, ˝I Э Â

ЛЬЮ ˇ FastEthernet 0/0 OSPF ѝ MD5 Â

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

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area authentication	OSPF ш Ⱳ Â
ip ospf authentication-key	OSPF Â
ip ospf message-digest-key	OSPF MD5 Â

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34.1.22 ip ospf authentication-key

OSPF ˇ ٩ **ip ospf authentication-key** Â ٩ **no** Â

ip ospf authentication-key *key*

no ip ospf authentication-key

Key	ˇ ٤ Л∪ 8 Â

Â

٩ Â

ip ospf authentication-key ٩ ˇ OSPF Â a ˇ ч ٨ a OSPF ˇ ≠ a Â a ٤ ٤ Л∪ a ˇ ٤ Э ˇ Â

OSPF

Â

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

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34.1.24 ip ospf cost

OSPF ^ OSPF ~~ **ip ospf cost** Â **no** Â

ЛьЮ ˘ serial 1/0 OSPF й 100 Â

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

¾	
bandwidth	Â a Â

show ip ospf

	३	
३		

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	ip ospf hello-interval	OSPF Hello Â

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	¼	
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34.1.27 ip ospf disable all

a Ą ospf Â

ip ospf disable all

no ip ospf disable all

	-	-

¾ Â

¾ network area ¬ ˘ ¾ ¼˘
network˘ ≠ a Ą ospf Â a OSPF ˘ ≠ a
б OSPF Â

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

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	-	-

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¾	¼	
	-	-

34.1.28 ip ospf hello-interval

OSPF MD5 ˘ ৡ ip ospf message-digest-key Â
ৡ no OSPF MD5 Â

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

no ip ospf message-digest-key

key	˘ ৶ Л৬ 16 Â
key-id	˘ ÿ

area authentication	OSPF ष ⅎ Â

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34.1.31 ip ospf network

OSPF ˘ ʒ **ip ospf netw ork** Â ʒ **no** Â

ip ospf network {*broadcast* „ *non-broadcast* „

point-to-multipoint [*non-broadcast*]„ *point-to-point*}

no ip ospf network {*broadcast* „ *non-broadcast* „

point-to-multipoint [*non-broadcast*]„ *point-to-point*}

broadcast	OSPF ỳ Â
non-broadcast	OSPF ỳ ˘ NBMA Â
point-to-multipoint [*non-broadcast*]	OSPF ỳ Â , non-broadcast ỳ
point-to-point	OSPF ỳ Â

' PPP à SLIP à à X.25 ' NBMA ' ^ ~ à X.25 ^ ~ ' ' Л ' ỳ Â

ʒ Â

a ˩ ˘ OSPF ǂ ỳ Ь ' Â ^ Л ˘ ʒ ˘ FDDI˜ ' Â ^ ˘ X.25˜ ' Â ^ HDLC˜ PPP˜ SLIP˜ Â è ˘ OSPF a ˩ ǂ ỳ ч ' Â (NBMA) ÂNBMA ˘ ˩ ˘ SVC˜ X.25˜ ˘ PVC˜ ~ Â OSPF NBMA Э б Э ˘ ^ Designated Router˜ ˘ NBMA Â Â Â a ˘ OSPF

Â ˘ OSPF
˘ Л Â
ʃ ѝ , Â
a ѫ˘ ˩Л ѝ Â ˩Л
ˆ ˘ X.25˜ ˘ OSPF ˘
Â X.25 map Frame-relay map ʒ˘ ˩Л X.25
έ ˘ OSPF ˩Л X.25 Â
˩Л ˘ OSPF ˘
ў Â б ЛЮ '
Â ˘ a ˘ ≠ ,
Â ʒ' ˘ a Â
Л à Л X.25 ˘ IP ˘
broadcast Â

1' ЛЮ ˘ ѝ ˘ Â

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

2' ЛЮ ˘ ѝ ˘
Â

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

3' ЛЮ ˘ ѝ ˘ DR/RDR˜
˚ ÂЛЮ ʃ a
Э ˆ ⁸ ѝ DR/BDR˜ Â

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

ʒ

ʒ	
dialer map ip	ѭ IP б Л Л Â
frame-relay map	ѭ IP б DLCI Â
neighborˆ OSPF˜	ѭ IP ˘ ˩ NBMA Â

	X25 map	IP 6 X.25 Â

	/I	
¾	-	-

34.1.32 ip ospf priority

OSPF. "I~I ˘ =

ʒ	/ı	
	-	-

34.1.33 ip ospf retransmit-interval

ЊЖ LSUˆ ~ ˘ ʒ **ip ospf retransmit-interval** Â ʒ **no** Â

ip ospf retransmit-interval *seconds*

no ip ospf retransmit-interval

seconds	LSU ˘ Л∪ и Æ˘ ч ' 1-65535 Â ч Â

и 5 Â

ʒ Â

LSU ˘ LSU ă ˘ **ip ospf retransmit-interval** ʒ ЊЖ ˘ ˘ LSU Â ˘ Л∪ a ˘ Э˘ ˩ Л∪ Â LSU area virtual-link ʒ retransmit-interval Ŕ Â

ЛЬЮ ˘ serial 1/0 LSU и 10 Â

```
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip ospf retransmit-interval 10
```

ʒ	
area virtual-link	ЊЖ OSPF Â

˩ı

ʒ	/ı	
	-	-

34.1.34 ip ospf transmit delay

ৡ OSPF LSU ˘ ৡ **ip ospf transmit delay** Â
ৡ **no** Â

ip ospf transmit delay

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

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

detail	↓

╖ ˘ a detail ˘ ↓ Full Full
Â

ʒ Â

ЛЬЮ ˘ ↓ Â

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# log-adj-changes detail
```

ʒ	
show ip ospf	ospf Â

↓

/!	
-	-

34.1.36 max-concurrent-dd

↓ DD Â

max-concurrent-dd <*1-65535*>

no max-concurrent-dd

no max- ┐ **RṡṠ** **-ʁ** **p** **ҿ**

ʒ Â

RGOS ˚ й ˘ Â IP ˘ й
ў IP Â
NBMA Э ↓ й a ˘
Hello ˘ OSPF Hello ˘ Hello й
Â OSPF ˘ ↓ ″I a й 0 Hello ˘
″I й 0 a б DR/BDR Â DR/BDR Лυ ∧˘ DR/BDR
Hello Â
Э, й a έ Лυ ╟ ,
ʒ й è , ∧ ↓Лυ cost
Â

ЛυЮ ˘ OSPF ˘ è IP й 172.16.24.2˝ ″I
й 1˘ й 150 Â

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

ʒ	
ip ospf priority	OSPF ″I Â
ip ospf network	OSPF

∧

∧	
-	-

34.1.38 network area

Ⱨ OSPF˝ Лυ OSPF ш ˘ ʒ **network area** Â
ʒ **no** OSPF ш Ⱨ Â

network *ip-address wildcard* **are** ב

wildcard	ЬЖ IP Æˇ 0 ˇ 1 a Â
area-id	OSPF ш Â OSPF ш ˇ ѝ ˇ ≠ ⊿Ло ѝ OSPF ш Â

OSPF ш Â

Â

ip-address *wildcard* ч ЬЖ˘ ʒ ⊿Ло OSPF ш Â Э OSPF˘ ў IP network area ЬЖ IP Â network area ЬЖ IP ˇ ⊿ IP ˇ a OSPF Â

⊿ б OSPF network ʒ ЬЖ IP ˇ ˇ б OSPF Â

ЛЬЮ ˇ ЬЖ ' ш ' 0˘ 1˘ 172.16.16.0 Â IP 192.168.12.0/24 ЬЖ ш 1˘ IP 172.16.16.0/20 ЬЖ ш 172.16.16.0˘ è ЬЖ ш 0 Â

```
Ruijie(config)# router ospf 20
Ruijie(config-router)# network 172.16.16.0 0.0.15.255 area 172.16.16.0
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 1
Ruijie(config-router)# network 0.0.0.0 255.255.255.255 area 0
```

ʒ	
router ospf	OSPF Â

⊿

/ ⌉ # ⊀

no overflow database

<1-4294967294>	LSA
hard | **soft**	hard LSA ˘ OSPF soft LSA ˘

a ⁸ OSPF LSA Â

¾ Â

OSPF ˘ hard ˘ a OSPF ˘ ˘
soft

ЛЬЮ ¾ LSA 10 ˘ OSPF 10 Â

```
Ruijie# config terminal
Ruijie(config)# router ospf 10
Ruijie(config-router)# overflow database 10 hard
```

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-	-

Ť ' Ъ ε Ų =

a ⁸ external-LSA Â

⁸ external-LSA ˘ external-LSA ʌ˘ a ̈Ą

Â

३ Â

external-LSA *max-dbsize* ˘ ˘ ƗƟ˘ a

̈Ą ╗ external-LSA˘ Ɔ

Ɨu

no	a OSPF OVERFLOW ╖ Â

a Ю OSPF OVERFLOW Â

ʒ

OSPF OVERFLOW ў ˘ й a Ѐ Â

╖ ˘ OSPF OVERFLOW ˘ ┘ Â й ˘ OSPF NULL ˘ ÿ æ ˘ OVERFLOW Ю Â ┘ Л∪ **clear ip ospf process** ʒ Æ OSPF ˘ OSPF OVERFLOW Â

no a OSPF a OVERFLOW ˘ ┘ ˘ ˘ OSPF ˘ Â

1' OSPF a Ю a OVERFLOW '

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

ʒ

ʒ	
clear ip ospf process	OSPF Æ
show ip protocols ospf	OSPF

ʃ

ʃ	
10.3(4b3)	ʒ

34.1.42 passive-interface

ʒ й ╠ Â ʒ **no** Â

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

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

isis [*area-tag*]	ÿ isis ʃ ˘ *area-tag* ɛ́ isis
ospf *process-id*	ÿ ospf ʃ ˘ *process-id* ɛ́ ospf ˘ ˬ '

ग ' ॅ OSPF ISIS ˘ ग ॅ match
level ˘ ॅA route-map Â

a OSPF Â

ٹ Â

RGOS10.1 Э ╗ /I ˘ ѝ OSPF Â a ↓ OSPF
˘ ↓ Л ѝ ч Â

ЛЬЮ ˘ **vrf** *vpn_1* OSPF 10 Â

```
Ruijie(config)# router ospf 10 vrf vpn_1
```

ٹ	
show ip protocols	Â
show ip ospf	ospf Â

↓I

/I	
-	-

34.1.45 router-id

ID, ٹ no ↓ Л Router ID˘
Router ID Â

router-id *router-id*

no router-id

router-id	ID,Л IP

OSPF ^ loopback˜ IP ѝ '
IP ^ loopback˜ ˘ ѫ OSPF ↓ IP
ѝ Â

ٹ Â

˘ Â LSA ˝I
router-id Â

ЛЬЮ ˘ router-id ѝ 0.0.0.36 Â

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

ʒ	
show ip protocols	Â

NSSA ʊ˘ **summary-address** ʒ ˩ NSSA ABR Э ˘ ɜ ˩
ʃ Â

ЛЬЮ ʒ˘ 100.100.0.0/16 Â

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

ʒ

ʒ	
area range	OSPF ʊ Э Â
redistribute	ʃ è Â

Â

ы 4¦ ˘ ٦Ո ٹ Â a

Â LSA ЮЎ ˘ Л LSA

Â ы CPU ˘ LSA a ˘ Ո

LSA ˘ æ Â ˘ 10000 LSA˘ ٦Ո æ

˘ ٧ 40˙ 100 ˘ ٦Ո 10~20¦ Â

ՈЮ ˘ ы 120 Â

```
Ruijie(config)#router ospf 20
Ruijie(config-router)#timers lsa-group-pacing 120
```

ٹ	
show ip ospf	ospf

Л

Л	
-	-

34.1.48 timers spf

OSPF ٦ ˘ SPF ˘ Ո ч SPF

˘ ٦ ٹ **timers spf** Â ٹ no Â

timers spf *spf-delay spf-holdtime*

no timers spf

	Ю SPF ˘ Ո ы Æ˘
spf-delay	0-214748364 ( ) ÂOSPF ٦ ˘ Л˘ SPF Â ÆBÂÛ,tk!¦'('@H dVTLЮ

ǂ ѝ ЛЬЮ ч '

1 à RGOS 10.4 ˘ a timers throttle spf ʒ Â ѝ

timers spf 5 10

2 à RGOS 10.4 ˘ timers throttle spf ʒ Â Ю timers spf ʒ a ˘ SPF Лυ **timers throttle spf** ʒ ѝ ˘ timers throttle spf ʒ Â

ʒ Â

spf-delay *spf-holdtime* ˘ OSPF ⅄ ≠ ˘ ≠ ˘ ´ CPU Â

~ timers spf б timers throttle spf Â

ЛЬЮ ˘ OSPF ǂ ѝ 3 9 Â

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

ʒ	
show ip ospf	ospf
timers throttle spf	SPF ˘ ╗ timers spf ╗ ' timers throttle spf ⅄ ʒ timers spf

⅄

,Ì G Q ¸ 0

spf-delay	Ⱨ SPF ˇ Л ѝ Æˇ ѵ ' 1-600000 ÂOSPF ѵ ˇ SPF spf-delay Л Â
spf-holdtime	Ⱨ ч SPF ˇ Л ѝ Æˇ ѵ ' 1-600000 Â
spf-max-waittime	Ⱨ ч SPF ˇ Л ѝ Æˇ ѵ ' 1-600000 Â

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

show ip ospf	ospf
timers spf	SPF Â 10.4 RGOS ˘ SPF ˀ Â timers throttle spf ˀ timers spf

˄

ˀ	
10.4(1)	ˀ

34.2

34.2.1 show ip ospf

OSPF ˘ ˀ **show ip ospf** Â

show ip ospf [*process-id*]

process-id	ospf ˄

ˀ Â

ˀ ˄ ˄Ъ OSPF Â

˄Ъ **show ip ospf** ˀ '

```
Ruijie# show ip ospf
```

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

Router ID	Â
Process uptime	OSPF ˆ router-id ŭ 0.0.0.0 a ˜ Â
Bound to VRF	OSPF VRF Â

Conforms to RFC2328	б RFC2328 Â
	RFC1583
RFC1583Compatibility flag	RFC2328 '

Number of interfaces in this area	ш Â
Number of fully adjacent neighbors in this area	ш Full Â
Number of fully adjacent virtual neighbors through this area	ш Full ' ৸ ш Â
Area authentication	ш Â
SPF algorithm last executed	Э SPF Â
SPF algorithm executed times	SPF Â
Number of LSA	ш LSA Â
Checksum Sum	ш LSA Â
NSSA Translator State	NSSA LSA ѝ External LSA' NSSA ш˘ з ABR OSPF Â
BFD enabled	OSPF б BFD ╟

ҳ˘ ↓ Л∪ ABR ASBR OSPF ÂOSPF
a ↓ **show ip route** ˘ OSPF й OSPF
˘ a Â

Л∪Ю й **show ip ospf border-routers**

ৡ a ৶ a ৶ ˆ LSAs˜ Â

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

area-id	ˆ ৶ ˜ ʁ ʃ Â
adv-router	ˆ ৶ ˜ ʹΩ Â
link-state-id	ˆ ৶ ˜ ৸ OSPF Â
self-originate	ˆ ৶ ˜ Â
max-age	ˆ ৶ ˜ LSA
router	ˆ ৶ ˜ OSPF Â
network	ˆ ৶ ˜ OSPF Â
summary	ˆ ৶ ˜ OSPF Â
asbr-summary	ˆ ৶ ˜ ASBR Â
external	ˆ ৶ ˜ OSPF Â
nssa-external	ˆ ৶ ˜ OSPF Â
opaque-area	ˆ ৶ ˜ LSA
opaque-as	ˆ ৶ ˜ LSA
opaque-link	ˆ ৶ ˜ LSA
database-summary	ˆ ৶ ˜ OSPF LSA Â

ৡ Â

OSPF ˘ ǂ ǂ Â ৡ˘ ╠
OSPF Â

1' ЛЫЮ ѝ **show ip ospf database** ৡ '

```
Ruijie# show ip ospf database
OSPF Router with ID (1.1.1.1) (Process ID 1)
```

```
                Router Link States (Area 0.0.0.0)
                Link ID         ADV Router      Age  Seq#       CkSum  Link count
                1.1.1.1         1.1.1.1         2    0x80000011 0x6f39 2
                3.3.3.3         3.3.3.3         120  0x80000002 0x26ac 1
                Network Link States (Area 0.0.0.0)
                Link ID         ADV Router      Age  Seq#       CkSum
0marys (Area 0.0.0.0) Link192.88.88.2ADV Router.1    Age 1se0q#0x8000CkSum0x7kSum
                Lin.88.88.2ID
```

ADV Router	Â
Age	Â
Seq#	/ˇ LSA Â
Cksum	Â
Link-Count	
Route	LSA
Tag	Â

2' ЛЬЮ ѝ **show ip ospf database asbr-summar**y ʒ '

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

show ip ospf database asbr-summary ʒ Ю Â

OSPF Router with ID	ЛЬЮ б OSPF /ł
AS Summary Link States	ЛЬЮ AS Â
LS age	Â
Options	Â
LS Type	Â
Link State ID	Â
Advertising Router	Â
LS Seq Number	/ł Â
Checksum	Â
Length	ˇ Лъ ѝ Æ Â

Network Mask	Â
TOS	TOS ˘ ѵ ѝ 0Â
Metric	Â

3' ЛЬЮ ѝ **show ip ospf database external** ҳ '

```
Ruijie# show ip ospf database external
OSPF Router with ID (1.1.1.35) (Process ID 1)
AS External Link States
LS age: 752
Options: 0x2 (*|-|-|-|-|-|E|-)
LS Type: AS-external-LSA
Link State ID: 20.0.0.0 (External Network Number)
Advertising Router: 1.1.1.1
LS Seq Number: 8000000a
Checksum: 0x7627
Length: 36
Network Mask: /24
Metric Type: 2 (Larger than any link state path)
TOS: 0
Metric: 20
Forward Address: 0.0.0.0
External Route Tag: 0
```

show ip ospf database external ҳ ЮÂ

OSPF Router with ID	ЛЬЮ б OSPF Л Â Â
Type-5 AS External Link States	ЛЬЮ ѝ Â
LS age	Â
Options	Â
LS Type	Â
Link State ID	Â
Advertising Router	Â
LS Seq Number	Л Â
Checksum	Â
Length	˘ Лъ ѝ æ Â
Network Mask	Â
Metric Type	Â

TOS	TOS ˘ √ и 0Â
Metric	Â
Forward Address	˘ IP Â и 0.0.0.0Ơ Â
External Route Tag	˘ 32 ÂOSPF a ˘ è ƚ OSPF Â

4' ЛЬЮ и **show ip ospf database networ**k ʒ '

```
Ruijie# show ip ospf database network
OSPF Router with ID (1.1.1.1) (Process ID 1)
Network Link States (Area 0.0.0.0)
LS age: 572
Options: 0x2 (*|-|-|-|-|-|E|-)
LS Type: network-LSA
Link State ID: 192.88.88.27 (address of Designated Router)
Advertising Router: 1.1.1.1
LS Seq Number: 80000001
Checksum: 0x5366
Length: 32
Network Mask: /24
Attached Router: 1.1.1.1
Attached Router: 3.3.3.3
```

show ip ospf database network ʒ Ю Â

OSPF Router with ID	ЛЬЮ б OSPF Л Â
Network Link States	ЛЬЮ и Â
LS age	Â
Options	Â
LS Type	Â
Link State ID	Â
Advertising Router	Â
LS Seq Number	Л Â
Checksum	Â
Length	˘ Лъ и æ Â

Network Mask	Â
Attached Router	Э Â

5' ЛЬЮ ѝ **show ip ospf database route**r ֳ '

```
Ruijie#
```

Link connected to	˘ Л Â
(Link ID)	Â
(Link Data)	Â
Number of TOS metrics	TOS ˘ ↙ TOS0 Â
TOS 0 Metrics	TOS Â

б Л Ю и **show ip ospf database summary** ҃ '

```
Ruijie# show ip ospf database summary
OSPF Router with ID (1.1.1.1) (Process ID 1)
Summary Link States (Area 0.0.0.0)
LS age: 499
Options: 0x2 (*|-|-|-|-|-|E|-)
LS Type: summary-LSA
Link State ID: 10.0.0.0 (summary Network Number)
Advertising Router: 1.1.1.1
LS Seq Number: 80000004
Checksum: 0x330e
Length: 28
Network Mask: /24
TOS: 0  Metric: 11
```

show ip ospf database summary ҃ Ю Â

OSPF Router with ID	Л Ю б OSPF ↗ Â
Summary Net Link States	Л Ю и Â
LS age	Â
Options	Â
LS Type	Â
Link State ID	Â
Advertising Router	Â
LS Seq Number	↗ Â
Checksum	Â
Length	˘ Л и Æ Â
Network Mask	Â
TOS	TOS ˘ ↙ и 0 Â
Metric	Â

7 ЛЬЮ ̀ **show ip ospf database nssa-external** ʒ '

```
Ruijie# show ip ospf database nssa-external
OSPF Router with ID (1.1.1.1) (Process ID 1)
NSSA-external Link States (Area 0.0.0.1 [NSSA])
LS age: 1
Options: 0x0 (*|-|-|-|-|-|-|-)
LS Type: AS-NSSA-LSA
Link State ID: 20.0.0.0 (External Network Number For NSSA)
Advertising Router: 1.1.1.1
LS Seq Number: 80000001
Checksum: 0x033c
Length: 36
Network Mask: /24
Metric Type: 2 (Larger than any link state path)
TOS: 0
Metric: 20
NSSA: Forward Address: 100.0.2.1
External Route Tag: 0
```

show ip ospf database nssa-external ʒ ЮÂ

OSPF Router with ID	ЛЬЮ б OSPF Л Â
NSSA-external Link States	ЛЬЮ ̀ Â
LS age	Â
Options	Â
LS Type	Â
Link State ID	Â
Advertising Router	Â
LS Seq Number	Л Â
Checksum	Â
Length	˘ Лъ ̀ æ Â
Network Mask	Â
Metric Type	Â
TOS	TOS ˘ ↓ ̀ 0 Â
Metric	Â

NSSA:Forward Address	˘ IP Â ŭ 0.0.0.0Ø Â
External Route Tag	˘ 32 ÂOSPF a ˘ è † OSPF Â

8′ ЛЬЮ ŭ **show ip ospf database external** ʒ '

```
Ruijie# show ip ospf database external
OSPF Router with ID (1.1.1.1) (Process ID 1)
AS External Link States
LS age: 1290
Options: 0x2 (*|-|-|-|-|-|E|-)
LS Type: AS-external-LSA
Link State ID: 20.0.0.0 (External Network Number)
Advertising Router: 1.1.1.1
LS Seq Number: 8000000a
Checksum: 0x7627
Length: 36
Network Mask: /24
Metric Type: 2 (Larger than any link state path)
TOS: 0
Metric: 20
Forward Address: 0.0.0.0
External Route Tag: 0
```

show ip ospf database external ʒ ЮÂ

OSPF Router with ID	ЛЬЮ б OSPF Л Â
Type-7 AS External Link States	ЛЬЮ ŭ Â
LS age	Â
Options	Â
LS Type	Â
Link State ID	Â
Advertising Router	Â
LS Seq Number	Л Â
Checksum	Â

Length	˘ Л Ù ѝ Æ Â
Network Mask	Â
Metric Type	Â
TOS	TOS ˘ ѵ ѝ 0 Â
Metric	Â
Forward Address	˘ IP Â ѝ 0.0.0.0ˇ Â
External Route Tag	˘ 32 Â OSPF a ˘ è ƚ OSPF Â

9ˈ ЛЫЮ ѝ **show ip ospf database database-summary** ֽ '

