Ruijie

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ŽĄ ˝ ѝ ' RGOS®10.4(2) Â

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' Ƕ ʒ ˥ ˆ Ƕ ʒ ʒ ǂ ˜

[ ] ' [ ] ǂ ˘ ج Ƕ ʒ ˩ Â

{ x | y | … }' ÿ ч ˥ Â

[x | y | …]' ÿ ч ˥ a Â

//' ˥ ѝ Â

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~	**2.** ˝Ạ ˆ ᴩ ü̈ ὲ ᴩ ˆ ᴩ صر ᴨ à ~ ˘ ὲ Ʌ ὶ Â	
	3. ˝Ạ ᴨ ᴩ ᴩ ᴩ في ˘ ʔ Ⱗ Ю ᴩ˘ Ʌ ᴨ ~ Ь Â	

1 CLI

1.1

1.1.1 alias

ԽՍ Ղ ⁞ ՛ ՛ Ռ ՀՍ ԿՕ alias ԽՍ Ղ Â ԽՍ Ղ no
՛ Ռ ԽՍ Ղ ⁞ ՛ ԿՕ ԽՍ Ղ ⁞ ՛ Â

alias *mode command-alias original-command*

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

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mode	⁞ ՛ Ղ ԽՍ Ղ ԽՍ Ղ Â
command-alias	ԽՍ Ղ ⁞ ՛ Â
original-command	⁞ ՛ Ղ ԽՍ Ղ Â

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ՀՍ EXEC ԿՕ ԽՍ Ղ ՀՍ ⁞ ՛ Â

ԽՍ Ղ

EXEC ԿՕ ԽՍ Ղ ⁞ ՛ ՝ **h** ՀՍ**p** ՀՍ**s** ՀՍ**u** ՀՍ**un** ԽՍ ՛ ⁞ ՝ **help** ՀՍ**ping** ՀՍ**show** ՀՍ **undebug** ՀՍ **undebug** Â

ԽՍ Ղ ⁞ ՛ a **no alias exec** ԽՍ Ղ Â

ԽՍ Ղ ⁞ ՛ ՛ Ռ ´ Ղ ԽՍ Ղ Â ԽՍ Ш Ղ ԽՍ Ж ī

```
Ruijie# s?
*s=show  show  start-chat  start-terminal-service
    ⁞ ⅈ  ३  ħu ३ a  ´  ˘  ‡  ⁄⁄  ħu ३ ↑  Â  ˘ ⌂ EXEC
   Ю  ⁞ ⅈ ”sv” ३  ħu ३ ”show version”˘  ‡'
Ruijie# s?
*s=show  *sv=”show version” show  start-chat
start-terminal-service
⁞ ⅈ  ÿ  ħu ३  ˘ ⁄⁄  a  Â  Э  ˘  ⌂
ħu ३  ⁄⁄  ˘  a  ⅈ  ⁞ ⅈ'
Ruijie# s?
show  start-chat  start-terminal-service
ħu ३ ⁞ ⅈ ≠ ⅉ Л  ⅉ ħu ३  ⅄  ╠  ˘  ⅄  Ю  ħu ३ ⁞ ⅈ ”ia” ३
  ”ip address”˘  ‡ ⌂  ⅄  Ю'
Ruijie(config-if)# ia ?
A.B.C.D  IP address
dhcp    IP Address via DHCP
Ruijie(config-if)# ip address
        ”ip address”ħu ३ ⅈ  ⅄  ˘  ɜ  ⁞ ⅈ  ħu ३ Â
ħu ३ ⁞ ⅈ ⌂  ˘  ї ‡ a  ⁞ Â
    show aliases ħu ३ ⅉ Л  ⁞ ⅈ  Â
```

```
ЛЮ  ˘  Ю˘  ħu ३ ⁞ ⅈ ”def-route” ३  ”ip route
0.0.0.0 0.0.0.0 192.168.1.1”˝
Ruijie# configure terminal
Ruijie(config)# alias config def-route ip route 0.0.0.0 0.0.0.0
192.168.1.1
Ruijie(config)# def-route?
*def-route="ip route 0.0.0.0 0.0.0.0 192.168.1.1"
Ruijie(config)# def-route?
% Unrecognized command.
Ruijie(config)# end
Ruijie# show aliases config
globle configure mode alias:
def-route          ip route 0.0.0.0 0.0.0.0 192.168.1.1
```