```
Ruijie# show ip ospf database database-summary
OSPF process 1:
Router Link States      : 4
Network Link States     : 2
Summary Link States     : 4
ASBR-Summary Link States : 0
AS External Link States  : 4
NSSA-external Link States: 2
```

show ip ospf database database-summary ֽ Ю Â

OSPF Process	ЛЫЮ Л
Router Link	ѭ ˘ OSPF LSA Â
Network Link	ѭ ˘ OSPF LSA Â
Summary Link	ѭ ˘ OSPF LSA Â
ASBR-Summary Link	ѭ ˘ OSPFASBR LSA Â
AS External Link	ѭ ˘ OSPF LSA
NSSA-external Link	,OSPF NSSA LSA

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34.2.4 show ip ospf interface

б OSPF ˘ ३ **show ip ospf interface** Â

show ip ospf interface [

```
Matching network config: 192.88.88.0/24
Process ID 1, Router ID 1.1.1.1, Network Type BROADCAST, Cost: 1
Transmit Delay is 1 sec, State DR, Priority 1, BFD enabled
Designated Router (ID) 1.1.1.1, Interface Address 192.88.88.27
Backup Designated Router (ID) 3.3.3.3, Interface Address
192.88.88.72
Timer intervals configured,Hello 10,Dead 40,Wait 40,Retransmit 5
Hello due in 00:00:03
Neighbor Count is 1, Adjacent neighbor count is 1
Crypt Sequence Number is 70784
Hello received 1786 sent 1787, DD received 13 sent 8
LS-Req received 2 sent 2, LS-Upd received 29 sent 53
LS-Ack received 46 sent 23, Discarded 1
```

show ip ospf interface serial *1/0* ৡ ЮÂ

FastEthernet 0/0 State	˘ UP ˘ Down Â
Internet Address	IP Â
Area	OSPF ѡ Â
MTU	MTU
Matching network config	OSPF network area
Process ID	/ৗ
Router ID	OSPF Â
Network Type	OSPF

Neighbor count	
Adjacent neighbor count	Full
Crypt Sequence Number	md5 ⁄
Hello received send	б HELLO Â
DD received send	б DD Â
LS-Req received send	б LS Â
LS-Upd received send	б LS Â
LS-Ack received send	б LS Â
Discard	OSPF Â
BFD enabled	OSPF б BFD ╟

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34.2.5 show ip ospf neighbor

OSPF ˘ ३ **show ip ospf neighbor** Â

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

detail	ˆ ˩ ˜ Â
interface-type interface-number	ˆ ˩ ˜ Â
neighbor-id	ˆ ˩ ˜ Â

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ЛЬЮ й **show ip ospf neighbor** ʒ '

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

б BFD ˘ ж ╗ Ю ”BFD session state up”

```
Ruijie# show ip ospf neighbor
OSPF process 1, 1 Neighbors, 1 is Full:
Neighbor ID    Pri   State    Dead Time   Address    Interface
3.3.3.3  1   Full/BDR  00:00:32  192.88.88.72  FastEthernet 1/0
Ruijie# show ip ospf neighbor detail
Neighbor 3.3.3.3, interface address 192.88.88.72
In the area 0.0.0.0 via interface FastEthernet 1/0
Neighbor priority is 1, State is Full, 11 state changes
DR is 192.88.88.27, BDR is 192.88.88.72
Options is 0x52 (*|O|-|EA|-|-|E|-)
Dead timer due in 00:00:32
Neighbor is up for 05:11:27
```

```
Database Summary List 0
Link State Request List 0
Link State Retransmission List 0
Crypt Sequence Number is 0
Thread Inactivity Timer on
Thread Database Description Retransmission off
Thread Link State Request Retransmission off
Thread Link State Update Retransmission off
Thread Poll Timer on
Graceful-restart helper disabled
BFD session state up
```

show ip ospf neighbor ʅ Ю'

Neighbor ID	Â
Pri	˝l ˆ DR ˜
State	
Dead Time	Dead
Address	
Interface	
interface address	
In the area	˝ ɯ
via interface	Â
Neighbor priority	OSPF ˝l Â
State	OSPF ÂFULL ' DR й ' BDR й ' DROTHER a DR/BDR Â DR BDR Â
State changes times	ʌ
Dead Time	'
DR	DR (Hello DR)
BDR	BDR (Hello BDR)
Options	Hello E ˘ 0 ɯ й STUB' ˘ ɯ a STUB ɯ Â

Dead timer802 152.7 10.02 0 07<0759118D>6<584.97 0.772 Td[<468F1219432F8F21804475f0 Tc

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

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34.2.6 show ip ospf route

OSPF Â

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

process-id	OSPF ᴎˇ OSPF
count	OSPF

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ৡ OSPF ˘ count OSPF Â

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

show ip ospf route ৡ ЮЎ

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	३ ४ NSSA ABR Э ˘ з ४ Â

ЛЬЮ й **show ip ospf summary-address**

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˘ ˬ ʒ ˘ Л Ь Â **show ip ospf neighbor** ʒ a Â

ЛЬЮ й **show ip ospf virtual-links** ʒ '

```
Ruijie# show ip ospf virtual-links
Virtual Link VLINK0 to router 1.1.1.1 is up
Transit area 0.0.0.1 via interface FastEthernet 0/1
Local address 10.0.0.37/32
Remote address 10.0.0.27/32
Transmit Delay is 1 sec, State Point-To-Point,
Timer intervals configured,Hello 10,Dead 40,Wait 40,Retransmit 5
Hello due in 00:00:05
Adjacency state Full
```

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Virtual Link VLINK0 to router	Л Ь
Virtual Link state	.
Transit area	ш Â
via interface	Â
Local address	
Remote Address	
Transmit Delay	Â
State	
Time intervals configured	Hellŏ Deaď Waiť Retransmit
Adjacency State	Â FULL й Â

ď [redacted]

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35.1

35.1.1 distribute-list in

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

no distribute-list

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

access-list	
prefix-list	

-	-

35.1.2 distribute-list out

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

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

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

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ˆ ˘ è a ⁸ Â
OSPF ⁸ ˘ a ˘ ɜ ˩ OSPF
Â

ЛЬЮ ˘ 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-router)# exit
Ruijie(config)# access-list 10 permit 192.168.12.0 0.0.0.255
```

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access-list	Ⱨ
prefix-list	Ⱨ
redistribute	ˆ

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35.1.3 ip community-list

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ip community-list {{**standard** | **expanded**} *community-list-name* | *community-list-number* } {**permit** | **deny**} [*community-number..*]

no ip community-list {{**standard** | **expanded**} *community-list-name* | *community-list-number*}

standard	
expanded	

community-list-name	ɹ ɹ a 80
community-list-number	ʃ ' ʃ ѝ 1-99 ' ʃ ѝ 100-199
permit	
deny	
community-number	Â ѝ AA:NN(ʃ' 2)˘ ˘ 0-4294967295˘ ЛЬЮ Ня ' internet˘ Internet ˘ Â local-as˘ a AS ˘ ˘ a è Â no-advertise˘ a BGP peers Â no-export˘ a EBGP peers Â ' 1..255 Â ' 32 Â

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ҙ Ня BGP Â

```
Ruijie(config)# ip community-list standard test deny 100:20 200:20
Ruijie(config)# ip community-list standard test2 permit internet
```

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match community	ҵ
set comm-list delete	BGP
show ip community-list	
show ip bgp community-list	ҵ BGP

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35.1.4 ip default-network

˘ ʒ **ip default-network** Â ʒ no ʌ Л∪ Â

ip default-network *network*

no ip default-network *network*

network	ʌ Â

ѝ 0.0.0.0/0 Â

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ѝ ˘ **default-network** ЛЮ ˚ ' a ˘ ʌ Â Л∪"*" ʌ ˘ Ą Â connected Ю ˘ Â

1' ЛЮ ˘ 192.168.100.0 ѝ ˘ ˘ Л∪ ╠ Â

```
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 ѝ ˘ ʌ 200.200.200.0 ˘ ѝ Â

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

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35.1.5 ip prefix-list

ᒣ ˘ **ip prefix-list** ϡ Â ϡ **no** Â

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

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

prefix-lis-name	ɻ
seq-number	Л∪ Л Â è 1 2147483647 Â ϡ Л˘ ѝ ɬ Л Â Л 5˜ Л Л Л 5
deny	ϩ
permit	ϩ
ip-prefix	Л∪ Â ɻ Л∪ IP Â ÿ 0 32
minimum-prefix-length	ˆ ɻ ˜ ( ) ' ge ϡ
maximum-prefix-length	ˆ ɻ ˜ ( ) ' **le** ϡ

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ϡ Â

ip prefix-list ϡ IP Â permit deny ᾱ ϩ Ю ɻ ╟ Â

Ⱶ ϩ ϩ Âge le Ⱶ ϩ ˘ ip-prefix ᒣ ϩ Â ϡ ge le ˘ ip-prefix ϩ Â

ge˘ ˥ minimum-prefix-length 32 Â le˘ ˥ ip-prefix maximum-prefix- length Â γ ˘ ˥ ÿ minimum-prefix-length maximum-prefix- length Â ˘ ip-prefix à minimum-prefix-length maximum-prefix-length ' ip-prefix < minimum-prefix-length < maximum-prefix-length <= 32 Â

ЛЬЮ й ˆ ˘ OSPF ˆ RIP ˆ IP ˘ IP ЊЖ(ˬ IP 201.1.1.0/24 ˆ)˘ Ю '

```
Ruijie# configure terminal
Ruijie(config)# ip prefix-list pre1 permit 201.1.1.0/24
Ruijie(config)# router ospf
Ruijie(config-router)# distribute-list prefix pre1 out rip
Ruijie(config-router)# end
```

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ЛЬЮ й IP ╗ **Deny routes from Net-A'**

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

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35.1.7 ip prefix-list sequence-number

й ╗ ˘ **ip prefix-list description** ϡ Â ϡ **no** ϻ ╗ Â

ip prefix-list sequence-number

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ЛЬЮ й ╗ '

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

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35.1.8 ip route

˘ ʒ ip route Â ʒ no Â

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

vrf_name	VRF ɻ
network	
net-mask	
ip-address	Ю
Interface	ˆ ɻ ˜ Ю
distance	ˆ ɻ ˜
permanent	ˆ ɻ ˜
number	ˆ ɻ ˜
disable/enable	ˆ ɻ ˜

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˘ ɻ ╠ a ˘ Â ɻ
Л ˘ ˘ ѝ ╠ Â OSPF
ѝ 110˝ ɻ Л ѝ 125˘ OSPF ˘
ɻ Л˽ Э Â
ɻ Л vrf˝ ╗ vrf Â
ѝ 1˘ ɻ Л **show ip route weight** ʒ
Â weight WCMP ╗ ˘ ɻ ˘
˽ ˘ weight ˽
˘ ˽ Â WCMP ⁸ ѝ 32˘
a ɻ˘ Л è WCMP ⁸ б /ſ ’
⁸ ˘ ⁸ a Â
⁸ ˘ a Â

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Л∪ ˘ Ю ѝ ˆ ip route 0.0.0.0 0.0.0.0 Fastethernet 0/0˜ Â ˘ Fastethernet 0/0 ˘ ў ARP ˘ ´ CPU Â Л∪ a Л∪ Â

Л∪Ю ˘ ╗ 172.16.100.0/24 ˘ Ю ѝ 192.168.12.1˜ ѝ 115 Â

```
ip route 172.16.100.0 255.255.255.0 192.168.12.1 115
```

˘ ˘ ┘ ÿ è Â ˘ ÂЛ∪Ю ˘ 172.16.100.0/24 ┘ ÿ fastethernet 0/0 Â

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

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show ip route	IP Â

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35.1.9 ip routing

RGOS ˚ IP ╗ ˘ Ю ʒ Â ʒ no ┘ Л∪ IP ╗ Â

ip routing

no ip routing

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IP Â

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┘ ѝ ˘ ┘ ѝ VOIP ˘ ┘ Л∪ a RGOS ˚ IP

Â ЛЮ RGOS IP Â

ЛЮ RGOS IP Â

```
Ruijie(config)# no ip routing
```

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35.1.10 ip static route-limit

Э ϡ **ip static route-limit** Â ϡ no ЛЮ Â

ip static route-limit *number*

no ip static route-limit

number	Э 1-10000

й 1024 Â

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Э й 8 **ip static route-limit** Э Л Ю a Э Â **show running-config** ЛЮ Э Â

ЛЮ Э й 900 Л Â

```
Ruijie(config)# ip static route-limit 900
Ruijie(config)# no ip static route-limit
```

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35.1.11 match as-path

ʃ AS_PATH ˘ ʒ **match as-path** Â
ʒ **no** Â

match as-path *as-path-acl-list-num as-path-acl-list-num…..*

no match as-path *as-path-acl-list-num……*

as-path-acl-list-num	ʃ Â ʃ 1…500

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ʒ Â

match as-path ʒ ʃ ˩ ʃ ʃ Â
˘ ˩ ʃ ʃ 1 **match** ʒ 1 **set** ʒ Â
match ʒ˘ ¬ ' **set** ʒ˘ a Â

```
Ruijie(config)# route-map ROUTEMAP2IBGP
Ruijie(config-route-map)# match as-path 20 30
```

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

ʃ

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35.1.12 match community

† COMMUNITY ˘ ϡ **match community** Â ϡ **no** Â

match community{*community-list-number* | *community-list-name*}[**exact-match**] [{*community-list-number* | *community-list-name*}[**exact-match**] …]

no match community { *community-list-number* | *community-list-name* } [**exact-match**] [{ *community-list-number* | *community-list-name*} [**exact-match**] …]

community-list-number	Ѝ ' Ѝ ѝ 1-99 ' Ѝ ѝ 100-199
communitys-list-name	ѕ ѕ a 80
exact-match	ϧ

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match community ϡ ѕ ϟЛ Ѝ ѕ ˘ ч a 6Â

exact-match ˘ a ϧ Â

˘ ϟЛ 1 **match** ϡ 1 **set** ϡ Â

match ϡ˘ ϧ ' **set** ϡ˘ a Â

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

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ϡ	
ip community-list	

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

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35.1.13 match interface

match interface *interface-type interface-number* [*…interface-type interface-number*]

no match interface *interface-type interface-number* [*…interface-type interface-number*]

interface-type	
interface-number	

match interface OSPF RIP

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ˇ ɛ̀ ˇ ɺ ʅ a ɺ Â ɺ ᛘ
Эˇ a ɺ ˇ ɛ̀ ʅ ≠ a ɺ Â
ЉЮ ˇ OSPF ᛘ RIP ˇ ɺ ᛘ Ю й 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
```

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match ip address	˥
match ip next-hop	˥ Ю
match ip route-source	˥
match metric	˥
match route-type	˥
match tag	˥
set metric	ᛘ
set metric-type	ᛘ
set tag	ᛘ

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35.1.14 match ip address

ᛘ ˇ ʅ **match ip address** Â ʅ **no** Â

match ip address {*access-list-number* [*access-list-number...*

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

access-list-number	Л Л ' 1-99ˇ 1300-1999 Л ' 100-199ˇ 2000-2699
access-list-name	ɻ
prefix-list *prefix-list-name*	٦ ɻ

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match ip address ʒ Л ɻЛ Л ɻ Â
ɻЛ ÿ ǂ Л ╖ Â ɻЛ OSPF
ǂ Л RIP ˘ ≠ ɻЛ RIP ǂ Л
OSPF Â ǂ ɻЛ IP Â
ǂ ˘ ^ route maps˜ ˘ ч
ǂ ˅ ⁸ Â
˘ ɻЛ 1 **match** ʒ 1 **set** ʒ Â
match ʒ˘ ٦ ' **set** ʒ˘ a Â

ǂ ˘ ɻЛ ǂ Э Â a
˘ ὲ ˘ ɻ ʒ a ɻ Â ɻ ǂ
Э˘ a ɻ ˘ ὲ ʒ ≠ a ɻ Â
ЛЬЮ ˘ OSPF ǂ RIP ˘ ɻ ǂ 10
RIP ˘ OSPF ˘ й type-1˜ й 40 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)# access-list 10 permit 200.168.23.0 0.0.0.255
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match ip address 10
Ruijie(config-route-map)# set metric 40
Ruijie(config-route-map)# set metric-type type-1
```

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match ip next-hop ʒ ʌ ʅ Л Ʊ Ʌ ʅ Â

ʅ Л Ʊ ÿ ʈ ʌ ╖ Â ʅ Л Ʊ OSPF

ʈ ʌ ╖ Â ʅ Л Ʊ OSPF ʈ

ʌ RIP ˘ ≠ ʅ Л Ʊ RIP ʈ ʌ OSPF Â

ʈ ʅ Л Ʊ IP Â

ʈ ˘ ^ route maps˜ ˘ ч

ʈ ˚ ⁸ Â

˘ ʅ Л Ʊ 1 **match** ʒ 1 **set** ʒ Â

match ʒ˘ ¬ ' **set** ʒ˘ a Â

ЛЬЮ ˘ OSPF ʈ RIP Â ʅ RIP Ю

10 20ʺ OSPF ѐ ʈ 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)# access-list 10 permit host 192.168.10.1
Ruijie(config)# access-list 20 permit host 172.16.20.1
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match ip next-hop 10 20
```

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access-list	Ьѫ
match ip address	¬
match interface	¬ Ю
match ip route-source	¬
match metric	¬
match route-type	¬
match tag	¬
set metric	ʈ
set metric-type	ʈ
set tag	ʈ

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

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

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35.1.17 match length

IP **match length** **no**

match length *min-length max-length*

no match length *min-length max-length*

min-length	IP
max-length	IP

Â

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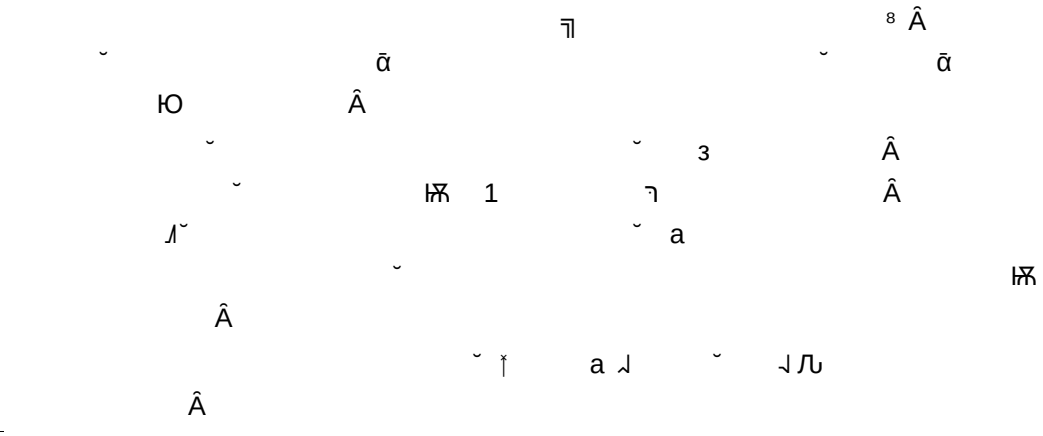

ЛЬЮ ˘ serial 1/0 ˘ 500 ˘ ÿ fastethernet 1/0 Â

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

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

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35.1.18 match metric

match metric Â **no** Â

match metric *metric*

no match metric

metric	0-4294967295

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OSPF RIP RIP OSPF IP route maps 1 **match** 1 **set** Â **match** **set** a Â

OSPF RIP Â 10 RIP OSPF Â

```
Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets route-map redist-rip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redist-rip permit 10
Ruijie(config-route-map)# match metric 10
```

access-list	
match ip address	

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

-	-

35.1.19 match origin

׳ ˘ ׳ **match origin** Â ׳

no Â

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

no match origin {**egp** | **igp** | **incomplete|**}

egp	EGP
igp	IGP
Incomplete	a

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

ϡ

ϡ	
match as-path	ϩ AS_PATH
match metric	ϩ
match origin	ϩ
set as-path prepend	ϯ AS_PATH
set metric	ϯ
set origin	ϯ

ϡ

ϡ	
-	-

35.1.20 match route-type

ϩ ˘ ϡ **match route-type** Â ϡ **no** Â

match route-type {**local | internal | external** [**type-1 | type-2**] **| level-1 | level-2**}

no match route-type {**local | internal | external** [**type-1 | type-2**] **| level-1 | level-2**}

local	
Internal	OSPF
external	(BGP OSPF)
type-1	**type-2**	OSPF 1 2
level-1	**level-2**	ISIS 1 2

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˧ʃ ÿ ᛘ ʃ ╥ Â ˧ʃ OSPF ᛘ ʎ RIP ˘ ≠ ˧ʃ RIP ᛘ ʎ OSPF Â ᛘ ˧ʃ IP Â ᛘ ˘ ˆ route maps˜ ˘ ч ᛘ ¨ ⁸ Â

˘ ˧ʃ 1 **match** ʅ 1 **set** ʅ Â **match** ʅ˘ ˥ ' **set** ʅ˘ a Â

ʃЮ ˘ RIP ᛘ OSPF Â RIP ˧ ᛘ OSPF Â

```
Ruijie(config)# router rip
Ruijie(config-router)# redistribute ospf route-map redrip
Ruijie(config-router)# network 192.168.12.0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match route-type internal
```

ʅ

ʅ	
access-list	⊮
match ip address	˥
match interface	˥ Ю
match ip next-hop	˥ Ю
match ip route-source	˥
match metric	˥
match tag	˥
set metric	ᛘ
set metric-type	ᛘ
set tag	ᛘ

ʎ

ʅ

ʎ	
-	-

35.1.21 match tag

˥ ˘ ʅ **match tag** Â ʅ **no** Â

match tag *tag* [*…tag*]

no match tag *tag* [*…tag*]

set metric-type	
set tag	

-	-

35.1.22 route-map

route-map *route-map-name* [**permit** | **deny**] [*sequence-number*]

no route-map *route-map-name* [**permit** | **deny**] [*sequence-number*]

route-map-name	
permit	permit match set
deny	deny match a
sequence-number	

35.1.23 set aggregator as

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

set aggregator as *as-num ip_addr*

no set aggregator as [*as-num ip_addr*]

as-number	AS
ip_addr	

BGP

as,ip-addr a

```
Ruijie(config)# route-map set-as-path
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set aggregator as 3 2.2.2.2
```

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

-	-

35.1.24 set as-path prepend

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

set as-path prepend *as-number*

no set as-path prepend [*as-number*]

as-number	AS_PATH AS

Ruijie(config)# route-map set-as-path 0/3 1 15.543 (Ruijie63 0847/0 1 I4

AS_PATH as-path 15 as

```
Ruijie(config)# route-map set-as-path
Ruijie(config-route-map)#
```

35.1.25 set comm-list delete

match COMMUNITY_LIST community **set comm-list delete** **no**

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

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

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

```
Ruijie(config)# router bgp 100
Ruijie(config-router)# neighbor 172.16.233.33 remote-as 120
Ruijie(config-router)# neighbor 172.16.233.33 route-map ROUTEMAPIN
in
Ruijie(config-router)# neighbor 172.16.233.33 route-map
ROUTEMAPOUT out
Ruijie(config-router)# exit
Ruijie(config)# ip community-list 500 permit 100:10
Ruijie(config)# ip community-list 500 permit 100:20
Ruijie(config)# ip community-list 120 deny 100:50
Ruijie(config)# ip community-list 120 permit 100:.*
Ruijie(config)# route-map ROUTEMAPIN permit 10
Ruijie(config-route-map)# set comm-list 500 delete
Ruijie(config-route-map)# exit
Ruijie(config)# route-map ROUTEMAPOUT permit 10
Ruijie(config-route-map)# set comm-list 120 delete
```

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

Â

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

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

-	-

35.1.27 set dampening

match **set dampening** Â

no Â

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

no set dampening

half-life	˩ a ˩ Â 1..45(ʃ)˘ ѝ 15ʃ
reuse	æ ˘ ⁸ Â 1..20000ʊ ѝ 750 Â
suppress	˘ ⁸ Â 1..20000ʊ 2000 Â
max-suppress-time	⁸ Â 1..255(ʃ)˘ ѝ 4* half-life

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ˀ Â

```
Ruijie(config)# route-map tag
Ruijie(config-route-map)# match as path 10
Ruijie(config-route-map)# set dampening 30 1500 10000 120
Ruijie(config-route-map)# exit
Ruijie(config)# router bgp 100
Ruijie(config-router)# neighbor 172.16.233.52 route-map tag in
```

ʒ	

35.1.28 set default interface

match

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

-	-

35.1.29 set extcommunity

match **set extcommunity** **no**

set extcommunity {**rt** *extend-community-value* | **soo** *extend-community-value*}

no set extcommunity {**rt** | **soo**}

rt	RT
soo	SOO
extend-community-value	

```
Ruijie(config)# access-list 2 permit 192.168.78.0 255.255.255.0
Ruijie(config)# route-map MAP_NAME permit 10
Ruijie(config-route-map)# match ip-address 2
Ruijie(config-route-map)# set extcommunity rt 100:2
```

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

-	-

35.1.30 set ip default next-hop

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

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

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

ip-address	IP
weight	

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

		next-hop ʎ	weight	˘	set	ϗ
~	╟Ґ	ѝ WCMP		Â	WCMP	
	Ю˘		weight	nexthop	˘	ѐ weight
	ѝ 1 Â					

set ip next-hop	**set ip default next-hop**	ϗ	Ш	'	**set ip next-hop**
s e	ʔ سخي h	#	l	سخي	lJ

set default interface	˘
set interface	
set ip next-hop	ЮO IP ˘
set ip precedence	IP ˝I

-

/I	
-	-

35.1.31 set ip dscp

¬ match DSCP ˘ ¦ **set ip dscp** Â ¦

no Â

set ip dscp *dscp_value*

no set ip dscp

dscp_value	IP IP DSCP

Â

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¦	
route-map	Ы
match ip address	¬
set default interface	˘
set default interface	˘

set interface	
set ip default next-hop	Ю IP ˘
set ip precedence	IP ˝I

Л	
-	-

35.1.32 set vrf

й ┐ match IP VRF ˘
ⅎ **set vrf** Â ⅎ **no** Â ⅎ Â

set vrf *name*

no set vrf *name*

name	VRF ⅃ Â

Â

ⅎ Â

ⅎ ⅃Л┘ ┐ a ⅃ match IP a ⅃ VRF Л Â

1 à **set vrf** ¾ ˘ VRF Â set VRF
a ˘ Â

~

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

RGOS 10.4	RGOS 10.4

35.1.33 set ip next-hop

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

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

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

ip-address	IP
weight	

set WCMP WCMP weight WCMP

set ip next-hop IP a 32

ip address weight a 4 nexthop

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ˇ Ня 1 ┐ Â

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ˇ Ня

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┘Л∪ set Â

ЛuЮ ˇ serial 1/0 Э Â 10.0.0.0/8

ˇ 192.168.100.1' й 172.16.0.0/16

ˇ 172.16.100.1' è Â

```
Ruijie(config)#interface serial 1/0
Ruijie(config-if)#ip policy route-map load-balance
Ruijie(config)#access-list 10 permit 10.0.0.0 0.255.255.255
Ruijie(config)#access-list 20 permit 172.16.0.0 0.0.255.255
Ruijie(config)#route-map load-balance permit 10
Ruijie(config-route-map)#match ip address 10
Ruijie(config-route-map)#set ip next-hop 192.168.100.1
Ruijie(config)#route-map load-balance permit 20
Ruijie(config-route-map)#match ip address 20
Ruijie(config-route-map)#set ip next-hop 172.16.100.1
Ruijie(config)#route-map load-balance permit 30
Ruijie(config-route-map)#set interface Null 0
```

route-map	Ня
match ip address	┐
set default interface	ˇ
set default interface	ˇ
set interface	
set ip default next-hop	Ю IP ˇ
set ip precedence	IP ″I

route-map	Ⱨ
match ip address	ϩ
set default interface	˘
set default interface	˘
set interface	
set ip default next-hop	Ю IP ˘
set ip precedence	IP ″I

ϡ

ϡ	
-	-

35.1.35 set ip precedence

ϩ match IP ″I , ϡ **set ip precedence** Â ϡ **no** ˘ ″I Â

set ip precedence {*<0-7>* | *critical* | *flash* | *flash-override* | *immediate* | *internet* | *network* | *priority* | *routine* }

no set ip preceden ce {*<0-7>* | *critical* | *flash* | *flash-override* | *immediate* | *internet* | *network* | *priority* | *routine* }

-	-

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IP ″I IP a ϡ ″I Â
˘ ϡ Л **set ip precedence** ϡ˘ ϡ ϡ
˘ ϡ ϡ ϩ IP ″I Â

ЛЮ ˘ ÿ FastEthernet 0/0 ѝ 192.168.217.68

precedence й 4Â

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

match interface	ר Ю
match ip address	ר
match ip next-hop	ר Ю
match ip route-source	ר
match metric	ר
match route-type	ר
match tag	ר
set metric-type	׀
set tag	׀
set ip tos	IP tos

-	-

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IP TOS IP a ⊿ ⊾
Â
⊿ ⌐ IP Э TOS Â

ЛЬЮ ˘ ÿ fastEthernet 0/0 ѝ 192.168.217.68
tos ѝ 4 Â

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

match interface	⌐ 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	⍑
set ip precedence	IP ˝I

⊿

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35.1.37 set level

ন match ש ˘ ৡ **set level** Â
ৡ
ৡ

-	-

35.1.38 set local-preference

match ð #g|"Ÿ! 3 ŒH›ãm ï4 ²cT =B`?â ðÀÉ ñY‰€uÊïå.\à Ä†H È âcm ï4 »T&Žî& þ ‘ V3˜˜

-	-

35.1.39 set metric

match **set metric** **no**

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

no set metric

+	metric
-	metric
metric-value	

set metric + - metric RIP metric 1-16 OSPF OSPF IP route maps

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

match **set**

OSPF RIP 40

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

```
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)#
```

ʃ ˘ ˆ route maps˜ ˘ ч
ʃ ˚ ⁸ Â
˘ ↓ЛU 1 **match** ʒ 1 **set** ʒ Â
match ʒ˘ ¬ ' **set** ʒ˘ a Â

ЛUЮ ˘ OSPF ʃ RIP ˘ ʃ й type-1 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 metric-type type-1
```

ʒ	
match interface	¬ Ю
match ip address	¬
match ip next-hop	¬ Ю

ip-address	Ю IP

Â

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ЛЪ ÿ ǂ Л ╖ Â ЛЪ OSPF
ǂ Л RIP ˘ ≠ ЛЪ RIP ǂ Л
OSPF Â ǂ ЛЪ IP Â
ǂ ˘ ^ route maps˜ ˘ ч
ǂ ˚ ⁸ Â
˘ ЛЪ 1 **match** ʒ 1 **set** ʒ Â
match ʒ˘ ┐ ’ **set** ʒ˘ a Â

ЛЪЮ ˘ ┐ ⁸ ˝ Ю ѝ 192.168.1.2 Â

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

ʒ	
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	ǂ
set tag	ǂ

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35.1.42 set origin

ৡ

ৗ match ˘ ৡ **set origin** Â

ৡ **no** Â

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

no set origin

-	-

35.1.43 set originator-id

match set originator-id

no

set originator-id *ip-addr*

no originator-id [*ip-addr*]

ip-addr	

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

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

ʒ	Л	
	-	-

35.1.44 set tag

¬ match ˘ ʒ **set tag** Â ʒ **no** Â

set tag *tag*

no set tag

tag	ϯ

a ˩ Â

ʒ Â

ʒ ˩ ϯ Â ʒ˘ Â

ЛЬЮ ˘ OSPF ϯ RIP ˘ ϯ й 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
```

ʒ	

set metric-type	

-	-

35.1.45 set weight

match BGP **set weight** **no**

set weight *number*

no set weight

number	0-65535

BGP

BGP

neighbor weight

32768

BGP

BGP in 1.1.1.1 100

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


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

-	-

35.2

35.2.1 show ip community-list

permit 0:10
deny 0:20

ʒ	
match community	ʒ
set comm-list delete	BGP

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35.2.2 show ip prefix-list

˘ **show ip prefix-list** ʒ Â

show ip prefix-list [*prefix-name*]

prefix-name	ɻ

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ɻ ˘ ˘ ʃ
Â

```
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
```

ʒ	
-	-

```
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

Routing Descriptor Blocks	Ю IP à à à à à àBGP

3' ЛЬЮ ѝ **show ip route count** ҄ '

```
Match clauses:
ip address 2
Set clauses:
metric 10
```

route-map	ɻ
Permit	permit
sequence 10	ʃ
Match clauses	Hʭ ך Â permit deny ᾱ set
Set clauses	Hʭ match ך ɻ

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-	-

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-	-

36

36.1

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36.1.1 protected-ports route-deny

Ю Ÿ ى

[illegible] **no** [illegible]

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

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

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

[illegible]

[illegible]

[illegible]

[illegible]

show storm-cont [illegible] **"** **-**

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	-	-

36.1.3 switchport protected

ʒ й Â ʒ **no** Â

switchport protected

no switchport protected

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ℸ ˘ Â ३ no ˘
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Static	╟ ˜ ˇ ˥ ╟ ˜ Â

time time

Ю ˇ ⅃ Л∪ IP+ MAC IP ˇ

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	-	-

36.1.7 switchport port-security binding interface

ȸO ˘ ȷȷȕ IP+ MAC IP ˘
ȉ˘ ȷȷȕ ˘ a
Â no ȷ '

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

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

i*nterface-id*	ID
mac-address	MAC
Vlan_id	MAC VID
Ipv4-address	Ipv4 Ip

ȝ

1' 192.168.1.100 10'

```
Ruijie(config)# switchport port-security binding interface g0/10
192.168.1.100
```

2' 192.168.1.100 MAC 00d0.f800.5555, VID= 1 10'

Ruijie(config)# **switchport port-security binding interface** *g0/10 00d0.f800.5555* **vlan** *1 192.168.1.100*

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

switchport port-security aging	
show port-security	

-	-

36.1.8 switchport port-security maximum

no

switchport port-security maximum *value*

[**no**] **switchport port-security maximum** **maxim3**

show port-security	

show port-security	

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/I	
-	-

36.1.10 switchport port-security mac-address interface

IO ˘ no '

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

i*nterface-id*	ID
mac-address	
vlan-id	MAC VID ' TRUNK IO vlan-id

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

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

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

३	

¶	
storm-control	8 Â

¶

¶	
-	-

36.2.2 show port-security

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

address	Â
interface *interface-id*	Â
all	Â

¶

¶ a ¶ ˘ à ˘ ¶
Â

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

¶

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switchport port-security	Ⅱ ˘ Â
switchport port-security aging	ѝ Э Â
switchport port-security mac-address	Â

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37 802.1X

37.1 dot1x

37.1.1 dot1x auto-req

802.1X

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37.1.2 dot1x auto-req packet-num

ў ╟ ˘ no ѝ Â

dot1x auto-req packet-num *num*

no dot1x auto-req packet-num

num	ў ╟ Â

num = 0; Â

٣ Â

ў ╟ ˘ ٦Л **show dot1x auto-req** ٣ ╖ Â

Ю ў ╟ 802.1x '

```
Ruijie# configure terminal
Ruijie(config)# dot1x auto-req packet-num 0
Ruijie(config)# end
Ruijie# show dot1x auto-req
Auto-Req: Enabled
User-Detect : Enabled
Packet-Num  : 0
Req-Interval: 30 Second
```

٣	
show dot1x auto-req	ў ╟

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37.1.3 dot1x auto-req req-interval

ў ╟ ˘ **no** и

dot1x auto-req req-interval *interval*

no dot1x auto-req req-interval

interval	ў ╟ ˘ Æ s

30

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ў ╟ ˘ ┘Л **show dot1x auto-req** ٪ ╖ Â

Ю 802.1x и 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
```

٪	
show dot1x auto-req	ў ╟ Â

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37.1.4 dot1x auto-req user-detect

ў ╟ ˘ no й Â

dot1x auto-req user-detect

no dot1x auto-req user-detect

-	-

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ў ╟ ˘ ┘Л **show dot1x auto-req** ʒ ╖ Â

Ю ў Э Л '

```
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
```

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show dot1x auto-req	ў ╟ Â

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37.2 dot1x

37.2.1 dot1x timeout quiet-period

ৡ ˆ ৡ ˜ ʃ ˆ
˜ Â ৡ **no** й Â

dot1x timeout quiet-period *seconds*

no dot1x timeout quiet-period

seconds	ʃ Â 0 65535 Â æ s

10 Â

ৡ Â

ʃ˘ a ˘ Â┘Л **show dot1x**
ৡ Â

Ю й 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
```

show dot1x	802.1x Â

-	-

37.2.2 dot1x timeout re-authperiod

Â **no** Â

dot1x timeout re-authperiod *seconds*

no dot1x timeout re-authperiod

seconds	Â 0 65535 Â Æ s Â

3600

Â

show dot1x 802.1x Â

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

802.1X ३

3 Â

¯ç Â

ÉÏÎñ **show dot1x** ¯ç 802.1x Â

Ю й 10s'

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

37.2.5 dot1x timeout tx-period

Л˘ ٣ ˘ Â
٣ no й Â

dot1x timeout tx-period *seconds*

no dot1x timeout tx-period

ৡ	
show dot1x	802.1x Â

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37.3 dot1x

37.3.1 dot1x re-authentication

ৡ Â ৡ no
Â

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

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ৡˇ ৶ˇ ৶ Â ৸Ճ
show dot1x ৡ 802.1x Â

Ю ℸ '

```
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
```

¾

¾	
show dot1x	802.1x Â

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37.3.2 dot1x reauth-max

¾ Â ¾ **no** Â

dot1x reauth-max *count*

no dot1x reauth-max

count	Â

й 3

¾ Â

¾˘ ┘Л Â┘Л **show dot1x** ¾ 802.1x Â

Ю ╖ '

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

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

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interval	hello
alive	
interval	

Â

Â

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

show dot1x	

802.1X ३

¾ 802.1X Â ¾ **no** ¬ Â

dot1x auth-address-table address *mac-addr* **interface** *interface*

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

mac-addr	¬ Â
Interface	/I Â

¬ Â

¾ Â

¬ 802.1X Â **show dot1x auth-address table** ¾ Â

Ю Э ╗ Â

```
Ruijie# configure terminal
Ruijie(config)# dot1x auth-address-table address
00d0f8000000 interface ehternet 1/1
Ruijie(config)# end
Ruijie#
```

¾	
show dot1x auth-address-table	802.1X Â

¬

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-	-

37.5.3 dot1x auth-fail max-attempt

VLAN Â

dot1x auth-fail max-attempt *num*

no dot1x auth-fail max-attempt

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

¾	
show dot1x	802.1x Â

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37.5.6 dot1x default

802.1x ¦ Â

dot1x default

-	-

Â

ЛЈ **show dot1x** ¾ 802.1x Â

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

¾	
show dot1x	802.1x Â

-	-

37.5.7 dot1x eapol-tag

EAPOL TAG Â

dot1x eapol-tag

no dot1x eapol-tag

-	-

й

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show dot1x 802.1x Â

Ю 802.1X tag

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

show dot1x	802.1x Â

dot1x mac-auth-bypass

no dot1x mac-auth-bypass

IO 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
```

¾	
show dot1x	802.1x Â

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37.5.12 dot1x private-supplicant-only

˘ ¬ ˘ **no** Â

dot1x private-supplicant-only

no dot1x private-supplicant-only

-	-

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¬ Л **show dot1x private-supplicant-only** ¾ 802.1x Â

Ю ¬ '

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

¾	
show dot1x private-supplicant-only	Â

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37.5.13 dot1x port-control auto

˘ ¦¦ Â ¦ **no**

Â

dot1x port-control auto

no dot1x port-control

	-	-

a ¦¦ 802.1x Â

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ˌ/Ъ **show dot1x** ¦ 802.1x Â

Ю 802.1x б '

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

¦	¦	
	show dot1x	802.1x Â

ˌ/

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	-	-

37.5.14 dot1x port-control-mode

802.1x ⁸ Ю MAC ⁸ ˘ ˩
˘ è ˩ ˘ ⁸
˘ ˩ ˘ Ю
Â ⁸ ˘ Ю ˩ ˘
˩ ˘ Â ⁸ Ю˘ ˩ ѝ
˘ è ˘ Ю ˘ Â
ʒ Ю'

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

no dot1x port-control-mode

mac-based	mac 802.1X ⁸
port-based	802.1X ⁸
single-host	802.1x ⁸

ѝ mac-based ⁸

ʒ Â

˩Л↻ **show dot1x port-control** ʒ 802.1x Â
s26 Э˘ 802.1X a ˩ ˘
Ю˘ 802.1X Э ѝ Â
single-host 802.1x ⁸˘ **show dot1x port-control** Э
ѝ port-based˘ **show running-config** ѝ **dot1x port-control-mode port-based single-host** Â
single-host ˩ ˘ ╟ default-user-limit˘ single-host Â single-host ˥˘ Ю default-user-limit˘ single-host ˘ ˩ Э Â

1' Ю 802.1x б '

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

2' Ю 802.1x '

```
Ruijie(config)# interface g 0/1
Ruijie(config-if)# dot1x port-control auto
Ruijie(config-if)# dot1x port-control-mode port-based single-host
```

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

ʒ		
ʒ	**show dot1x port-control**	802.1x Â
	Show running-config	Â

ʃ

ʃ		
ʒ	**-**	-

37.5.15 dot1x stationarity enable

802.1x ⁸ Ю˘ Ю˘ ╟ ┘Л Ъ ˘ Ю˘ й а ÿ 802.1X è ˘ ┘Л Ъ ЛЪЮ ʒ Â

dot1x stationarity enable

no dot1x stationarity enable

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Ю 802.1x б '

```
Ruijie# configure terminal
Ruijie(config)# dot1x stationarity enable
Ruijie(config)# end
Ruijie#
```

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	-	-

37.5.16 dot1x redirect url

˘ 802.1x ℸ ˆ ~ ˘
˘ URL URL˘ ᑌ http:// ˘ '
http://ruijie.net/web˘ ˘ ৸ http:// ˘ a https:// Â ৸
˘ ˘ ৶ url url Â no ৸ ᑌ ৡ
url

ل

٪	ل
-	-

37.5.17 dot1x redirect for special tcp-destination port

ى ˘ ip ى ip web ˘ 80 à 8080
˘ Ѧ 16 TCP ل˘ no dot1x redirect for special tcp-destination
port ل˘ ل ╗ port_mum ل'

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

port num	TCP ل

tcp ى 80 8080ѓ з a ل no

٪

TCP ى 1-65535

1' TCP ى 8443ѓ

```
Ruijie(config)#dot1x redirect for special tcp-destination port
8443
```

٪	
d> ¤1 ‘ Q Г « ˜ Ь	

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37.5.18 dot1x redirect time-out

(Æ'), ѝ 3 ' ↓ ѝ 1-10 Â no ↓ Л∪ ҄ '

dot1x redirect time-out port *time-out-interval*

ل ˘ 1 ˘ ل ى 1-10 Â no ل Л ٦ '

dot1x redirect num for special source-ip *num*

no dot1x redirect num for special source-ip

num	

1

٦

1' ى 3'

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

٦	
dot1x redirect url	
dot1x redirect for special tcp-destination port	ى ˘ ip ى ip web
dot1x redirect time-out	
show dot1x	dot1x

٨

٨	
-	-

37.6 dot1x

37.6.1 show dot1x

-	-

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```
Ruijie# show dot1x
802.1X Status:       Enabled
Authentication Mode:  EAP-MD5
Authed User Number:   0
Re-authen Enabled:    Disabled
Re-authen Period:     3600 sec
Quiet Timer Period:   10 sec
Tx Timer Period:      3 sec
Supplicant Timeout:   3 sec
Server Timeout:       5 sec
Re-authen Max:        3 times
Maximum Request:      3 times
Filter Non-RG Supp:   Disabled
Client Oline Probe:   Disabled
Eapol Tag Enable:     Disabled
Authorization Mode:   Group Server
Ruijie#
```

ৡ	
dot1x auth-mode	802.1x Â
dot1x max-req	Â
dot1x port-control auto	╗ Â
dot1x reauth-max	

	dot1x timeout re-authperiod	Â
		Ł
	dot1x timeout server-timeout	

dot1x auth-mode	802.1x Â
dot1x max-req	Â

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

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

-	-

37.6.4 show dot1x private-supplicant-only

Â

show dot1x private-supplicant-only

-	-

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

¾	
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

37.6.6 show dot1x port-control

б Â

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

interface	

٦ Â

Ю '

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

٦

٦	
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 quiet-period	Â
dot1x timeout re-authperiod	Â
dot1x timeout server-timeout	Â
dot1x timeout supp-timeout	Â
dot1x timeout tx-period	Â

-	-

37.6.8 show dot1x re-authentication

show dot1x re-authentication

-	-

Â

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

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

-	-

37.6.9 show dot1x reauth-max

show dot1x reauth-max

-	-

Â

Â

Ю '

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

Ruijie#

id	show summary id

¾ Â

HO **show dot1x user id *1***

Mac address vlan id: 1, Status: Authorized
Authentication method: Dot1x
Port number: 1
Initialize: FALSE
Reauthentication: FALSE
Operation mode: Single-Host
Max number of clients: 1
Authorized MAC address: 00-24-01-07-00-01
Authorized IP address: 192.168.1.1

¾

¾	
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

802.1X

-	-

¾

Ю Ю ╖

```
Ruijie# configure terminal
Ruijie(config)# dot1x redirect
```

¾	

¾

Л	
10.2(5)	¾

37.7.2 http redirect

HTTP IP ╖ ˘ ¾ **http redirect** Â ¾
no HTTP IP Â

http redirect *ip-address*

no http redirect

ip-address	HTTP IP

HTTP IP

¾

╖ ╟ Л ╖ ˘ HTTP IP Â
HTTP ˘
Ю ˘ Ю ˘ Ю ˘ Â

Ю Ю ╖ '

```
Ruijie# configure terminal
Ruijie(config)# http redirect 172.16.0.1
Ruijie(config)# end
```

٪	
show http redirect	HTTP
http redirect homepage	ў Â

٨

/I	
10.2(5)	٪

37.7.3 http redirect direct-site

Â ٦ Л∪ ٪ **no**

Â

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

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

ip-address	IP
ip-mask	IP Â
arp	ARP CHECK ╖ ˘ ж ARP ˘ **arp** Â

Â

50 Â

Ю IP й 172.16.0.1 й '

```
Ruijie# configure terminal
Ruijie(config)# http redirect direct-site 172.16.0.1
```

ʒ

ʒ	
show http redirect	HTTP

Л

ʒ

Л	
10.2(5)	ʒ

37.7.4 http redirect homepage

Ю Ь ў Â Л Л∪ ʒ **no** Ю Ь ў Â

http redirect homepage *url-string*

no http redirect homepage

url-string	Ю Ь ў й *url-string*˘ Л∪ “http://” “https://” ˘ a Ш¶ ’ й 255 Â

Ю Ь ў Â

ʒ

Т ╟ Л Т ˘ Ю Ь ў Â

Ю Ю Ь ў й *www.su-download.net/*

```
Ruijie# configure terminal
Ruijie(config)# http redirect homepage www.su-download.net/
```

ʒ

ʒ	

show http redirect	HTTP

٨	
10.2(5)	٦

37.7.5 http redirect port

٨ HTTP ˘ **http redirect port** ٦ Â ٦ **no** Â

http redirect port *port-num*

no http redirect port *port-num*

-	-

й 80 HTTP Â

Э ~ ˘ HTTP ˘ HTTP ˘ Â ˘ ˘ Ю Â

Ю˘ ٨ й 80 HTTP ˘ Â

PC ٨ HTTP ˘ ٦ Â

10 a ٧ ٨˘ ٨ 80 ≠ Â

Ю PC ٨ й 8080 HTTP '

```
Ruijie# configure terminal
Ruijie(config)# http redirect port 8080
```

٦	
show http redirect	HTTP

ﻝ

٣

ﻝ	
10.2(5)	٣

37.7.6 http redirect session-limit

ﻝ HTTP ˘ Ю
HTTP Â ﻝ Л∪ ٣ **no** HTTP
й 3 Â

http redirect session-limit *session-num* [**port** *port-session-num*]

no http redirect session-limit

session-num	ﻝ HTTP ˘ ﻝ 1-255 Â
port-session-num	ˆ ﻝ ˜ Ю HTTP ˘ ﻝ 1-300 Â

HTTP й 255˜ Ю
HTTP й 300 Â

٣

й HTTP ˘ TCP ˘
Э 8 HTTP Â

˘ ´ HTTP ˘ ε ≠ ﻝ ´ HTTP
˘ a HTTP й 1 Â

Ю HTTP й 4'

```
Ruijie# configure terminal
Ruijie(config)# http redirect session-limit 4
```

٣

٣	
show http redirect	HTTP

HTTP Â

show http redirect

-	-

Ю HTTP '

```
Ruijie# show http redirect
HTTP redirection settings:
  server:         192.168.32.123
  port:           80  8000
  homepage: http://192.168.32.123:8888/ePortal/index.jsp
  session-limit: 10
  timeout:        5

Direct sites:
  Address           MASK              ARP Binding
  ---------------- ---------------- -----------
  61.233.3.215     255.255.255.255    On
  61.233.3.220     255.255.255.255    Off
  192.168.5.140    255.255.255.255    Off
  218.30.66.101    255.255.0.0        Off
  218.30.66.101    255.255.255.255    Off
```

http redirect	HTTP IP
http redirect direct-site	
http redirect homepage	Ю Ь ў
http redirect port	Л HTTP
http redirect session-limit	Л HTTP
http redirect timeout	

10.2(5)	

?	
aaa new-model	•eK„

IO AAA Enable Â "I RADIUS
RADIUS
Â

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

aaa new-model	AAA
enable	
username	

-	-

38.1.3 aaa authentication login

AAA Login **aaa authentication login**
Login Â no Â

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

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

default	Login Â
list-name	Login Â
method	local à none à group 4
local	
none	a
group	RADIUS TACACS+

AAA ┗˘ AAA Login Â
aaa authentication login ঽ ┘ Login Â
┘ ˘ ⁄ Â
Login ⁄˘ è Login Э˘ a
Â

Ю Ⱨ ⁄ ѝ list-1 AAA Login Â ˝I
RADIUS ┗ ˘ RADIUS ┗ ˘
Â

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

ঽ	
aaa new-model	AAA ┗
username	Ⱨ
login authentication	Э Login

⁄

⁄	
-	-

38.1.4 aaa authentication ppp

AAA PPP ˘ ঽ **aaa authentication ppp** PPP
Â ঽ no Â

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

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

default	˘ ⁄ Ⱨ ѝ PPP Â
list-name	Ⱨ PPP ˘ ┘Ո Â
method	ľ local à none à group Ŀ ˘ 4 ε Ş ˇΩ

group	RADIUS TACACS+

Â

AAA PPP AAA PPP Â
aaa authentication ppp PPP Â
Â

RADIUS RADIUS
Â

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

aaa new-model	AAA
ppp authentication	PPP
username	

-	-

38.1.5 login authentication

Login RADIUS **login authentication** Login no Â

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

no login authentication

default	Login Â
list-name	Login Â

¦ Â

Login ˘ ╟ Э Â Э
Login ˘ ¦ Â ЊЖ ˘
˘ Э Login a ˘ ЊЖ Login
Â

Ю ЊЖ ¦ и list-1 AAA Login Â
Â ¦ VTY 0 - 4 Э Â

```
Ruijie(config)# aaa authentication login list-1 local
Ruijie(config)# line vty 0 4
Ruijie(config-line)# login authentication list-1
```

¦

¦	
aaa new-model	AAA Ь
username	ЊЖ
login authentication	Login

¦

¦

¦	
-	-

38.2

38.2.1 aaa authorization commands

NAS CLI Э ˘ AAA ¦ ╖ ¦
˘ é ¦ Â ¦ **aaa authorization commands** Â ¦ no AAA ¦ ╖ Â

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

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

level	0~15
default	
list-name	
method	none group 4
none	a
group	TACACS+

AAA

RGOS AAA
14
15

```
Ruijie(config)# aaa authorization commands 15 default group tacacs+
```

aaa new-model	AAA
authorization commands	

-	-

38.2.2 aaa authorization config-commands

AAA ˆ è ˜ Ю ৡ ˘
ৡ **aaa authorization config-commands** Â ৡ no AAA Ю
ৡ ℸ Â

aaa authorization config-commands

no aaa authorization config-commands

-	-

a Ю ৡ Â

ৡ Â

৶ ˆ ˜ Ю ৡ ˘ ৶ Л ৡ no
ℸ ˘ è Ю ৡ a ৡ ৶ Л Â

Ю Ю ৡ ℸ '
Ruijie(config)# **aaa authorization config-commands**

ৡ	
aaa new-model	AAA Ł
aaa authorization commands	Ю AAA ৡ

৶

/I	
-	-

38.2.3 aaa authorization console

AAA ⁸ ৶ ˘ ৡ ˘ ৡ **aaa authorization console** Â ৡ no AAA ⁸ ৶ ৡ
ℸ Â

aaa authorization console

no aaa authorization console

-	-

a ⁸ ⅄ ৡ Â

ৡ Â

RGOS Ψ† ⁸ ⅄ è ˘ ⅃ Л ⁸ ⅄ ˘
ৡ Â ⁸ ⅄ ৡ ℼ ˘ ⁸ ⅄
ৡ a Â

Ю ⁸ ⅄ ৡ ℼ '

```
Ruijie(config)# aaa authorization console
```

local	¸
none	a
group	¸ ˘ RADIUS TACACS+ ¸

AAA Exec ¶ Â

¢ Â

RGOS NAS CLI ˘ è CLI ^ 0~15 ˜ Â
Login ˘ Exec Â Exec ˘
CLI Â
Exec ˘ è Exec Э˘ a
Â

Ю RADIUS ¸ Exec '

```
Ruijie(config)# aaa authorization exec default group radius
```

¢	
aaa new-model	AAA ¸
authorization exec	Э
username	Ћ

˝

˝	
-	-

38.2.5 aaa authorization network

AAA ¸ ^ PPP à SLIP ˜ ˘
¢ **aaa authorization network** Â ¢ no AAA ¶ Â

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

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

default	' ˘ ⁄ Ⅎ ѝ Network Â
method	ľ none à group Ŀ ˘ 4
none	a
group	Ł ˘ RADIUS TACACS+ Ł

AAA Network ℸ Â

३ Â

٦ Э˘ ٦ **authorization commands** Â ٦ no ٧ Э ٦ ╖ Â

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

no authorization commands *level*

level	٦ ˘ 0~15˜ ¤ ٦ ٨ Â
default	˘ ٦ Â
list-name	⌧ ٦ Â

AAA ٦ ╖ Â

٦ Â

٦ ˘ ╟ Э Â Э ٦ ˘ ٧ ٦ Â ⌧ ˘ ˘ Э ٦ a ˘ ⌧ ٦ Â

Ю ٨ й cmd ٦ ˘ 15 ٦ ˘ TACACS+ й Ь ˘ Ь none Â ٨ VTY 0 – 4 Э'

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

٦	
aaa new-model	AAA Ь
aaa authorization commands	⌧ AAA ٦

٧

٨	
-	-

38.2.7 authorization exec

default	ˇ Exec Â
list-name	Ыѫ Exec Â

AAA Exec ╖ Â

ʒ Â

Exec ˇ ╟ Э Â Э
Exec ˇ ↓ ʒ Â Ыѫ ˇ
ˇ Э Exec a ˇ Ыѫ Exec
Â

Ю ↓ й exec-1 Exec ˇ RADIUS й Ь ˇ
Ь B„èeVGQRuRDDDDDëK TL

1ææG5ÉÆPCGQ?UÉxecè<h*ûÍ4ôÃ“CÃ> 4“CÃ!5BÃ¸DXWKRUL]DWLRQH[HF
ʒ no ↓ Э Exec ╖ Â

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

no authorization exec

NAS

aaa accounting commands no

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

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

level	0~15
default	
list-name	
method	**none** **group** 4
none	a
group	TACACS+

RGOS none a

TACACS+ 15

```
Ruijie(config)# aaa accounting commands 15 default start-stop group
tacacs+
```

aaa new-model	AAA
aaa authentication	AAA
accounting commands	

٦	٨	
	-	-

38.3.2 aaa accounting exec

╟˘ NAS ╟ ˘ ٦ **aaa accounting exec** Â ٦ no ٧ Exec ╖ Â

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

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

default	˘ ٨ Ⱶ Ѫ Exec Â
list-name	Ⱶ Ѫ Exec ˘ ٧ Ո Â
method	ľ **none à group** Ŀ ˘ 4
none	a
group	Ŀ ˘ RADIUS TACACS+ Ŀ

╖

٦ Â

RGOS ٧ ٨˘ Exec ╖ ˘ ѝ none˘ a Exec Â

╖ ٨˘ NAS CLI Ą˘ ˆ Start˜ Ŀ ˘ Ą˘ ˆ Stop˜ Ŀ Â Start ˘ ≠ a Stop Â Exec ٨˘ ε ٦ Э˘ a Â

Э Â б Ŋ б

aaa new-model	AAA
aaa authentication	AAA
accounting commands	Exec

-	-

38.3.3 aaa accounting network

aaa accounting network no

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

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

default	Network
list-name	
start-stop	
method	4
none	a
group	RADIUS TACACS+

RGOS **start-stop** 8

RADIUS

'

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

¾	
aaa new-model	AAA ┗
aaa authorization network	ㄏ AAA
aaa authentication	ㄏ AAA
username	ㄏ

¾

/I	
-	-

38.3.4 aaa accounting update

╖ ˘ ¾ **aaa accounting update** ¾˘ ¾
Â ¾ no ╖ Â

aaa accounting update

no aaa accounting update

-	-

╖ Â

¾ Â

AAA ┗˘ a Â AAA ┗˘
¾ Â

Ю Â

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

¾	¾	

aaa new-model	AAA
aaa accounting network	

-

38.3.5 aaa accounting update periodic

aaa accounting update periodic

aaa accounting update periodic *interval*

no aaa accounting update periodic

interval	

5 minutes

AAA a

```
Ruijie(config)# aaa new-model
Ruijie(config)# aaa accounting update
Ruijie(config)# aaa accounting update periodic 1
```

aaa new-model	AAA
aaa accounting network	

¾	/Л	
	-	-

38.3.7 accounting exec

Exec Э˘ ¾ **accounting exec** Â
¾ no л Э Exec ╖ Â

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

no accounting exec

default	˘ Exec Â
list-name	ЊЖ Exec Â

╖

¾ Â

Exec ˘ ╟ Э Â Э
Exec ˘ л ¾ Â ЊЖ ˘
˘ Э Exec a ˘ ЊЖ Exec
Â

Ю ╛ й exec-1 Exec ˘ RADIUS й Ь ˘
Ь none Â л VTY 0 – 4 Э'

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

¾	
aaa new-model	AAA Ь
aaa accounting commands	ЊЖ AAA Exec

л

¾	/Л	

	-	-

38.4 AAA

38.4.1 aaa domain

˘ Â ৡ no ৸ ৡ Â

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

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

[redacted]

default ˘

domain-name ৸

38.4.2 aaa domain enable

¸ AAA ¸ ˘ Ю й Â Ą˘ ˝I
¸ AAA ¸ Â ¾ no Â

aaa domain enable

no aaa domain enable

¸ AAA ¸ Â

¾ Â

¸ AAA ¸ ˘ Â

¸ AAA ¸ '

```
Ruijie(config)# aaa domain enable
```

¾	
aaa new-model	AAA ¸
show aaa domain	

¾

/I	
-	-

38.4.3 access-limit

8˘ ¾ IEEE802.1x ' ¾ no ¾ ¾ Â

access-limit *num*

no access-limit

num	8˘ ¾ 8 IEEE802.1x

Ю a ⁸ Â

३ Â

३ ⁸ Â

Ю л ѝ ruijie.com ѝ 20

W Tc 12D(config)#Tj/TT1 2 Tf9 08 01 Td(20aaa domainTj/TT1 3 Tf9 68 00 Td[(u

¾	¼
-	-

38.4.7 state

˘ ¾ no Â

state {**block** | **active**}

no state

block	
active	

Ю й Â

¾ Â

Â

Ю Â

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

¾	
aaa new-model	AAA Ł
aaa domain enable	ł AAA Ł
show aaa domain	

¾	¼

	-	-

38.4.8 show aaa domain

Â

show aaa domain [**default** |

ɹ ˘ ʒ no

omain}

б ⊧ ˘ ɹ Â

uijie.com

sername-domain without-domain

	AAA ⊧
	ɹ AAA ⊧

˜Ω ƨ ʒ

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

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

vrf_name	vrf ?

?

?

й

Ю

```
Ruijie(config)# aaa group server radius ss
Ruijie(config-gs-radius)# server 192.168.4.12
Ruijie(config-gs-radius)# server 192.168.4.13
Ruijie(config-gs-radius)# ip vrf forwarding vrf_name
Ruijie(config-gs-radius)# end
```

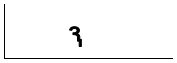
?

?	
aaa group server	aaa
show aaa group	aaa

?

?	
-	-

38.5.3 s` iSPCrt2



Ю Â

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

Â

AAA 8 Â

Ю Â

```
Ruijie# show aaa group
Group Name:  ss
Group Type:  radius
Referred:    2
Server List:
IP Address: 192.168.217.64
Authentication Port: 1812
Accounting Port: 1813
Referred:  1
```

aaa group server	AAA

-	-

38.6 AAA

38.6.1 aaa local authentication attempts

login

aaa local authentication attempts *max-attempts*

¾ Â

¾ Login

Ю '

```
Ruijie# configure terminal
Ruijie(config)# aaa local authentication attempts 6
```

¾

Show running-config	
Show aaa lockout	login

-

-	-

38.6.3 aaa new-model

RGOS AAA ¾ **aaa new-model** AAA
¾ **no** AAA

aaa new-model

no aaa new-model

-	-

AAA

¾ AAA ¾ AAA **aaa new-model**
AAA AAA AAA ¾ a

IO AAA

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

¾	
aaa authentication	
aaa authorization	
aaa accounting	

-

-	-

-	-

38.6.4 clear aaa local user lockout

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

<*word*>	ID

¾ Â

˘ ┘Л ≠ ┘Л

Ю '

```
Ruijie# clear aaa local user lockout all
```

¾	
show running-config	
show aaa lockout	login

Л

Л	
-	-

38.6.5 debug aaa

AAA Ь Â ¾ **no** Â

debug aaa event

no debug aaa event

-	-

৭ EXEC Â

৭	

aaa authentication dot1x san-f local group angel group rain none
aaa authentication enable default group radius
Accounting method-list
aaa accounting network default start-stop group radius
Authorization method-list
aaa authorizating network default group radius

¾	
aaa authentication	Ht
aaa authorization	Ht
aaa accounting	Ht

/I	
-	-

38.6.7 show aaa user lockout

Â

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

<*word*>	ID

Â

˘ Л Â

Ю '
Ruijie# **show aaa user lockout all**

¾	
show running-config	

show aaa lockout	login

-	-

39 SSH

39.1 SSH

39.1.1 crypto key generate

Ł Ὼ ˘ ЮЎ ٹ'

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

rsa	RSA
dsa	DSA

Ю SSH Server Ὼ Â

ٹ

SSH Server Ł ˘ ٹ SSH Ł Ὼ Â ٦
enable service ssh-server ٹ˘ SSH Server ╖ ÂSSH 1 RSA ' SSH 2 RSA DSA Â ˘ RSA ˘ SSH1 б SSH2 ٦ Л∪ ' DSA ˘ SSH2 ٦Л∪ Â

~ ˘ a ٹ **no crypto key generate**˘ ٹ **crypto key zeroize** ٹ Â

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

ٹ

retry times	Â

Ю ѝ 3 Â ⊿˘ **no ip ssh authentication-retries** ٦ ≠ ⊿Л ѝ Â

٦ Q…ïBPçcNQBgpg≺ ! 'XGc955B-ã

¶

¶ SSH Server Â ÿ ↓ ˘
120s ╖ ˘ и Â **show ip ssh** ¶ SSH server
Â

и 100s˙

```
Ruijie# configure terminal
Ruijie(config)# ip ssh time-out 100
```

¶

¶	
show ip ssh	ssh-server Â

↓ ˚ RGOS10.1 Л Э

¶

Л	
-	-

39.1.5 ip ssh version

SSH server Â ¶ no и Â

ip ssh version {**1** | **2**}

no ip ssh version

1	SSH Server SSH1
2	SSH Server SSH2

Ю SSH 1 2Â Л˘ ↓ ↓ SSH
Â **no ip ssh version** ¶ ≠ ↓Л и Â

¶

¶ ⁸ SSH Server SSH Â Ю˘ SSH Server
SSH1 б SSH2˘ SSH 1 SSH 2 ↓Л Â
1 2˘ ↓ SSH Â **show ip ssh**
¶ SSH Server Â

SSH

show ip ssh

?

SSH Â ' ´ VTY /I à SSH à ╗
à à à ⅃ Â

Ruijie# **show ssh**

?

?	
-	-

/I ˚ RGOS10.1 ЛЬЭ

?

/I	
-	-

40 CPU

40.1

40.1.1 cpu-protect type packet-type pps pps_value

CPU Â

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

pps_value

CPU ″I Â

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

pri_num	ID˘ ↓ ѝ 0¨ 7

ѝ 0Â

¾ Â

5L Û y RÅ ú° @

Ю BPDU 7 '

```
Ruijie(config)# cpu-protect type bpdu pri
```

३ Â

३ CPU Â

ЮO S9610 CPU

41 DoS

41.1

41.1.1 ip deny invalid-l4port

¶ Â ¾ **no** ¶ Â

ip deny invalid-l4port

no ip deny invalid-l4port

-	-

ЮЎ ¶ Â

¾ Â

1' Э ¶ '

```
Ruijie(config)# ip deny invalid-l4port
```

2' Э ¶ '

```
Ruijie(config)# no ip deny invalid-l4port
```

¾	
show ip deny invalid-l4port	

/I	
-	-

41.1.2 ip deny invalid-tcp

TCP ¶ Â ¾ **no** TCP ¶ Â

ip deny invalid-tcp

no ip deny invalid-tcp

-	-

	/\

-	-

Â

```
Ruijie# show ip deny land
DoS Protection Mode              State
-------------------------------  -----
protect against land attack      On
```

(**no**) **ip deny land**	Land

-	-

DAI Q, ३

42.2

42.2.1 ip arp inspection trust

γ ۶ ˘ ३ **ip arp inspection trust** Â ३ **no**
γ ѝ a Â

ip arp inspection trust

no ip arp inspection trust

-	-

a Â

३ Â

ARP ˚ DAI ˘ ۶ Л ὲ ۶
˘ a ARP ˘ Â

NFPP( ) ˘ ⁸ NFPP ˘ a ¨Ą
& DAI ˘ ३ **show ip arp inspection interface** ۶ Â

VLAN DAI ╖ ˘ ȝ ARP γ a ↓ ˘
ARP ˘ DHCP Snooping .
˘ ÂDHCP Snooping ê DHCP
Snooping Ì Â

43 arp

43.1 arp

43.1.1 anti-arp-spoofing ip

arp Â ৡ

Ю arp Â

show anti-arp-spoofing

¾

¾

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

¾

¾	
anti-arp-spoofing ip	arp ¾

¼

¾

¼	
-	-

show ip source binding	IP

ऻ

३	
ऻ	
-	-

44.2 IP Source Guard

44.2.1 ip verify source

Э IP Source Guard ╖ ˘ **no** ╖ Â

[**no**] **ip verify source** [**port-security**]

port-security	IP Source Guard ╖ IP+MAC Â

Â

Â

३ IP Source Guard ╖ ˘ ⌟Л IP ˘ IP+MAC ’

IP Source Guard ╖ DHCP Snooping Э ˘ ≠ ˘ Trust ЛЬ DHCP Snooping ⁸ Э IP Source Guard ╖ ˘ IP Source Guard ╖ a Â

Ю 1 Э IP Source Guard ╖ ’

```
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip verify source
Ruijie(config-if)# end
```

३	
show ip source binding	IP Source Guard

ऻ

¾	/I	
	-	-

44.3 IP Source Guard

44.3.1 show ip source binding

¾ IP Â

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

ip-address	ip '
mac-address	mac '
dhcp-snooping	╟ '
static	'
vlan-id	vlan '
interface-id	Â

Â

¾ Â

Â

Ю '

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

-	-

44.3.2 show ip verify source

ȝ IP Source Guard

show ip verify source [**interface** *interface-id*]

interface-id	Â

Â

interface IP Source Guard ˘

“IP source guard is not configured on the interface FastEthernet 0/10” Â

IP Source Guard (**mode**)

Â **inactive-no-snooping-vlan** ' DHCP Snooping

Â **inactive-trust-port** ' DHCP Snooping

Â **active?** Â

-	-

45 NFPP

45.1

45.1.1 cpu-protect sub-interface {manage|protocol|route} pps

३ Â

cpu-protect sub-interface {*manage*|*protocol*|*route*} pps *pps_vaule*

pps_vaule	˘ ৸ 1-8192

ђ ф Ỳ ⁚ ʁ Ä

٣ ´ ¶ Â

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

percent_vaule	¶ ˘ ٧ 1 100

(Manage)´ ă ש ¶ ٸ 30˝
(Route)´ ă ש ¶ ٸ 25˝
(Protocol)´ ă ש ¶ ٸ 45 Â

٣

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

٣	
cpu-protect sub-interface { *manage* | *protocol* | *route* } **pps**	´ ¶

٧

٨	
-	-

٣

45.3 ARP

45.3.1 arp-guard attack-threshold

˘ Ą˘ ٸ ٸ Â

arp-guard attack-threshold {**per-src-ip** | **per-src-mac** | **per-port**} *pps*

per-src-ip	IP Â
per-src-mac	MAC Â
per-port	Â

	pps	˘ Æ ˘ ↓ [1,9999] Â

IP MAC 8 ˘
200 Â

३ NFPP

a Â

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

३	
nfpp arp-guard policy	
show nfpp arp-guard summary	
show nfpp arp-guard hosts	↓ ў
clear nfpp arp-guard hosts	ў

↓

45.3.5 arp-guard monitored-host-limit

३ ↓ ў Â

arp-guard monitored-host-limit *number*

number	↓ ў ˘ ↓ и 1 4294967295

↓ ў и 1000 Â

३ NFPP

↓ ў 1000 ˘ ↓ ў 1000ˆ a ↓ ў ˘ l' %ERROR' The value that you configured is smaller than current monitored hosts 1000ˆ ↓ ў ~ ˘ please clear a part of monitored hosts. Ł ˘ ĭ ў Â

↓ ў ˘ l' % NFPP_ARP_GUARD-4-SESSION_LIMIT: Attempt to exceed limit of 1000ˆ ↓ ў ~ monitored hosts. Ł Â

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

३	

per-src-ip	IP
per-src-mac	MAC
per-port	
pps	˘ ¼ [1,9999] Â

IP MAC 4 ˘
100 Â

¾ NFPP

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

¾	
nfpp arp-guard policy	
show nfpp arp-guard summary	

¼

¼	
-	-

45.3.7 arp-guard scan-threshold

Â

arp-guard scan-threshold *pkt-cnt*

pkt-cnt	˘ ¼ [1,9999] Â

15˜ Æ 10 Â

३ NFPP

10 15 ЛЪЭ ARP ˘ MAC IP ˩ ˘
MAC IP IP a ˩ ˘ ѝ
Â

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard scan-threshold 20
```

३	
nfpp arp-guard scan-threshold	Э
show nfpp arp-guard summary	
show nfpp arp-guard scan	ARP
clear nfpp arp-guard scan	ARP

३

/ſ	
-	-

45.3.8 clear nfpp arp-guard hosts

˩ ў ˘ ў ˘ Â

clear nfpp arp-guard hosts [**vlan** *vid*] [**interface** *interface-id*] [*ip-address* | *mac-address*]

vid	/ſ
interface-id	˩
ip-address	IP
mac-address	MAC

३

a ˘ ў Â

VLAN 1 g 0/1 ÿ Â

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

¾	
arp-guard attack-threshold	
nfpp arp-guard policy	
show nfpp arp-guard hosts	↵ ÿ

↵

/I	
-	-

45.3.9 clear nfpp arp-guard scan

ARP Â

clear nfpp arp-guard scan

-	-

M	

seconds	˘ Æ ˘ ↓ 0 a Â		0	[30, 86400]˘	

٦

a Â

```
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
```

٦

٦	
arp-guard attack-threshold	
arp-guard rate-limit	
show nfpp arp-guard summary	
show nfpp arp-guard hosts	↓ ў
clear nfpp arp-guard hosts	ў

↓

٦

/\	
10.4	٦

45.3.13 nfpp arp-guard scan-threshold

Э Â

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

pkt-cnt	˘ ↓ [1,9999] Â

ARP ˘ ARP Â

NFPP

ৡ	
nfpp dhcp-guard policy	
show nfpp dhcp-guard summary	
show nfpp dhcp-guard hosts	↓ ў
clear nfpp dhcp-guard hosts	↓ ў

/I	
-	-

45.4.2 dhcp-guard enable

ৡ DHCP ╖ Â

dhcp-guard enable

-	-

DHCP ˘ Â

ৡ NFPP

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

ৡ	
nffp dhcp-guard enable	Э DHCP ╖
show nfpp dhcp-guard summary	

/I	

-	-

45.4.3 dhcp-guard isolate-period

ʒ Â

dhcp-guard isolate-period {*seconds* | **permanent**}

seconds	˘ Æ ˘ ˬ 0 [30, 86400]ʗ 0 a Â
permanent	

0ʗ a Â

ʒ NFPP

ʈ ˋй ˆ ˜ Â
˘ ˘ ж , ˘
Â

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard isolate timeout 180
```

ʒ	
nfpp dhcp-guard isolate-period	Э
show nfpp dhcp-guard summary	

ʃ

ʃ	
-	-

٣	NFPP
	↓ ў 1000 ˘ ↓ ў 1000˝ a ↓ ў ˘ ľ %ERROR' The value that you configured is smaller than current monitored hosts 1000˝ ↓ ў ~ ˘ please clear a part of monitored hosts. Ł ˘ ť ў Â ↓ ў ˘ ľ % NFPP_DHCP_GUARD-4-SESSION_LIMIT: Attempt to exceed limit of 1000˝ ↓ ў ~ monitored hosts. Ł Â
	`Ruijie(config)# nfpp` `Ruijie(config-nfpp)# dhcp-guard monitored-host-limit 200`
٣	

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard rate-limit per-src-mac 8
Ruijie(config-nfpp)# dhcp-guard rate-limit per-port 100
```

¾	
nfpp dhcp-guard policy	
show nfpp dhcp-guard summary	

/¶	
-	-

45.4.7 clear nfpp dhcp-guard hosts

˘ Â

clear nfpp dhcp-guard hosts [*vlan vid*] [**interface** *interface-id*] [*mac-address*]

vid	/¶
interface-id	¸
mac-address	MAC

a ˘ Â

VLAN 1 g 0/1 Â

```
Ruijie# clear nfpp dhcp-guard hosts vlan 1 interface g0/1
```

¾	
dhcp-guard attack-threshold	
nfpp dhcp-guard policy	

	show nfpp dhcp-guard hosts	ў

٨

٦	٨	
	-	-

45.4.8 nfpp dhcp-guard enable

٦ Э DHCP ٦ Â

nfpp dhcp-guard enable

	-	-

DHCP ˘ Â

٦

DHCP ¨I DHCP Â

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp dhcp-guard enable
```

٦	٦	
	dhcp-guard enable	DHCP ٦
	show nfpp dhcp-guard summary	

٨

٦	٨	
	10.4	٦

45.4.9 nfpp dhcp-guard isolate-period

٦ Э Â

nfpp dhcp-guard isolate-period {*seconds* | **permanent**}

seconds	˘ Æ ˘ ˇ	0	[30, 86400]Ĩ:Q 5 5 ef6682.74

٣

a Â

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp dhcp-guard policy per-src-mac 3 10
Ruijie(config-if)# nfpp dhcp-guard policy per-port 50 100
```

٣

٣	
dhcp-guard attack-threshold	
dhcp-guard rate-limit	
show nfpp dhcp-guard summary	
show nfpp dhcp-guard hosts	٧ ў
clear nfpp dhcp-guard hosts	ў

٧

٨	
10.4	٣

45.5 ICMP

45.5.1 icmp-guard attack-threshold

˘ Ą˚ ѝ ѝ Â

icmp-guard attack-threshold { **per-src-ip** | **per-port**} *pps*

per-src-ip	IP Â
per-port	Â
pps	˘ Æ ˘ ٧ [1,9999] Â

IP 1200 ˘ 1500 Â

¾ NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard attack-threshold per-src-ip 600
Ruijie(config-nfpp)# icmp-guard attack-threshold per-port 1200
```

¾

¾	
nfpp icmp-guard policy	
show nfpp icmp-guard summary	
show nfpp icmp-guard hosts	↓ ў
clear nfpp icmp-guard hosts	ў

↓

¾

↑	
-	-

45.5.2 icmp-guard enable

¾ ICMP ╖ Â

icmp-guard enable

-	-

ICMP ╖

¾ NFPP

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

¾	
nffp icmp-guard enable	Э ICMP ¶
show nfpp icmp-guard summary	

/I	
-	-

45.5.3 icmp-guard isolate-period

¾ Â

icmp-guard isolate-period {*seconds* | **permanent**}

seconds	˘ Æ ˘ ↓ 0

/1	

pps	˘ ↓ [1,9999] Â

IP 900 ˘ 1000 Â

¾ NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard rate-limit per-src-ip 500
Ruijie(config-nfpp)# icmp-guard rate-limit per-port 800
```

¾	
nfpp icmp-guard policy	
show nfpp icmp-guard summary	

↓

/I	
-	-

45.5.7 icmp-guard trusted-host

a ↓ ў Â

icmp-guard trusted-host *ip mask*

no icmp-guard trusted-host {**all |** *ip mask*}

ip	IP
mask	IP
all	no ˘ ↓ ў

↓ ў Â

¾ NFPP

ل ў a ˘ ў ˘ ل Л٥ ٪ Â
ل ў CPU ICMP CPU a Â
ل Л٥ ў a Â
500 ل ў Â

Ruijie(config)# **nfpp**
Ruijie(config-nfpp)# **icmp-guard trusted-host** 1.1.1.0 255.255.255.0

٪

٪	
show nfpp icmp-guard trusted-host	

ل

٪

/ا	
-	-

45.5.8 clear nfpp icmp-guard hosts

ل ў ˘ ў ˘ Â

clear nfpp icmp-guard hosts [*vlan vid*] [**interface** *interface-id*] [*ip-address*]

vid	/ا
interface-id	ل
ip-address	IP

٪

a ˘ ў Â

VLAN 1 g 0/1 ل ў Â
Ruijie# **clear nfpp icmp-guard hosts vlan** *1* **interface** *g 0/1*

٪

٪	
icmp-guard attack-threshold	

nfpp icmp-guard policy	
show nfpp icmp-guard hosts	ў

¾ Э Â

˘ Â

ʒ

a Â

```
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
```

ʒ

ʒ	
icmp-guard attack-threshold	
icmp-guard rate-limit	
show nfpp icmp-guard summary	
show nfpp icmp-guard hosts	↓ ў
clear nfpp icmp-guard hosts	ў

ʃ

ʒ

ʃ	
10.4	ʒ

45.6 IP

IP ЛЬЮ ʒ'

Â ip-guard attack-threshold

Â nfpp ip-guard scan-threshold

~	˘ IP IP a IP IP Â IP IP IP ˘ CPP˚ CPU Protect Policy˜ Â γ a IP ˘ Ь IP Â

45.6.1 ip-guard attack-threshold

˘ Ą˘ ѝ ѝ Â

ip-guard attack-threshold {**per-src-ip** | **per-port**} *pps*

per-src-ip	IP Â
per-port	Â
pps	˘ Æ ˘ ч [1,9999] Â

IP 20 ˘ 200 Â

ȝ NFPP

a Â

Ð

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

ȝ	
nfpp ip-guard policy	

show nfpp ip-guard summary ȯ = ľ

¶ NFPP

Ruijie(config)# **nfpp**
Ruijie(config-nfpp)# **ip-guard isolate-period** 180

¶	
nfpp ip-guard isolate-period	Э
show nfpp ip-guard summary	

¶

Л	
10.4	¶

45.6.4 ip-guard monitor-period

¶ Â

ip-guard monitor-period *seconds*

seconds	˘ Æ ˘ ↓ [180, 86400] Â

600 Â

¶ NFPP

Â Ą˘ ѝ Ơ ˚ ˘ ѝ
Â ˚ ˘ ѝ ˘ ╠ ˚
↓ ˚ ˘ з ѝ Â ѝ 0 Ю
Ђ Â
Â ÿ ˘ ˘ a
˚ Â

Ruijie(config)# **nfpp**

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

ʒ	
show nfpp ip-guard summary	
show nfpp ip-guard hosts	↓ ў
clear nfpp ip-guard hosts	ў

↓

/\	
10.4	ʒ

45.6.5 ip-guard monitored-host-limit

ʒ ↓ ў Â

ip-guard monitored-host-limit *number*

show nfpp ip-guard summary	

¼

¾	
¼	¾
10.4	¾

45.6.6 ip-guard rate-limit

Â

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

per-src-ip	IP
per-port	
pps	˘ ¼ [1,9999] Â

IP 20 ˘ 100 Â

¾ NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard rate-limit per-src-ip 2
Ruijie(config-nfpp)# ip-guard rate-limit per-port 50
```

¾	
nfpp ip-guard policy	
show nfpp ip-guard summary	

¼

¼	
10.4	¾

45.6.7 ip-guard scan-threshold

Â

ip-guard scan-threshold *pkt-cnt*

pkt-cnt	˘ ↓ [1,9999] Â

10 100 Â

¾ NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard scan-threshold 20
```

¾	

ʒ NFPP

ʌ ў a ˘ ў ˘ ʌ Л ʒ Â
ʌ ў CPU IP CPU a Â
500 ʌ ў Â

1.1.1.0/24 ў ѝ ʌ ў Â

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)#ip-guard trusted-host 1.1.1.0 255.255.255.0
```

ʒ

ʒ	
show nfpp ip-guard trusted-hosts	ʌ ў

ʌ

ʒ

ʌ	
10.4	ʒ

45.6.9 clear nfpp ip-guard hosts

ʌ ў ˘ ў ˘ Â

clear nfpp ip-guard hosts [**vlan** *vid*] [**interface** *interface-id*] [*ip-address*]

vid	ʌ

Ruijie# **clear nfpp ip-guard hosts vlan** *1* **interface** g0/1

٣	
ip-guard attack-threshold	
nfpp ip-guard policy	
show nfpp ip-guard hosts	٧ ў

٧

٨	
10.4	٣

45.6.10 nfpp ip-guard enable

٣ Э IP ╖ Â

nfpp ip-guard enable

-	-

IP ˘ Â

٣

IP ˝I Â

Ruijie(config)# **interface G0/1**
Ruijie(config-if)# **nfpp ip-guard enable**

٣	
ip-guard enable	IP ╖
show nfpp ip-guard summary	

٧

٣	٨	

per-port	Â
rate-limit-pps	˘ ↓ 1 9999 Â
attack-threshold-pps	˘ ↓ 1 9999 Â

˘ Â

ʒ

a Â

```
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
```

ʒ

ʒ	
ip-guard attack-threshold	
ip-guard rate-limit	
show nfpp ip-guard summary	
show nfpp ip-guard hosts	↓ ў
clear nfpp ip-guard hosts	ў

↓

ʒ

/\	
10.4	ʒ

45.6.13 nfpp ip-guard scan-threshold

Э Â

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

pkt-cnt	˘ ↓ [1,9999] Â

IP ˘ ARP Â

¾

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# nd-guard attack-threshold per-port ns-na 20
Ruijie(config-nfpp)# nd-guard attack-threshold per-port rs 10
Ruijie(config-nfpp)# nd-guard attack-threshold per-port ra-redir
ect 10
```

¾

¾	
nfpp nd-guard policy	
show nfpp nd-guard summary	

¼

¾

¼	
10.4	¾

45.7.2 nd-guard enable

¾ ND ¶ Â

nd-guard enable

-	-

ND ¶

¾ NFPP

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

¾

¾	
nffp nd-guard enable	Э ND ¶
show nfpp nd-guard summary	

ل

٣	ا	
	10.4	٣

45.7.3 nd-guard rate-limit

Â

nd-guard rate-limit per-port {**ns-na** | **rs** | **ra-redirect**} *pps*

ns-na	Ω
rs	
ra-redirect	Ω
pps	˘ ل [1,9999] Â

/Ω 15 ˘
15 ˘ Ω / 15 Â

٣ NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# nd-guard rate-limit per-port ns-na 10
Ruijie(config-nfpp)# nd-guard rate-limit per-port rs 5
Ruijie(config-nfpp)# nd-guard rate-limit per-port ra-redirect 5
```

٣	
nfpp nd-guard policy	
show nfpp nd-guard summary	

ل

ا	

45.7.4 nfpp nd-guard enable

ֽ Э ND ╖ Â

nfpp nd-guard enable

-	-

ND ˘ Â

ֽ

ND ¨I Â

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp nd-guard enable
```

ֽ	
nd-guard enable	ND ╖
show nfpp nd-guard summary	

ʎ

ʎ	
10.4	ֽ

45.7.5 nfpp nd-guard policy

Э Â

nfpp nd-guard policy per-port {**ns-na** | **rs** | **ra-redirect**} *rate-limit-pps attack-thresh old-pps*

ns-na	̛Ω
rs	
ra-redirect	̛Ω

rate-limit-pps	˘ ↊	1	9999 Â
attack-threshold-pps	˘ ↊	1	9999 Â

˘ Â

३

a Â

ND snooping ↟ ѝ ˘ ў ˘
Â ˘ Л
˘ ND snooping ╖ ˘ ˘ ND snooping
ND guard Ь 800
0 P

NFPP ă ʁ Â

clear nfpp log

-	-

ৡ

Ruijie# **clear nfpp log**
32 log-buffer entries were cleared.

ৡ	
show nfpp log	NFPP ă ʁ

ৗ

ʃ	
10.4	ৡ

45.8.2 log-buffer entries

NFPP ă ʁ Â

log-buffer entries *number*

number	ă ʁ ˇ Æ ˇ ৗ [0,1024]

ă ʁ ѝ 256 Â

ৡ NFPP

NFPP ă ʁ ѝ 50 Â

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# log-buffer entries 50
```

ʒ

ʒ	
log-buffer logs number_of_message **interval** length_in_seconds	NFPP ÿ ă ʁ ɻ Â
show nfpp log	NFPP ă ʁ

ɻ

ʒ

ʃ	
10.4	ʒ

45.8.3 log-buffer logs

NFPP ÿ ă ʁ ɻ Â

log-buffer logs *number_of_message* **interval** *length_in_seconds*

number_of_message	ѝ 0-1024˜ 0 ж ă ʁ˘ a Â
length_in_seconds	ѝ 0-86400˜ 1 ˜ ˘ 0 a ă ʁ˘ Â number_of_message length_in_seconds ѝ 0 a ă ʁ˘ Â number_of_message /length_in_second ɻ Â

number_of_message ѝ 1˜ *length_in_seconds* ѝ 30 Â

ʒ NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# log-buffer logs 2 interval 12
```

३	
show nfpp log summary	NFPP ă ʁ Â

४	
३	

४	
10.4	३

45.8.5 show nfpp log

NFPP Â

show nfpp log summary

NFPP ă ʁ Â

show nfpp log buffer [**statistics**]

NFPP ă ʁ Â

```
Ruijie#show nfpp log buffer statistics
There are 6 logs in buffer.
```

NFPP ă ʁ Â

```
Ruijie#show nfpp log buffer
Protocol VLAN  Interface IP address MAC address    Reason
 Timestamp
------- ----  --------  --------- -----------    ------
 ---------
ARP    1     Gi0/1     1.1.1.1     -            DoS
2009-05-30 16:23:10
ARP    1     Gi0/1     1.1.1.1     -            ISOLATED
2009-05-30 16:23:10
ARP    1     Gi0/1     1.1.1.2     -            DoS
2009-05-30 16:23:15
ARP    1     Gi0/1     1.1.1.2     -            ISOLATE_FAILED
2009-05-30 16:23:15
ARP    1     Gi0/1     -         0000.0000.0001 SCAN
2009-05-30 16:30:10
ARP    -     Gi0/2     -         -              PORT_ATTACKED
2009-05-30 16:30:10
```

Protocol ЛЬЮ ↓ '

Â ARP ARP ~

Â IP IP ~

Â ICMP ICMP ~

Â DHCP DHCP ~

Â NS-NA ND Ὼ ~

Â RS ND ~

Â RA-REDIRECT ND Ὼ ~

Reason ˇ 5 ↓ '

Â DoS Ł

Â ISOLATED ˚ ℸ

Â ISOLATE_FAILED

Â SCAN

Â PORT_ATTACKED

٣	
clear nfpp log	NFPP ǎ ש

٨	
10.4	٣

45.9 ARP

45.9.1 show nfpp arp-guard hosts

ى ў Â

show nfpp arp-guard hosts [**statistics** | [[*vlan vid*] [**interface** *interface-id*] [*ip-address* | *mac-address*]]]

statistics	ى ў
vid	٨
interface-id	ى
ip-address	IP

2' ↓ ў ˘ l' remain-time(seconds) L Â

```
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
```

```
Ruijie# show nfpp arp-guard scan statistics
ARP scan table has 4 record(s).
```

' Ľ ARP 4 Ŀ Â

```
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)
```

Ľ timestamp Ŀ ARP ˘ Ľ 2008-01-23 16:23:10 Ŀ
2008 1 23 16 23¦ 10 ARP Â

```
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)
```

ȝ

ȝ	
arp-guard scan-threshold	
nfpp arp-guard scan-threshold	
clear nfpp arp-guard scan	ARP

Ȗ

ȝ

Ȗ	
-	-

45.9.3 show nfpp arp-guard summary

Â

show nfpp arp-guard summary

-	-

٦

٦ ٧Ո Â

```
Ruijie# show nfpp arp-guard summary
ˆ 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 Sc
an-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
```

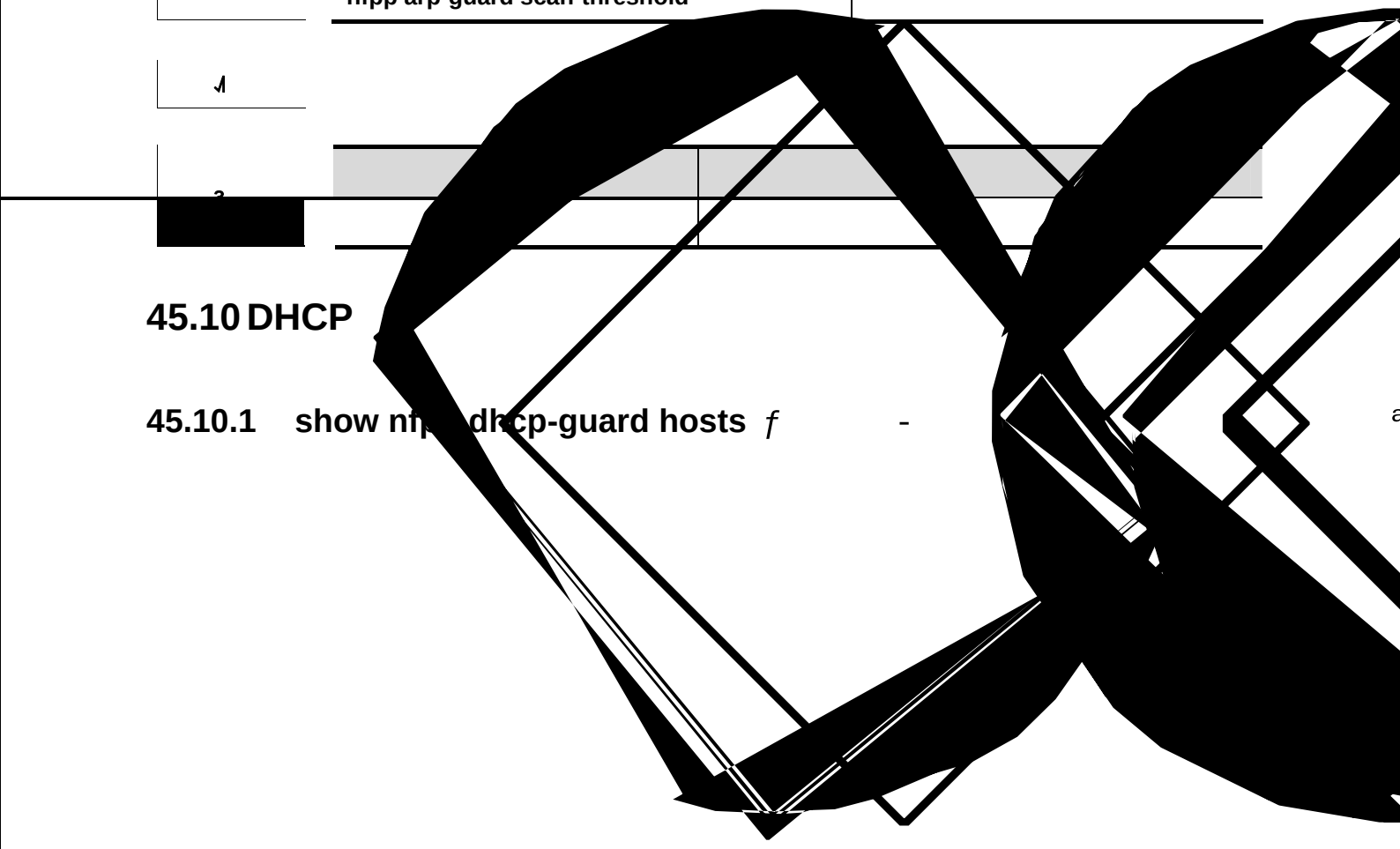
ˆ 1˜ Interface ѝ Global Â

ˆ 2˜ Status ٩ Â

ˆ 3˜ Rate-limit ѝˆ IP / MAC / ˜ ˇ Attack-threshold Â ľ - Ŀ Â

٦	
arp-guard attack-threshold	
arp-guard enable	ARP ٩
arp-guard isolate-period	
arp-guard monitor-period	
arp-guard monitored-host-limit	٧ ў

arp-guard rate-limit	
arp-guard scan-threshold	
nfpp arp-guard enable	ARP
nfpp arp-guard isolate-period	
nfpp arp-guard policy	
nfpp arp-guard scan-threshold	



45.10 DHCP

45.10.1 show nfpp dhcp-guard hosts

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

100 20 120

120 ˄ ў ˇ è 100 ˄ ў ˚ ╖ ˇ 20 ˄ ў ˚

ˆ a ˇ ˚ a ~ Â

˄ ў ˇ Ľ remain-time(seconds) Ł 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)

ʒ

ʒ	
clear nfpp dhcp-guard hosts	˄ ў

ˆ 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

ˆ 1˜ Interface ѝ Global Â

ˆ 2˜ Status ╖ Â

ˆ 3˜ Rate-limit ѝˆ IP / MAC / ˜ ˇ Attack-threshold Â ľ - Ł Â

ʒ	
dhcp-gua(**pdxḣp ŏ dn**	˜

↓ ў Â

show nfpp icmp-gu ard hosts [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*ip-addr ess*]]]

statistics	↓ ў
vid	/ł
interface-id	↓
ip-address	IP

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ˈ Ruijie#**sho** XÍ $ ÅB _

45.11.2 show nfpp icmp-guard summary

Â

show nfpp icmp-guard summary

-	-

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Ruijie# show nfpp icmp-guard summary

ˆ 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	4/-/60	8/-/100
Gi 0/1	Enable	180	5/-/-	8/-/-
Gi 0/2	Disable	200	4/-/60	8/-/100

Maximum count of monitored hosts: 1000

Monitor period: 300s

ˆ 1˜ Interface ѝ Global Â

ˆ 2˜ Status ℸ Â

ˆ 3˜ Rate-limit ѝˆ IP / MAC / ˜ ˘ Attack-threshold Â ľ - Ł Â

ꝛ ᵸ

icmp-guard rate-limit	
nfpp icmp-guard enable	Э ICMP ╖
nfpp icmp-guard isolate-period	
nfpp icmp-guard policy	

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ʒ	
10.4	ʒ

45.11.3 show nfpp icmp-guard trusted-host

a ┘ ў Â

show nfpp icmp-guard trusted-host

-	-

ʒ

ʒ

┘ ў Â

```
Ruijie# show nfpp icmp-guard trusted-host
IP address     mask
---------      ------
1.1.1.0        255.255.255.0
1.1.2.0        255.255.255.0
Total' 2 record(s)
```

ʒ	
icmp-guard trusted-host	a ┘ ў

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ʒ	/ʃ	
	10.4	ʒ

45.12 IP

- **Â show nfpp ip-guard hosts**
- **Â show nfpp ip-guard summary**
- **Â show nfpp ip-guard trusted-host**

45.12.1 show nfpp ip-guard hosts

ɹ ў Â

show nfpp ip-guard hosts [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*ip-addres s*]]]

statistics	ɹ ў
vid	/ʃ
interface-id	ɻ
ip-address	IP

ʒ

Ruijie#**show nfpp ip-guard hosts statistics**

success fail total

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

100 20 120

' ľ 120 ɻ ў ˘ è 100 ɻ ў ╖˘ 20 ɻ ў Ŀ 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 L ÿ ˘ ‖ ATTACK L ÿ

IP ˘ ‖ SCAN L ÿ Â

ˆ 1˜ Interface ѝ Global Â

ˆ 2˜ Status ٦ Â

ˆ 3˜ Rate-limit ѝˆ IP / MAC /
˜ ˘ Attack-threshold Â Ľ - Ł Â

٣	
ip-guard attack-threshold	
ip-guard enable	IP ٦
ip-guard isolate-period	
ip-guard monitor-period	
ip-guard monitored-host-limit	٧ ў
ip-guard rate-limit	
nfpp ip-guard enable	Э IP ٦
nfpp ip-guard isolate-period	
nfpp ip-guard policy	

٧

٨	
10.4	٣

45.12.3 show nfpp ip-guard trusted-host

a ٧ ў Â

show nfpp ip-guard trusted-host

-	-

٣

ل ў Â

```
Ruijie# show nfpp ip-guard trusted-host
```

46 ACL

ЛЬЮ ʒ ˩ ЛЬЮ ʒ

	ⅈ
id	/ı Â ˩ IP ACL' 1-99˝ 1300-1999 IP ACL' 100-199˝ 2000-2699 MAC ACL' 700–799 ж ACL' 2700–2899
name	ACL ˧

cos cos	cos (0-7)
cos inner cos	tag cos
icmp-type	ICMP ˆ 0-255˜
icmp-code	ICMP ʒ ˆ 0-255˜
icmp-message	ICMP ɻ

Operator ѝ ˆ lt-

operator port[port]

	E	DSAP( )	⊨	18	S	ip	42
	F	SSAP( )					

destination-mac-address | **any**}][**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*]

Â Ѧ Ethernet-type cos '

access-list *id* {**deny** | **permit**} {*ethernet-type*| **cos** [*out*][**inner** *in*]} [**VID** [*out*][**inner** *in*]] {**s***ource source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any** } {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**time-range** *time-range-name*]

Â Protocol '

access-list *id* {**deny** | **permit**} **protocol** [**VID** [*out*][**inner** *in*]] {*source source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any** }{*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*]

Â Expert '

Internet Control Message Protocol (ICMP)'

access-list *id* {**deny** | **permit**} **icmp** [**VID** [*out*][**inner** *in*]] {*source source-wildcard* | **host** *source*

Permit	˥ ˘ Â
Source	ˆ ў ˜
source-wildcard	Â ˩ Л∪ a ˘ 0.255.0.32
protocol	IP /ˇ ˩ Л∪ EIGRP àGRE àIPINIP àIGMP à NOS à OSPF à ICMP à UDP à TCP à IP ˘ ≠ ˩ Л∪ ʒ IP 0-255 / Â ICMP/TCP/UDP Â
Destination	ˆ ў ˜
destination-wildcard	Â ˩ Л∪ a ˘ 0.255.0.32
fragments	ǂ
precedence	″I
precedence	″I ˆ 0-7˜
range	/
lower	/ Ю
upper	/ Э
time-range	ѡ
time-range-name	ѡ ɻ
tos	Ь
tos	Ь ˆ 0-15˜
icmp-type	ICMP ˆ 0-255˜
icmp-code	ICMP ʒ ˆ 0-255˜
icmp-message	ICMP ɻ
operator	ˆ lt- ˘ eq- ˘ gt- ˘ neq- a ˘ range- ˜
port [*port*]	/ˇ *range* ч / ˘ ѐ ˩ / Â
host *source-mac-address*	ў Â
host *destination-mac-address*	ў Â
VID *vid*	vid ˥
ethernet-type	Л∪
match-all	˥ *tcp flag* Æ
tcp-flag	tcp flag

ACL

३

ѝ ˘ ˝I ३ **access-list** ⊮

ㅓ Â ㅣ Л∪ ε a ㅣ '

IP ˆ 1-99ᵹ 1300-1999˜ ㅓ ⊥ Ȯ ˃ ˜ ㅓ p

- Â general-parameter-problem
- Â host-isolated
- Â host-precedence-unreachable
- Â host-redirect
- Â host-tos-redirect
- Â host-tos-unreachable
- Â host-unknown
- Â host-unreachable
- Â information-reply
- Â information-request
- Â mask-reply
- Â mask-request
- Â mobile-redirect
- Â net-redirect
- Â net-tos-redirect
- Â net-tos-unreachable
- Â net-unreachable
- Â network-unknown
- Â no-room-for-option
- Â option-missing
- Â packet-too-big
- Â parameter-problem
- Â port-unreachable
- Â precedence-unreachable
- Â protocol-unreachable
- Â redirect
- Â router-advertisement
- Â router-solicitation
- Â source-quench
- Â source-route-failed
- Â time-exceeded
- Â timestamp-reply
- Â timestamp-request
- Â ttl-exceeded
- Â unreachable

ÞO TCP

Â cmd
Â daytime
Â discard
Â domain
Â echo
Â exec
Â finger
Â ftp
Â ftp-data
Â gopher
Â hostname
Â ident
Â irc
Â klogin
Â kshell
Â login
Â nntp
Â pim-auto-rp
Â pop2
Â pop3
Â smtp
Â sunrpc
Â syslog
Â tacacs
Â talk
Â telnet
Â time
Â uucp
Â whois
Â www
Ю UDP ɻ ˘ UDP ɻ Л ɻ Л ɛ '
Â biff
Â bootpc
Â bootps
Â discard
Â dnsix
Â domain
Â echo

Â isakmp
Â mobile-ip
Â nameserver
Â netbios-dgm
Â netbios-ns
Â netbios-ss
Â ntp
Â pim-auto-rp
Â rip
Â snmp
Â snmptrap
Â sunrpc
Â syslog
Â tacacs
Â talk
Â tftp
Â time
Â who
Â xdmcp

Л Ethernet-type Ю'

Â aarp
Â arp
Â appletalk
Â decnet-iv
Â diagnostic
Â etype-6000
Â etype-8042
Â lat
Â lavc-sca
Â mop-console
Â mop-dump
Â mumps
Â netbios
Â vines-echo
Â xns-idp

1' IP

Ю IP й 192.168.1.64 - 192.168.1.127 ˘ è

'

```
Ruijie(config)# access-list 1 permit 192.168.1.64 0.0.0.63
```

2' IP

Ю IP DNS ICMP '

```
Ruijie(config)# access-list 102 permit tcp any any eq domain
Ruijie(config)# access-list 102 permit udp any any eq domain
Ruijie(config)# access-list 102 permit icmp any any echo
Ruijie(config)# access-list 102 permit icmp any any echo-reply
```

3' MAC

Ю ˘ MAC ѝ 00d0f8000c0c ў ѝ 100 Л∪ ˘ 1Â '

```
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

Ю Expert Extended ACL˘ ж ACL IP ѝ 192.168.12.3 з MAC ѝ 00d0.f800.0044 TCP Â

```
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
```

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٣	
show access-lists	
mac access-group	Э MAC

Л

٣

Л	
V10.0	˘ V10.0 Л∪Э

46.1.2 deny

(deny) ˘ Л∪ ¤ Â

1˜ IP

[*sn*] **deny** {*source source-wildcard* | **host** *sourc* **y**}

2˜ IP

[*sn*] **deny protocol** *source source-wildcard* *ation destination-* *precedence*] [**tos** *tos*] [**fragments**] [**range** *lo* *per*] [**time-** *ge-*

IP ⁸ '

Â **Internet Control Message P** **l** (IC

[*sn*] **deny icmp** {*source source-wi* | **o** *ource* | **any**} *on destination-wildcard* | **host** *destination* **y**} *mp* [[*ic* *-type* [ ] | [*icmp-message*]] [**precedence** *prec* *e*] **os** *time-range-name*]

Â **Transmission Control Protocol** (TCP)

[*sn*] **deny tcp** {*source source-wildcard* | **host** *Source* | **any**} [*operator* **port** [*port*]] {*destination destination-wildcard* | **host** *destination* | **any**} [*operator* **port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag*]

Â **User Datagram Protocol**

[*sn*] **deny protocol** [[**VID** [*out*][**inner** *in*]]] {*source source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any** } {*destinationdestination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**precedence** *precedence*

	flow-label	˘	0-1048575
	protocol	IPV6	ɻ ѝ

```
10 deny host 0013.0049.8272 any aarp
Ruijie(config-mac-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mac access-group mac1 in
 " ' Ю  IP  ACL  ˘  IP й 192.168.4.12  ў ˘
  1 Â  '
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
Ruijie(config-if)# ip access-group 34 in
```

˧

˧	
show access-lists	
ip access-group	IP ACL
mac access-group	MAC ACL
ip access-list	IP ACL Ьѫ
mac access-list	MAC ACL Ьѫ
expert access-list	ж ACL Ьѫ
permit	Ьѫ ˧

˩

˧

˩	
V10.0	˚ V10.0 ЛЪЭ˘ arp ˚ V10.2(3) ЛЪЭ Â

46.1.3 expert access-group

EXPERT ACL Â ˧ **no** ˩ Â

expert access-group {*id* | *name*} {**in** | **out**}

no expert access-group {*id* | *name*} {**in** | **out**}

ACL ३

¾

¾ ¬Л show expert access-lists ¾ Â

1' ж ACL'

```
Ruijie(config)# expert access-list extended exp-acl
Ruijie(config-exp-nacl)# show expert access-lists
expert access-list extended exp-acl
Ruijie(config-exp-nacl)#
```

2' ж ACL'

```
Ruijie(config)# expert access-list extended 2704
Ruijie(config-exp-nacl)# show expert access-lists
expert access-list extended 2704
Ruijie(config-exp-nacl)#
```

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¾	
show expert access-lists	ж

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V10.0	° V10.0 ЛЪЭ

46.1.5 ip access-group

é ˘ ¾ **ip access-group** Â ¾ no ¬ Â

ip access-group {*id* | *name*} {**in** | **out**}

no ip access-group { *id* | *name*} {**in** | **out**}

id	IP ¬ˆ 1-199˜ 1300-2699˜
name	IP ¬
in	
out	ÿ

ACL

ip access-group

Ю fastEthernet0/0 Э 120

```
Ruijie(config)# interface fastEthernet 0/0
Ruijie(config-if)#ip access-group 120 in
```

access-list	
show access-lists	
show ip access-list	IP 1-199 1300 – 2699 3000 3199

ACL a ↓˘ ACL ╗ Â
deny permit ¾ Â **show ip access-lists** ¾ ACL Â

1' ACL'

```
Ruijie(config)# ip access-list standard std-acl
Ruijie(config-std-nacl)# show ip access-lists
ip access-list standard std-acl
Ruijie(config-std-nacl)#
```

2 ' ACL'

```
Ruijie(config)# ip access-list extended 123
Ruijie(config-ext-nacl)# show ip access-lists
ip access-list extended 123
```

¾

¾	
show ip access-lists	IP

↓

¾

/I	
V10.0	˚ V10.0 Л↻Э

46.1.7 ip access-list resequence

¾ ip ACL ˘ IPV6 ACL˘ Â ¾
no

ip access-list resequence {*id* | *name*} **start-sn inc-sn**

no ip access-list resequence {*id* | *name*}

Id	ACL /I
name	ACL ↓
start-sn	/I
inc-sn	/I

start-sn' 10
inc-sn' 10

¾

¾ ⅃Ո **show access-lists** ¾ Â

ACL '

```
Ruijie# show access-lists ip
```

ѝ ACL ╗

```
Ruijie# ip access-list extended 102
Ruijie(config-ext-nacl)# list-remark this acl is to filter the host
192.168.4.12
Ruijie(config-ext-nacl)# show access-lists
ip access-list extended 102
deny ip host 192.168.4.12 any
1000 hits
this acl is to filter the host 192.168.4.12
Ruijie(config-ext-nacl)#
```

ֽ

ֽ	
show access-lists	
ip access-list	IP ⊮

ѵ

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V10.0	˚ V10.0 Л Э Â

46.1.9 MAC access-group

MAC ACL Â ֽ **no** ѵ Â

mac access-group {*id* | *name*}{**in** | **out**}

no mac access-group {*id* | *name*} {**in** | **out**}

id	MAC ⁄ˆ 700-799˜
name	MAC ѧ
in	
out	ÿ

ACL

ֽ

¾ ⅃Ո **show running-config** ¾ Â

Ю access-list accept_00d0f8xxxxxx_only Gigabit 1 Э'

```
Ruijie(config)# interface GigaEthernet 1/1
Ruijie(config-if)# mac access-group accept_00d0f8xxxxxx_only in
```

¾

¾	
show access-group	Э ACL Â

⅄

¾

⅄	
V10.0	˚ V10.0 ՈЭ

46.1.10 MAC access-list

¾ MAC ACL˘ Â ¾ **no** ACL

mac access-list extended {*id* | *name*}

no mac access-list extended {*id* | *name*}

Id	MAC ⅄ˆ 700-799˜
name	MAC ⅃

MAC ACL

¾

¾ ⅃Ո **show mac access-lists** ¾ Â

1' MAC ACL'

```
Ruijie(config)# mac access-list extended mac-acl
Ruijie(config-mac-nacl)# show mac access-lists
mac access-list extended mac-acl
```

2' MAC ACL'

```
Ruijie(config)# mac access-list extended 704
```

```
Ruijie(config-mac-nacl)# show mac access-lists
mac access-list extended 704
```

show mac access-lists	mac

V10.0	V10.0

46.1.11 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)#
```

ʒ	
show access-lists	
ip access-list	ip ACL Ⱶ
ipv6 access-list	IPV6 ACL Ⱶ
deny	Ⱶ Ⱶ ACL
permit	Ⱶ Ⱶ ACL

ʃ

ʒ	ʃ	
	V10.0	˚ V10.0 ɅЪЭ

46.1.12 permit

(**permit**) ˚ Ʌъ ᾱ Â

1) IP

[*sn*] **permit** {*source source-wildcard* | **host** *source* | **any**}

2) IP

[*sn*] **permit protocol** *source source-wildcard destination destination-wildcard* [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*]

IP 8 '

Â **Internet Control Message Protocol** (ICMP)

[*sn*] **permit icmp** {*source source-wildcard* | **host** *source* | **any**} {*destination destination-wildcard* | **host** *destination* | **any**} [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**time-range** *time-range-name*]

Â **Transmission Control Protocol** (TCP)

[*sn*] **permit tcp** {*source source-wildcard* | **host** *Source* | **any**} [*operator* **port** [*port*]] {*destination destination-wildcard* | **host** *destination* | **any**}[*operator* **port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag*]

Â **User Datagram Protocol** (UDP)

[*sn*] **permit udp** {*source source -wildcard*|**host** *source* |**any**} [*operator* **port** [*port*]] {*destination destination-wildcard* |**host** *destination* | **any**} [**operator port** [*port*]]

[**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*]

3) MAC

[*sn*] **permit** {**any** | **host** *source-mac-address*} {**any** | **host** *destination-mac-address*} [*ethernet-type*][**cos** [*out*] [**inner** *in*]]

4) Expert

[*sn*] **permit** [**protocol** | [*ethernet-type*][**cos** [*out*] [**inner** *in*]]] [**VID** [*out][***inner** *in]*] {*source source-wildcard* | **host** *source* | **any**} {**host** *source*-**mac**-*address* | **any** } {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**precedence** *precedence*] [ ] [

[**precedenceprecedence**] [**tos** *tos*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*]

Â **Address Resolution Protocol** (ARP)

[*sn*] **permit arp** {**vid** *vlan-id***}** [**host** *source-mac-address* | **any**] [**host** *destination –mac-address* | **any**] {*sender-ip sender-ip–wildcard* | **host** *sender-ip* | **any**} {*sender-mac sender-mac-wildcard* | **host** *sender-mac* | **any**} {*target-ip target-ip–wildcard* | **host** *target-ip* | **any**}

Â **Internet Control Message Protocol** (ICMP)

[*sn*] **permit icmp** {*source-ipv6-prefix* / *prefix-length* | **any** *source-ipv6-address* | **host**} {*destination-ipv6-prefix* / *prefix-length*| **host** *destination-ipv6-address* | **any**} [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**dscp** *dscp*] [**flow-label** *flow-label*][**fragments**] [**time-range** *time-range-name*]

Â **Transmission Control Protocol** (TCP)

[*sn*] **permit tcp** {*source-ipv6-prefix* / *prefix-length* | **host** *source-ipv6-address* | **any**} [*operator* **port** [*port*]] {*destination-ipv6-prefix* / *prefix-length* | **host** *destination-ipv6-address* | **any**} [*operator* **port** [*port*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag*]

Â **User Datagram Protocol** (UDP)

[*sn*] **permit udp** {*source-ipv6-prefix* / *prefix-length* | **host** *source-ipv6-address* | **any**} [*operator* **port** [*port*]] {*destination-ipv6-prefix* / *prefix-length* | **host** *destination-ipv6-address* | **any**} [*operator* **port** [**port**]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*]

ЛЬЮ deny	-

¾ ACL Ю

ACL Ю ACL

1' Ю Expert Extended ACL˘ ж ACL IP й 192.168.4.12 з MAC й 001300498272 TCP Â

```
Ruijie(config)# expert access-list extended exp-acl
Ruijie(config-exp-nacl)# permit tcp host 192.168.4.12 host
0013.0049.8272 any any
Ruijie(config-exp-nacl)# deny any any any any
```

```
Ruijie(config-exp-nacl)# show access-lists
expert access-list extended exp-acl
10 permit tcp  host  192.168.4.12 host 0013.0049.8272 any any
20 deny any any any any
Ruijie(config-exp-nacl)#
```

2' Ю IP ACL ˘ IP й 192.168.4.12 ў TCP й 100 Ь˘ 1Â

```
Ruijie(config)# ip access-list extended 102
Ruijie(config-ext-nacl)# permit tcp host 192.168.4.12 eq 100 any
Ruijie(config-ext-nacl)# show access-lists
ip access-list extended 102
10 permit tcp host 192.168.4.12 eq 100 any
Ruijie(config-ext-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ip access-group 102 in
Ruijie(config-if)#
```

3' Ю MAC ACL ˘ MAC й 0013.0049.8272 ў й 100 Лu ˘ 1Â

```
Ruijie(config)# mac access-list extended 702
Ruijie(config-mac-nacl)# permit host 0013.0049.8272 any aarp
Ruijie(config-mac-nacl)# show access-lists
mac access-list extended
10 permit host 0013.0049.8272 any aarp702
Ruijie(config-mac-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mac access-group 702 in
```

4' Ю ip ACL ˘ IP й 192.168.4.12 ў ˘ 1Â '

```
Ruijie(config)# ip access-list standard std-acl
Ruijie(config-std-nacl)# permit host 192.168.4.12
Ruijie(config-std-nacl)# show access-lists
ip access-list standard std-acl
10 permit host 192.168.4.12
Ruijie(config-std-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ip access-group std-acl in
```

5' Ю IPV6 ACL ˘ IP й 192.168.4.12 ў ˘ 1Â '

```
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

V10.0	

Э ACL˘ a Э 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.
```

ʒ

acl *id* *name* ACL

```
Ruijie# show access-lists n_acl
ip access-list standard n_acl
Ruijie# show access-lists 102
ip access-list extended 102
Ruijie# show access-lists
ip access-list standard n_acl
ip access-list extended 101
mac access-list extended mac-acl
expert access-list extended exp-acl
```

ʒ

```
Ruijie# show expert access-group interface gigabitethernet 0/2
expert access-group ee in
Applied On interface GigabitEthernet 0/2.
```

expert access-list	Expert ACL

V10.0	V10.0

46.2.4 show ip access-group

IP ACL

show ip access-group[**interface** <*interface*>]

<*interface*>	

IP ACL IP ACL

```
Ruijie#
```

V10.0	V10.0

46.2.5 show mac access-group

MAC

show mac access-group[**interface** <*interface*>]

<*interface*>	

MAC ACL MAC ACL

```
Ruijie# show mac access-group interface gigabitethernet 0/3
mac access-group mm in
Applied On interface GigabitEthernet 0/3.
```

mac access-list	MAC ACL

V10.0	V10.0

47 VACL

47.1

Vlan access map ч ˘ è *map_name* ў a ┘ ˘ *map_sn* ˘ ┘Л∪ Â ┘ ┘ mapˆ ˜ ┘ ў map Â

1˜ **vlan access map** Э mapˇ a *map_sn* Ạˇ map з ┘ ў map map *map_sn* Э ╗ *10*

2˜ a *map_sn* Ạˇ **vlan access map**˘ ┘ *map_name* *Map_nam*e ˘ ў map ’

3˜ map_sn Ạˇ **vlan access mapˇ** mapˈ map ў map a map Ạˇ ў map ╟ ˘ a ’

4˜ ў map ┘Л∪ 6553 map Â

47.1.1 action forward/drop/redirect

map actions ╟ ˘ vacl Ю Ю ३ Â ३ no ↓ map actions ╟ ˘ ╟ forward Â

action forward

no action forward

map actions ╟ ˘ vacl Ю Ю ३ Â ३ no ↓ map actions ╟ ˘ ╟ forward Â

action drop

no action drop

map actions ╟ ˘ vacl Ю Ю ३ Â ३ no ↓ map actions ╟ ˘ ╟ forward Â

action redirect { **GigabitEthernet** | **Aggregateport** | **FastEthernet** } { **port_id** }

no action redirect{**GigabitEthernet** | **Aggregateport** | **FastEthernet** } {***port_id*** }

actions forward	३ ’
actions drop	३ ’
actions redirect	’

map ╟ ˘ ╟ forward Â map ↓ ╟ Â

¾ vacl

```
Ruijie(config-access-map)# action forward
Ruijie(config-access-map)# action drop
Ruijie(config-access-map)# action redirect gigabitEthernet 0/50
```

¾

¾	
-	-

↓

¾

↓	
-	-

47.1.2 Match ip/mac address

ip acl *mac acl* **vlan access map** Э˘ ↓ *ip acl* *mac acl* **vlan access map** Э ˘ ¾ no Â

match ip address { *acl_name* | *acl_id* }+

no match ip address { *acl_name* | *acl_id* }+

match mac address { *acl_name* | *acl_id* }+

no match mac address { *acl_name* | *acl_id* }+

acl_name	↓ acl;
acl_id	numbered acl;

¾ Config-access-map ˘ vacl

~	+ acl, 8 acl Â

&	Â map ৸ ip acl map acl˘ ч ৸ è ˘ a '
	Â map ৸ 8 acl'
	Â map a a acl'
	Â map a ace acl˘ acl'
	Â map ip acl (mac acl)˘ ¨Ą ip acl (mac acl)˘ ৶ ip acl (mac acl) ip acl (mac acl) ৶ '
	Â map ip acl (mac acl)˘ ¨Ą mac acl (ip acl)˘ ¨I ╟ ip acl (mac acl)˘ ৶ mac acl (ip acl)'

Ю ˘ map match '

```
Ruijie(config)# vlan access-map dd
Ruijie(config-access-map)# match ip address 10 20 sp1 30 sp2
Ruijie(config-access-map)# exit
Ruijie(config)# vlan access-map dd 20
Ruijie(config-access-map)# match mac address 710 720 m1 760
Ruijie(config-access-map)# exit
Ruijie(config)#
```

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-	-

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-	-

47.1.3 vlan access map

map˘ ৡ Â map˘ ৡ no Â

Vlan access map *map_name* [*map_sn*]

no Vlan access map *map_name* [*map_sn*]

map_name	map ў ˘ a 100 ˘ a ↓ '
map_sn	map ˘ [0 - 65535]˘ ↓ '

¾

Ю **vlan access map**'

```
Ruijie(config)# vlan access-map ddd 20
Ruijie(config-access-map)#
```

¾

¾	
-	-

↓

¾

/\	
-	-

47.1.4 vlan filter

ў map vlan Э˘ ¾ Â ↓ ў map vlan Э ˘ ¾ no Â

vlan filter *map_name* **vlan-list** *vlan_id*

no vlan filter *map_name* **vlan-list** *vlan_id*

map_name	ў map Â
vlan_id	vlan id Â

¾

```
action: forward
Vlan access-map aa  20
match ip address:   10, 20, 30, sp1, sp2, 60, 50, 80,
action: drop
Vlan access-map dd  20
match mac address:   710, 720, m1, 760,
action: forward
Ruijie(config)#
```

2' HO **show vlan access map** { *map_name* } '

```
Ruijie(config)# show vlan access-map dd
Vlan access-map dd  20
match mac address:   710, 720, m1, 760,
action: forward
Ruijie(config)#
```

?

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-	-

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d M	

48 QOS

48.1

QoS ˘ QoS ЛЬЮ '

Â 1 policy-map’

Â policy-map ˩ Лъ class-map’

Â class-map 1 ACL˘ ACL ACE ε ˩
’

Â Э ACE ÿ “ ACL” ⁸ Â

ЮЎ QoS ╖ Â ˩ Â Policy Map
Э˘ ˘ QoS ╖ Â
QoS ╖ ˘ ā Policy Map ˘ ѝ Off
˩ Â ЛЬЮ ѝ QOS '

CoS	0
	8
	WRR
QueueWeight	1:1:1:1:1:1:1:1
WRR Weight Range	1:15
DRR Weight Range	1:15
	No Trust

Cos

Cos

CoS	
0	1
1	2
2	3
3	4
4	5
5	6
6	7
7	8

CoS to DSCP

CoS to DSCP

CoS	DSCP
0	0
1	8
2	16
3	24
4	32
5	40
6	48
7	56

IP-Precedence to DSCP

IP-Precedence to DSCP

IP-Precedence	DSCP
0	0
1	8
2	16
3	24
4	32
5	40
6	48

48.2

48.2.1 class maps

ACL'

ip access-list {**extended** | **standard**} { *acl-id* | *acl-name* }

mac access-list extended {*acl-id* | *acl-name*}

expert access-list extended {*acl-id* | *acl-name*}

access-list acl-id ৡˆ ACL ˜

class mapˇ class map '

[**no**] **class-map** *class-map-name*

class map ৭ '

[**no**] **match access-group** *acl-name*| *acl-id*

acl-name	ACL ৸
acl-id	ACL id
class-map-name	class map ৸
no class-map *class-map-name*	class map
no match access-group *acl-name*| *acl-id*	৭

ৡ ` !v' /C2 0.03812 5[F 10.02 0 0 10.02 78.36 275.6603 Tm [<0A51>-6<04B81FF514E3

```
Ruijie(config)# class-map cm
  5'      ACL
Ruijie(config-cmap)# match access-group me
  6'      class-map
Ruijie(config-cmap)# exit
```

show mac access-lists	-
show ip access-lists	-
show class-map	-

-	-

48.2.2 drr-queue bandwidth

DRR

drr-queue bandwidth *weight1...weight8*

no drr-queue bandwidth

weight1...weight8	
no	

```
Ruijie(config)# drr-queue bandwidth 1 2 3 4 5 6 7 8
```

show mls qos queueing	-

48.2.4 mls qos cos

CoS

mls qos cos *default-cos*

no mls qos cos

default-cos	ं 0˙ 7
no	

CoS ं 0

३

Ruijie(config)# **interface gigabitethernet** *1/1*
Ruijie(config-if)# **mls qos cos** *7*

३	
show mls qos interface *interface-id*	-

४

४	
-	-

48.2.5 mls qos map cos-dscp

CoS DSCP

mls qos map cos-dscp *dscp1...dscp8*

no mls qos map cos-dscp

Ruijie(config)# **mls qo map cos-dscp** *8 10 16 18 24 26 32 34*

-	-

show mls qos maps dscp-cos maps,dscp-cos maps ip-prec-dscp maps

-	-

48.2.7 mls qos map ip-prec-dscp

ippre DSCP

mls qos map ip-prec-dscp dscp1...dscp8

no mls qos map ip-prec-dscp

dscp	a a
no	

```
Ruijie(config)# mls qo map ip-prec -dscp 8 10 16 18 24 26 32 34
```

	dscp-cos maps,dscp-cos maps

show mls qos maps

mls qos scheduler [**sp** | **rr** | **wrr** | **drr**]

no mls qos scheduler

sp	″l
rr	
wrr	
drr	
no	

й wrr

ʒ

Ruijie(config)# **mls qos scheduler sp**

ʒ	
show mls qos scheduler	-

ʌ

ʌ	
-	-

48.2.9 mls qos trust

Qos

mls qos trust [**cos** | **dscp** | *ip-precedence*]

no mls qos trust

cos	Qos й CoS
dscp	Qos й DSCP

	ip-precedence	Qos ѝ IP-PRE
	no	

a

ৡ

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mls qos trust cos
```

ৡ

ৡ	
show mls qos interface *interface-id*	-

ৡ

/I	
-	-

48.2.10 policy maps

policy map˘ policymap

[**no**] **policy-map** *policy-map-name*

policy map class-map ᚋ , ᚋ

[**no**]

[

class-map-name	class map ¸
no class *class-map-name*	¡
new-dscp	DSCP ' ¼ a ¸ a ¸
rate-bps	¸ ˘ Æ kbps
burst-byte	¸ ˘ Æ kbyte

priority-queue	й SP
no priority-queue	й WRR

й WRR

ʒ

Ruijie(config)# **no priority-queue**

ʒ	
show mls qos queueing	-

ʌ

ʌ	
-	-

48.2.12 priority-queue cos-map

CoS

priority-queue cos-map *qid cos0* [*cos1* [*cos2* [*cos3* [*cos4* [*cos5* [*cos6* [*cos7*]]]]]]]

no priority-queue cos-map

qid

Ruijie(config)# **priority-queue cos-map** *1 0 1*

٦	
show mls qos queueing	-

a ٨ a ٨˘

٨	
-	-

48.2.13 service-policy

policy map Э

service-policy {**input** | **output**} *policy-map-name*

no service-policy {**input** | **output**}

policy-map-name	policymap ٨
no	policy map Э

٦ > Ч A ٦ Ɒ Y DŴ R ٧

WRR

wrr-queue bandwidth *weight1 ... weightn*

no wrr-queue bandwidth

weight1...weightn	ӣ n ˘ n ৸
no	

weight1: ...: weightn = 1:..:1

ৡ

Ruijie(config)# **wrr-queue bandwidth** *1 2 3 4 5 6 7 8*

ৡ	
show mls qos queueing	-

৸ a ৶ a ৶˘ Â

৸	
-	-

48.3

48.3.1 show class-map

class map

show class-map [*class-name*]

class-name	class map ৶

class map

	Ruijie# **show class-map**

	-	-

	-	-

48.3.2 show policy-map

QoS policy map [class class-name]

show policy-map [*policy-name* [**class** *class-name*]]

	policy-name	policy name
	class-name	class map

	policy name
	Ruijie# **show policy-map**

	-	-

	-	-

48.3.3 show mls qos interface

QoS

show mls qos interface *interface-id* [**policers**]

interface-id	
policers	police

QOS

Ruijie# **show mls qos interface fastEthernet** *0/1*

-	-

-	-

48.3.4 show mls qos maps

dscp-cos maps,dscp-cos maps 2

Ruijie# **show mls qos maps**

-	-

-	-

48.3.5 show mls qos queueing

QoS (cos-to-queue map,wrr weight,drr weight)

show mls qos queueing

-	-

Ruijie# **show mls qos queueing**

-	-

-	-

48.3.6 show mls qos rate-limit

8

show mls qos rate-limit [**interface** *interface-id*]

interface	interface-id rate-limit

Ruijie# **show mls qos rate-limit**

-	-

-	-

48.3.7 show mls qos scheduler

show mls qos scheduler

-	-

Ruijie# **show mls qos scheduler**

-	-

-	-

49 Voice VLAN

49.1

49.1.1 voice vlan

Voice VLAN˘ VLAN ŕ Voice VLAN Â ┘Л┐ ३ **no** Voice VLAN ╖ Â

voice vlan *vlan-id*

no voice vlan

vlan-id	Voice VLAN ID Â

Â

३

३ Voice VLAN ╖ ˘ ┘ Voice VLAN ID Â

1˜ Voice VLAN ˘ ″I VLAN Â

2˜ VLAN 1 VLAN˘ ˘ VLAN 1 a ŕ Voice VLAN Â

3˜ a VLAN ┘ ŕ Voice VLAN б Super VLAN Â

4˜ Э 802.1x VLAN ╟ ╖ ˘ ŕ ╖ ˘ a Ю VID ŕ Voice VLAN ID Â

5˜ a RSPAN Remote VLAN б Voice VLAN ┘ 1 VLAN˘ ┘ ╖ б Voice VLAN ╖ Â

1' Voice VLAN ╖ ˘ VLAN2 ŕ Voice VLAN Â

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

३	३	

show voice vlan	Voice VLAN б Â

ʃ

ʒ	
10.4	ʒ

49.1.2 voice vlan aging

Voice VLAN Â ʅ Ʌʊ ʒ **no** Â

voice vlan aging *minutes*

no voice vlan aging

minutes	Voice VLAN Â

minutes ѝ 1440† Â

ʒ

ʅ Э Voice VLAN ˘ ˘ ÿ ˘ ÿ Voice VLAN Â

& ╟ Â

1' Voice VLAN ѝ 10†

```
Ruijie(config)# voice vlan aging 5
```

ʒ	
show voice vlan	Voice VLAN б Â

ʃ

ʒ	
10.4	ʒ

49.1.3 voice vlan cos

Voice VLAN CoS Â ┘Л∪ ३ **no**

Â

voice vlan cos *cos-value*

no voice vlan cos

cos-value	Voice VLAN CoS Â

cos-value Dz « Ȯ ⅋ o ̂ i ü ℵ õ P

dscp-value	Voice VLAN DSCP Â

dscp-value и 46 Â

¦

Voice VLAN CoS б DSCP "I ˘
Â

1' Voice VLAN "I ˘ DSCP и 40 Â

```
Ruijie(config)# voice vlan dscp 40
```

¦	
show voice vlan	Voice VLAN б Â

Л

Л	
10.4	¦

49.1.5 voice vlan enable

Ю ¦ Voice VLAN ╖ Â Л Л∪ ¦ **no** Voice VLAN ╖ Â

voice vlan enable

no voice vlan enable

Ю Voice VLAN ╖ Â

¦

¦ Voice VLAN ╖ ˘ Voice VLAN ╖ Л Э Â
Access Port ãTrunk Port ãHybrid Port ãPrivate VLAN ў ãPrivate VLAN

Voice VLAN

1˜ Voice V ˘
╗ Voice VLAN˝ N ╗ Â
2˜ ╟ ˘
native VLAN ѝ Voi
~
3˜ Trunk Port/Hybrid ˘
˝I Voice VLAN ÿ VL ˘ e
VLAN ╗ ˘ Л∪ ╗
a Vo Â

1˜ Voice VLAN ╗ Л˘ a ╟
⌈ ˘ ⌈ ˘ ˝I ╗ Â
& 1
2˜ ╟ Ю˝ a ʒ ╗ Voice VLAN
ÿ Voice VLAN Â

960 10.02 147.0 G 0 Td<0003>Tj0.2 w /C2_0 1 Tf78f10496.9 0 10.0Tc <45E-E>6<459412[<0F>.503

३

ѝ б ˇ ˩Л Voice VLAN Â
Л MAC ˇ MAC ˩
Voice VLAN OUI ˇ Voice VLAN ˇ Â

~ a Voice VLAN ˩ Ь Â
ˇ Voice VLAN Â

& ЮЎ untagged Voice VLAN tag
MAC ˇ è Voice VLAN tag ˇ
VLAN ˇ a ˩ Voice VLAN /
Â

1' Voice VLAN Â

```
Ruijie(config)# voice vlan security enable
```

३	
show voice vlan	Voice VLAN б Â

Л

Л	
10.4	३

49.2

49.2.1 show voice vlan

Voice VLAN б ˇ Voice VLAN ╖ Â

show voice vlan

३

३ ˘ ┘

50

50.1

50.1.1 rgos-security compatible

Ю˘ ╖ й RGOS ˘ ३ **rgos-security compatible** ' RGOS ˘ no ३ '

rgos-security compatible

no rgos-security compatible

Ю˘ ╖ й RGOS

३

~ ३ Л˘

1' ╖ й RGOS '

```
Ruijie(config)#no gos-security compatible
```

३	

Л

Л	
10.4	३

51.1.2 vrrp description

ҙ ѝ VRRP ˘ è **no** Â

vrrp *group* **description** *text*

no vrrp group description

group	VRRP Л
text	VRRP

Ю˝ Э VRRP ╖ Â VRRP ╖ ˘ ≠ VRRP Â

ҙ

ѝ VRRP ˘ ┘Л Ш╡ VRRP Â

Ю Л Е0 <34j/TT0 14219A345C4>6<30184 0 Td( )T_0 1 Tf1.19

vrrp *group* **ip** *ipaddress* [**secondary**]

no vrrp *group* **ip** *ipaddress* [**secondary**]

group	VRRP ٨
ipaddress	IP
secondary	IP

ЮЎ Э VRRP ╖ Â

٦

a ╖IP —ضذف Ị È ḍ ‘ Ȯ Â ╖ تمد

no vrrp *group* **preempt** [**delay**]

group	VRRP /ſ
delay *seconds*	˩ ˘ ⱵⱵ Master Â ѝ 0 Â

Ю˝ Э VRRP ╗ Â VRRP ╗ ˘ VRRP ´ Ю Â

३

VRRP ´ Ю˝ ″I Master ″I ˘ ´ ѝ VRRP ў Â VRRP ´ Ю˝ ″I Master ″I ˘ ≠ a ´ ѝ VRRP ў ÂVRRP Л∪ IP Ю˝ ´ ⱵⱵ a ˘ ѝ VRRP ε ″I ˘ ╟ ѝ VRRP ў Â

Ю ˘ VRRP ″I (200) ў ″I ˘ 15 /ſ ´ ѝ ў Â

```
vrrp 1 preempt delay 15
vrrp 1 priority 200
```

३	

Ruijie(config-if)# **vrrp** *group* **ă** [Y₽@pPDP<

group	VRRP Л
level	VRRP ″I

Ю˝ Э VRRP ╖ Â VRRP ╖ ˘ VRRP è ″I ѝ 100 Â

ꝛ

ꝛ ╟ VRRP ″I Â

Ю VRRP 1 ″I ѝ 254 Â

```
vrrp 1 priority 254
```

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ꝛ	
Ruijie(config-if)# **vrrp** *group* **ip** *ipaddress* [**secondary**]	VRRP ╖ IP
Ruijie(config-if)# **vrrp** *group* **preempt** [**delay** *seconds*]	VRRP ´

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51.1.6 vrrp timers advertise

ꝛ ў VRRP ˘ è no Â

vrrp *group* **timers advertise** *interval*

no vrrp *group* **timers advertise**

group	VRRP Л
interval	VRRP (Лυ ѝ æ)

Ю˝ Э VRRP ╖ Â VRRP ╖ ˘ ў ѝ 1 Â

३

VRRP ў ˘ Л VRRP

VRRP ″I

Ю VRRP 1 Э ˝ ╖ Â

```
vrrp 1 timers learn
```

३	
Ruijie(config-if)# **vrrp** *group* **ip** *ipaddress* [**secondary**]	VRRP ╖ IP
Ruijie(config-if)# **vrrp** *group* **timers advertise** [**msec**] *interval*	VRRP

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51.1.8 vrrp track

VRRP **vrrp** *group* **track** *interface-type number* ३˘ VRRP IP ╖ ˘ **vrrp** *group* **track** *ip-address* ३˘ **vrrp** *group* **track bfd** BFD IP˝ è **no** ╖ Â ३ Ю'

vrrp *group* **track** [*interface-type number* | **bfd** *interface-type interface-number ipv4-addess*] [*priority*]

vrrp *group* **track** *ipv4-address [***interval** *interval-value] [***timeout** *timeout-value] [priority]*

no vrrp *group* **track** *interface-type number*

no vrrp *group* **track** *ipv4-address*

group	VRRP ⁄
interface-type	
number	⁄
ipv4-addres	IPv4 ˘ ˘ bfd Â
interval-value	Â Æ ѝ Â a ˘ ѝ 3 Â
timeout-value	⁄ Â ˘ ˘ ѝ a ↓ Â Æ ѝ Â a ˘ ѝ 1 Â
priority	↓ è VRRP ¨I ↓ Â a ˘ ѝ 10 Â

Ю˘ Э VRRP ╖ Â VRRP ╖ ˇ

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	RGOS 10.4	-

51.2 VRRP

51.2.1 debug vrrp

३ VRRP à VRRP Y ˝ à VRRP Л ˘ è **no** ℸ Â

debug vrrp

no debug vrrp

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Ю˝ Â

३

Ю ˘ VRRP Â

```
Ruijie# debug vrrp
Ruijie#
VRRP: Grp 1 Advertisement priority 120, ipaddr 192.168.201.213
VRRP: Grp 1 Event - Advert higher or equal priority
%VRRP-6-STATECHANGE: FastEthernet 0/0 Grp 1 state Master -> Backup
VRRP: Grp 1 Advertisement from 192.168.201.213 has invalid virtual
G!5@Uñ @!©„ Ā€°'Ó Z G!5@Uñ @!©„ Ā€°'Ó Z
address 192.168.1.10 Tw 0 -1.563 TD8 90nt p2427_0 1 Tf0 Tc<11T8ir7ertisemer
```

Ruijie# **debug vrrp state** VRRP 'Ô

debug vrrp packets

no debug vrrp packets

-	-

debug vrrp state

no debug vrrp state

-	-

३ VRRP Â

show vrrp [**brief** | *grou*p]


```
Ruijie# show vrrp brief
Interface   Grp Pri Time  Own Pre State   Master addr     Group addr
FastEthernet 0/0   1   100   -    -   P  Backup  192.168.201.213
192.168.201.1
FastEthernet 0/0   2   120   -    -   P  Master  192.168.201.217
192.168.201.2
```

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Ruijie(config-if)# **vrrp** *group ip ipaddress* [**secondary**]	VRRP ╖ IP

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51.3.2 show vrrp interface

¾ Э VRRP Â

show vrrp interface *type number* [**brief**]

type	
number	Л
brief	┘ Â

Ю Л∪ E1/0 Э VRRP

```
Ruijie# show vrrp interface fastethernet 0/0
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 , pritority is 120
Master Advertisement interval is 3 sec
Master Down interval is 9 sec
FastEthernet 0/0 - Group 2
State is Master
Virtual IP address is 192.168.201.2 configured
Virtual MAC address is 0000.5e00.0102
Advertisement interval is 3 sec
Preemption is enabled
min delay is 0 sec
Priority is 120
Master Router is 192.168.201.217 (local), priority is 120
Master Advertisement interval is 3 sec
Master Down interval is 9 sec
```

Ruijie(config-if)# **vrrp** *group* **ip** *ip address* [**secondary**]	VRRP IP

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rldp detect-max *num*

no rldp detect-max

ऻ RLDP ˘ RLDP Â

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```
Ruijie(config)# rldp enable
```

३	
rldp port	RLDP ╖

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52.1.4 rldp port

३ rldp ˘ ᴊ Â

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	⌐

Â

३ Â

ऻ RLDP Ю˘ RLDP Â

Ю fas 0/1 Э rldp ˘ ѝ ˘ ѝ

Â

```
Ruijie(config)# interface fas 0/1
Ruijie(config-if)# rldp port loop-detect block
```

¾

¾	
rldp enable	rldp ¾

¼

¾

¼	
-	-

52.1.5 rldp reset

¾ **rldp shutdown** **disable** rldp Â

rldp reset

-	-

¾ Â

Ю ¾

```
Ruijie# rldp reset
```

¾

¾	
rldp enable	Rldp ¾

¼

¾

¼	
-	-

52.2

52.2.1 show rldp

rldp Â

show rldp [**interface** *interface-id*]

Interface-id	

৲ EXEC

৲

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-	-

52.2.2 debug rldp

rldp ᒪ Â ৲ no Â

debug rldp [**packet | event | error**]

undebug rldp [**packet | event | error**]

packet	rldp Â
event	ᒧ Â
error	Â

EXEC

-	-

-	-

53 TPP

53.1

53.1.1 topology guard

ৡ ЮЎ topology guard ৡ ╖ Â

ৡ

ℸ ˘ ৡ no ℸ Â

[**no**] **tp-guard port enable**

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ৡ ৡ

३ ३

३ tpp Â

Ю ℸ '

```
Ruijie# show tpp
```

३	
topology guard	ℸ

✓

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54

54.1

54.1.1 cd

Â

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

filesystem	Â
directory	

flash Ю

cd Â Â a
Â pwd Â

1' й usb0

```
Ruijie# cd usb0:/
```

2' й sd´

```
Ruijie# cd sd0:/
```

pwd	

54.1.2 copy

ÿ ˚ Â

copy *source-url destination-url*

source-url	˚ URL Â ˚ Э Ю ╟ ˘ ┘ Л Ц Â
destination-url	˚ URL Â ˚ Э Ю ╟ ˘ ┘ Л Ц Â

ϡ

```
Ruijie#copy tftp://192.168.201.54/rgos.bin flash:/
  2' Э ˚ tftp Ł
Ruijie#copy flash:/rgos.bin tftp://192.168.201.54/rgos.bin
  3' xmodem Ю ˚
Ruijie# copy xmodem: flash:/config.text
  4' ˚ U
Ruijie#copy flash:/config.text usb0:/config.text
  5' ˚ ÿ
Ruijie#copy flash:/config.text slave:/config.text
  6' ˚ ÿ flash sd´
Ruijie#copy flash:/rgos.bin sd0:/rgos.bin
  7' ˚ ÿ U sd´
Ruijie#copy usb0:/config.text sd0:/config.text
  8' ˚ ÿ sd´ U
Ruijie#copy sd0:/config.text usb0:/config.text
```

३

३	
del	˚
rename	˚ ⅃
dir	˚

ᗑ

३

ᗑ	

54.1.3 delete

˚ Â

delete *url*

url	˚ url Â

३

url Æ ˚ Â ३ Э ˚ ˘ URL flash:/
usb0:/ usb1:/ slave:/ Â url a ˘ ˚ Э ˚ Â

~ a .

1' Ю tmpfile ˚

```
Ruijie# delete tmpfile
```

2' ÿ Э rgos.bin.bak ˚

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

3' sd´ Э aaa.bin ˚

```
Ruijie# delete sd0:/aaa.bin
```

३

३	
copy	˚
dir	Э ˚

И

И	
३	

54.1.4 dir

Ю ˚ Â

dir [*filesystem:*][*directory*]

filesystem	˚ ˚ ˘ ":"
directory	˚

Ю ˚

३

Ю ˚ ˘ Ю

˚ Â

~ a .

1 Â ٦

/\	

54.1.5 mkdir

mkdir *directory*

directory	⸗

⸗ «

54.1.6 rename

╟ ˚ ˚ ˚

rename *url1 url2*

url1	╟ ˚ URL Â
url2	˚ URL

?

55

55.1 CPU

55.1.1 cpu-log

CPU , ↓ Л↓ **cpu-log** Â

cpu-*log* *log-limit low_num high_num*

log-limit	↰
low_num	CPU æ
high_num	CPU

Ю ѝ 100%˜ æ ѝ 90% Â

↰ Â

↰ ↓ Л↓ CPU æ ˘ CPU
Ю ˘ CPU , ↓ ' CPU
æ æ Л , , CPU Ю ˘ ↓
CPU ↓ ѝ æ æ Â

Ю CPU æ ѝ 70%˜ CPU ѝ
80% Â

```
ruijie(config)# cpu-log log-limit 70 80
  CPU          80%       Ю    '
Oct 20 15:47:01 %SYSCHECK-5-CPU_USING_RATE: CPU utilization in one
minute : 95%˘ Using most cpu's task is ktimer : 94%
  CPU      æ  70%       Ю    '
Oct 20 15:47:01 %SYSCHECK-5-CPU_USING_RATE: CPU
utilization in one minute :68%˘ Using most cpu's task
is ktimer : 60%
Oct 20 15:47:01 %SYSCHECK-5-CPU_USING_RATE: The CPU
using rate has down!
```

-	-

-	-

55.1.2 show cpu

CPU **show cpu**

show cpu

-	-

```
 5    0%    0%    0%   waitqueue_process
 6    0%    0%    0%   tasklet_task
 7    0%    0%    0%   kevents
 8    0%    0%    0%   snmpd
 9    0%    0%    0%   snmp_trapd
10    0%    0%    0%   mtdblock
11    0%    0%    0%   gc_task
12    0%    0%    0%   Context
13    0%    0%    0%   kswapd
14    0%    0%    0%   bdflush
15    0%    0%    0%   kupdate
16    0%    3%    1%   ll_mt
17    0%    0%    0%   ll main process
18    0%    0%    0%   bridge_relay
19    0%    0%    0%   d1x_task
20    0%    0%    0%   secu_policy_task
21    0%    0%    0%   dhcpa_task
22    0%    0%    0%   dhcpsnp_task
23    0%    0%    0%   igmp_snp
24    0%    0%    0%   mstp_event
25    0%    0%    0%   GVRP_EVENT
26    0%    0%    0%   rldp_task
27    0%    2%    1%   rerp_task
28    0%    0%    0%   reup_event_handler
29    0%    0%    0%   tpp_task
30    0%    0%    0%   ip6timer
31    0%    0%    0%   rtadvd
32    0%    0%    0%   tnet6
33    2%    0%    0%   tnet
34    0%    0%    0%   Tarptime
35    0%    0%    0%   gra_arp
36    0%    0%    0%   Ttcptimer
37    8%    1%    0%   ef_res
38    0%    0%    0%   ef_rcv_msg
39    0%    0%    0%   ef_inconsistent_daemon
40    0%    0%    0%   ip6_tunnel_rcv_pkt
41    0%    0%    0%   res6t
42    0%    0%    0%   tunrt6
43    0%    0%    0%   ef6_rcv_msg
```

```
44    0%    0%    0%    ef6_inconsistent_daemon
45    0%    0%    0%    imid
46    0%    0%    0%    nsmd
47    0%    0%    0%    ripd
48    0%    0%    0%    ripngd
49    0%    0%    0%    ospfd
50    0%    0%    0%    ospf6d
51    0%    0%    0%    bgpd
52    0%    0%    0%    pimd
53    0%    0%    0%    pim6d
54    0%    0%    0%    pdmd
55    0%    0%    0%    dvmrpd
56    0%    0%    0%    vty_connect
57    0%    0%    0%    aaa_task
58    0%    0%    0%    Tlogtrap
59    0%    0%    0%    dhcp6c
60    0%    0%    0%    sntp_recv_task
61    0%    0%    0%    ntp_task
62    0%    0%    0%    sla_deamon
63    0%    3%    1%    track_daemon
64    0%    0%    0%    pbr_guard
65    0%    0%    0%    vrrpd
66    0%    0%    0%    psnpd
67    0%    0%    0%    igsnpd
68    0%    0%    0%    coa_recv
69    0%    0%    0%    co_oper
70    0%    0%    0%    co_mac
71    0%    0%    0%    radius_task
72    0%    0%    0%    tac+_acct_task
73    0%    0%    0%    tac+_task
74    0%    0%    0%    dhcpd_task
75    0%    0%    0%    dhcps_task
76    0%    0%    0%    dhcpping_task
77    0%    0%    0%    dhcpc_task
78    0%    0%    0%    uart_debug_file_task
79    0%    0%    0%    ssp_init_task
80    0%    0%    0%    rl_listen
81    0%    0%    0%    ikl_msg_operate_thread
82    0%    0%    0%    bcmDPC
```

```
 83     0%     0%     0%    bcmL2X.0
 84     3%     3%     3%    bcmL2X.0
 85     0%     0%     0%    bcmCNTR.0
 86     0%     0%     0%    bcmTX
 87     0%     0%     0%    bcmXGS3AsyncTX
 88     0%     2%     1%    bcmLINK.0
 89     0%     0%     0%     bcmRX
 90     0%     0%     0%     mngpkt_rcv_thread
 91     0%     0%     0%     mngpkt_recycle_thread
 92     0%     0%     0%     stack_task
 93     0%     0%     0%     stack_disc_task
 94     0%     0%     0%     redun_sync_task
 95     0%     0%     0%     conf_dispatch_task
 96     0%     0%     0%     devprob_task
 97     0%     0%     0%     rdp_snd_thread
 98     0%     0%     0%     rdp_rcv_thread
 99     0%     0%     0%     rdp_slot_change_thread
100     4%     2%     1%     datapkt_rcv_thread
101     0%     0%     0%     keepalive_link_notify
102     0%     0%     0%     rerp_msg_recv_thread
103     0%     0%     0%     ip_scan_guard_task
104     0%     0%     0%     ssp_ipmc_hit_task
105     0%     0%     0%     ssp_ipmc_trap_task
106     0%     0%     0%     hw_err_snd_task
107     0%     0%     0%    rerp_packet_send_task
108     0%     0%     0%    idle_vlan_proc_thread
109     0%     0%     0%    cmic_pause_detect
110     1%     1%     1%    stat_get_and_send
111     0%     1%     0%    rl_con
112    75%    80%    90%    idle
```

Э ˘ 3 ↑ 5 à 1↑ à 5↑
CPU ^ LISR à HISR ┘~ ÂЮ é CPU ↑
Â è ˘ ЊЖ Ю'

No	Л
5Sec	┘ 5 CPU
1Min	┘ 1↑ CPU
5Min	┘ 5↑ CPU

ʒ 2 ˇ† LISR CPU HISR CPU
ˇ ÿ 3 ˇ Ł CPU Â Л idle CPU
ˇ Windows Ю Ї System Idle Process Ł ˇ Â Э
ˇ idle 5 CPU й 75%˘ CPU 75% Â

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-	-

Л

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-	-

55.2

55.2.1 memory-lack exit-policy

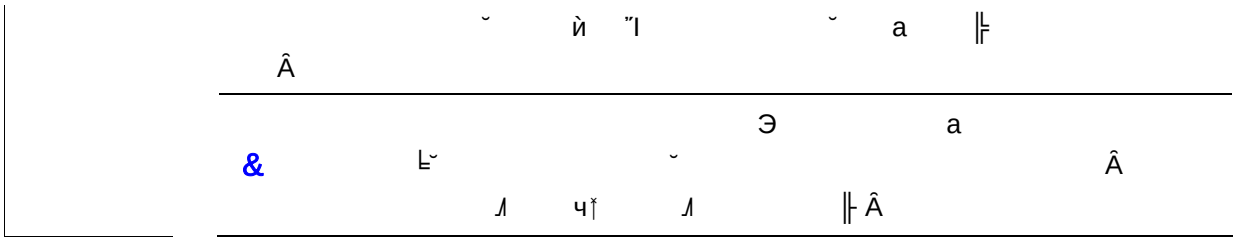
ʒ lower Л˘ Э ˇ Э BGP à OSPF à RIP à PIM-SM Â

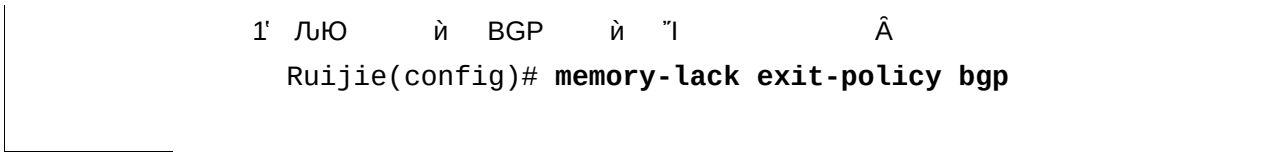
memory-lack exit-policy (**bgp**|**ospf**|**pim-sm**|**rip**)

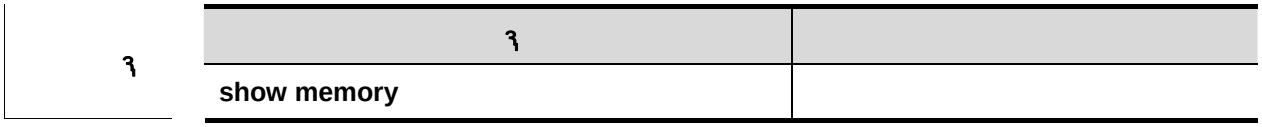
no memory-lack exit-policy

bgp|ospf|pim-sm|rip	й BGP OSPF PIM Ä

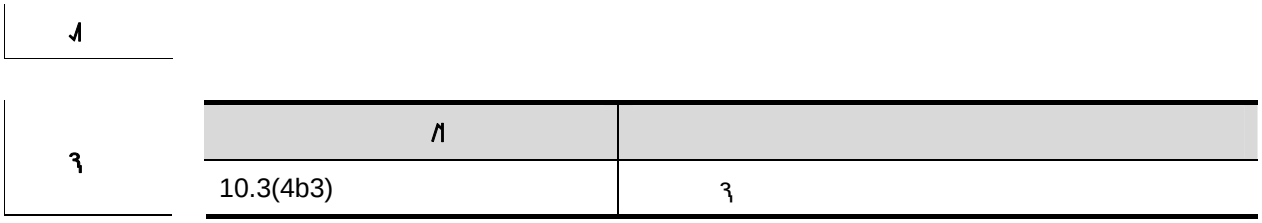
d







show memory	



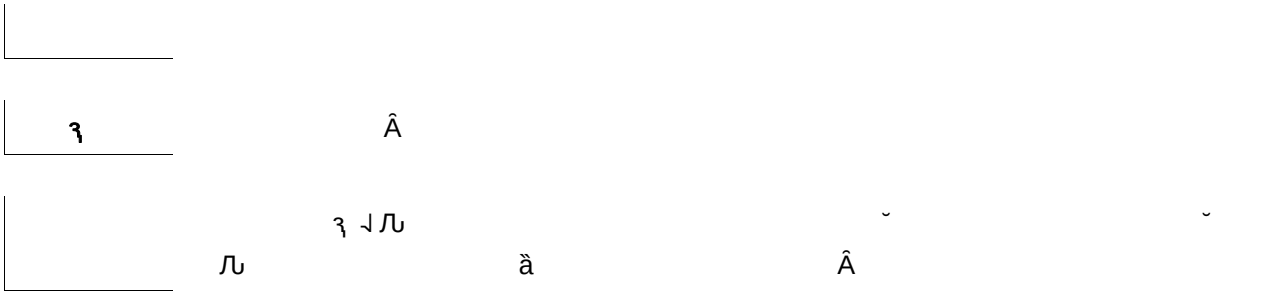
10.3(4b3)	

55.2.2 show memory

show memory

show memory

-	-



```
Free pages: 1079
  watermarks : min 379, lower 758, low 1137, high 1516
System Total Memory : 128MB, Current Free Memory : 5283KB
Used Rate : 96%
```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56

56.1

56.1.1 clear logging

ă ʁ ˘ Ю ʒ Â

clear logging

-	-

more flash:filename

Filename '	˚ ɻ

ϡ

FLASH ˚ ˚ ɻ ”//f2/˝ ”//f3/’ ˚ Â ϡ ϰ
˚ ˘ a ϡ è ˚ Â

Ю 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
```

ϡ	
logging file flash:	FLASH Э

ϡ

ϰ

ϰ	
-	-

ϡ

56.1.3 logging buffered

ă ʁ ˆ ш à ă ʁ ˜ ˘
ϡ Â ϡ no ă ʁ Â ϡ default
ă ʁ й Â

logging buffered [*buffer-size* | *level*]

no logging buffered

default logging buffered

buffer-size	ă ʁ ˘ ϰ ÿ 4K 128K Bytes Â

level	ш ˘ ÿ 0 7 Â ⅃ Л ⅄ ⅄ ˘ ≠ ⅃ Л ⅄ Â

ă ʁ ѝ 4k Bytes Â

ш ѝ 7 Â

ʕ

ă ʁ ˘ ʁ ˘

Â ă ʁ ˘ ʕ **show logging Â**

ă ʁ ˘ ʕ clear logging˘

ă ʁ Â ˘ FLASH

Syslog Server Â

ʈ ѝ ЛЮ 8 '

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

˘ ˘ 0 Â

Л ⅄˘ æ

56.1.5 logging count

Ю Â

no Â

logging count

no logging count

-	-

no logging count Âÿ Â

```
Ruijie(config)# logging count
```

show logging count	
show logging	б ă ш

-	-

56.1.6 logging facility

Ю Â no

й (23) Â

logging facility *facility-type*

no logging facility

facility-type	Syslog ˘ É Â

Local7(23)

ЮˆÂ 2˜ Syslog ˩ '

Numerical Code	Facility
0	kernel messages
1	user-level messages
2	mail system
	system daemons
	security/authorization messages
	messages generated internally by syslogd
	line printer subsystem
	network news subsystem
	UUCP subsystem
	clock daemon
0	security/authorization messages
1	FTP daemon
2	NTP subsystem
3	log audit
4	log alert
5	clock daemon
6	local use 0 (local0)
7	local use 1 (local1)
8	local use 2 (local2)
9	local use 3 (local3)
0	local use 4 (local4)
1	local use 5 (local5)

Ю Syslog й kernel

```
Ruijie(config)# logging facility kern
```

logging console	8 Э

-	-

56.1.7 logging file flash

FLASH Ю Â FLASH no Â

logging file flash:filename [*max-file-size*] [*level*]

no logging file

Filename	a txt Â
max-file-size	Â ÿ 128K 6M bytes 128K Â
level	Â FLASH 6 Â 1 Â

a FLASH Â

Syslog Server a FLASH Â txt Â

FLASH FLASH FLASH logging file flash a Â

Ю FLASH trace.txt 64K,
6Â

```
Ruijie(config)# logging file flash:trace
```

logging on	
show logging	ă ш ˇ Л∪
more flash	FLASH

VTY98 -0.006 Td<1ET69.60 015AB05B306B09B72CCC07telnet198

ϡ	
logging on	
show logging	ă ʁ ˘ Л

Л	
-	-

56.1.9 logging on

a ɹ Э ˘ ϡ Â ˘
ϡ no Â

logging on

no logging on

-	-

a ɹ Э Â

a ɹЛ Console àVTY Э˘ ≠ ɹЛ a ɹ Э'
ă ʁ à FLASH à Syslog Server Â ϡ ѝ ˘ ˘
a ˘ ш ѝ 1 Log Â

Ю Э '
`Ruijie(config)# no logging on`

ϡ	
logging buffered	ă ʁ
logging	Syslog Server
logging file flash:	FLASH Э

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

show logging count	

show logging

logging on	
show logging	ă ш ˘ Л∪
logging trap	syslog server

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56.1.12 logging source interface

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logging source interface *interface-type interface-number*

no logging source interface

interface-type	
interface-number	Л

Ю˘ Syslog Server IP IP Âй

˘ ↓ Л∪ ҄ IP й IP ˘

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Э IP ˘ IP Ў й IP Â

Ю Loopback 0 й Syslog '

```
Ruijie(config)# logging source interface loopback 0
```

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56.1.13 logging synchronous

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logging synchronous

no logging synchronous

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```
Ruijie(config)#
```

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56.1.14 logging trap

Syslog Server ˘ Ю ʒ Â
ʒ no Syslog Server Â

logging trap *level*

no logging trap

level	ш Â ɻ Ɲ ɻ ˘ ≠ ɻ Ɲ Â ш ˘ 1 Â

Informational(6)

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Syslog Serverˇ ˝I ʒ logging Syslog Server Â ɻ˘ logging trap ш Â
show logging ʒ ɻ Ɲ Â

Ю ѝ 6 ѝ 202.101.11.22 Syslog Serverґ

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

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logging on	
logging	Syslog Server
show logging	ă ʁ ˘ Ɲ

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56.1.15 service sequence-numbers

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service sequence-numbers

no service sequence-numbers

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```
Mar 22 15:28:02 %SYS-5-CONFIG: Configured from console by console
Ruijie# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# service sysname
Ruijie(config)# end
Mar 22 15:35:57 S3250 %SYS-5-CONFIG: Configured from console by
console
```

show logging	б ă ш

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56.1.17 service timestamps

╗ Э Ю Â Â no Э Â default й Â

service timestamps *message-type* [*uptime* | *datetime* [*msec* | *year*]]

no service timestamps *message-type*

default service timestamps *message-type*

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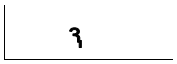
ʒ no Â



ƗO **show logging** '

```
Ruijie# show logging
Syslog logging: enabled
Console logging: level debugging, 4 messages logged
Monitor logging: level informational, 0 messages logged
```

Buffer logging	ă ʁ ˇ Ո
Timestamp debug messages	Debug
Timestamp log messages	Log
Sequence log messages	ʌ
Trap logging	Syslog Server ˇ Ո
Log Buffer	ă ʁ

```
CONFIG_I        5   1        Jul 6 10:29:57
----------------------------------------SYS      TOTAL      1
```

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logging count	ℸ
show logging	б ă ѡ
clear logging	ă ѡ

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57 USB

57.1

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57.1.1 show usb

USB Â

show usb

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10.4(1)	٦ ╗ SD´
10.4(2b4)	SD´ ٦ ÿ usb ٦

57.1.2 usb remove

usb remove *device-id*

device-id	϶ ᴖ Â USB ID ᴖ Â ᴖ ⅃ Л∪ show usb ⅃ Â

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USB ˘ ٦ ˘ Л∪ Â
╗˘ ˘ ⅃ Â ˘
USB ˘ Ä Â

Ю ϶ 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!
```

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	10.4(1)	ৡ ╗ SD´
	10.4(2b4)	SD´ ৡ ÿ usb ৡ

58

58.1

58.1.1 device-priority

device-priority [*member*] *priority*

member	ID Â ⅃ Л ˇ member 1

member *member*	ID Â ⅃ Л ˇ member 1 Â

```
Ruijie# show member
Member  Mac Address    Priority  Software Version
HardwareVersion  Description
------ ---------  -------  ---------- ---------   --------
1  00d0.f810.3323  1  RGOS 10.1.00(2),Release(12889) 1.0  SWITCH
2  00d0.f822.33aa  1  RGOS 10.1.00(2),Release(12889) 1.0  SWITCH
3  00d0.f822.33ae  1  RGOS 10.1.00(2),Release(12889) 1.0  SWITCH
4  00d0.f822.33b0  1  RGOS 10.1.00(2),Release(12889) 1.0  SWITCH
5  00d0.f822.33b2  1  RGOS 10.1.00(2),Release(12889) 1.0  SWITCH
6  00d0.f824.23b4  1  RGOS 10.1.00(2),Release(12889) 1.0  SWITCH
7  00d0.f833.44b4  1  RGOS 10.1.00(2),Release(12889) 1.0  SWITCH
8  00d0.f855.33ae  1  RGOS 10.1.00(2),Release(12889) 1.0  SWITCH
```


59

59.1

59.1.1 show version fans

show version fans

1' Ю '

```
Ruijie# show version fans
Fan information:
Type: M7806-FAN I
Item number: 9
   Hardware version : 1.00
   Software version : 1.00
```


10.4(2b)	

59.1.2 show fans

show fans

1' Ю '

```
Ruijie# show fans
Device : M7806-FAN I Temperature:30c
         Item     State    speed(0-4)
       -------   --------  ---------------
          1       stop        --
          2       error       --
          3       work         3
          4       work         5
          5       work         1
```

Temperature	
Item	/\
State	stop' error' work'
speed(0-5)	^ 0-4~ 0 ь ~ 4 ь

	10.4(2b2)	