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show aliases	⁞ ⅈ

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⁞˘ ⌟ Л ھ Ю **privilege** ԧ ३ Â
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ommand-string

mand-string

ԧ ३ CLI ԧ ३ Â
ԧ ३ ԧ ३ ˘ ⌟ й ⌟ ⁞ Â
ԧ ३ ԧ ३ ⁞˘ ⁞ ت 0-15 Â
ԧ ३ й ⁞ Â
ԧ ३ Â

⌟ CLI ԧ ३ ˘ a ⌟ ˘ ⌟ ᴙ˘ ھ Ю˘ ⌟ Л **privilege ?**

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0.0.2 294.68 -139.2 -19.1Hp

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

˘ ⁞ 1 CLI ˘ ˩ ˩ᑎ **reload** ħυ ३'

```
Ruijie> reload ?
<cr>
```

reload ħυ ३ ⁞ 1 ˘ ‡ ˩ᑎ **all** '

```
Ruijie(config)# privilege exec all level 1 reload
```

˘ ⁞ 1 CLI ˘ ˩ ˩ᑎ **reload** ħυ ३'

```
Ruijie> reload ?
at                    reload at a specific time/date
cancel                cancel pending reload scheme
in                    reload after a time interval
<cr>
```

ħυ ३	
enable secret	CLI ⁞ ˄ ३

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ЛuЮ ˘ EXEC Ю ħu ३ ⁞ ⅄'

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

2

2.1

2.1.1 disable

ƒ ƒO ƒ æ ŋ ƒ ƒ ƒu ३ disable Â

disable [*privilege-level*]

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privilege-level	

ƒu ३

ƒu ३ ÿ ƒ Â ╗ Ɔ ˘ ‡ ŋ æƒ Â

&	**disable** ƒu ३ ƒ ŋ Â

ƒO ŋ æƒ ´ '

Ruijie# **disable** *10*

enable	ÿ ƒ ˘ ƒ ⋮ Â

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2.1.2 enable

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2.1.3 enable password

a ھ ھ ھ ھ ھ ھ **enable password** Â ھ ھ **no** ھ ھ ھ Â

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

ھ	ھ	
	Password	EXEC ھ ھ Â
	Level	ھ Â
	0|7	ھ ھ ھ ھ 0 ھ ھ 7 ھ ھ Â
	encrypted-password	ھ ھ Â

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[illegible]

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[illegible]

ЮЎ [illegible] 8 [illegible]

[illegible]

[illegible]

Â [illegible] ü 1 26 [illegible] Â

Â [illegible] Â [illegible] ‡ [illegible] Â

[illegible] Â [illegible] ‡ a

~ EXEC Â a [illegible] Â

[illegible] Â

Ю [illegible] pw10

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

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ھو ڑ	
enable secret	[illegible] Â

[illegible]

ھو ڑ [illegible]

[illegible]	
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2.1.4 enable secret

a [illegible] [illegible] [illegible] ھو ڑ **enable secret** Â ھو ڑ **no** [illegible] Â

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

no enable secret

[illegible]

[illegible]	
Secret	EXEC [illegible] Â
Level	[illegible] Â
0|5	[illegible] 0 [illegible] 5 [illegible] Â
encrypted-password	[illegible] Â

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ㅎㅇ ㅎㅈ б ㄴÂ **no enable service** ㅎㅇ ㅎㅈ ㄴÂ

ㅇO ㅎㅇ ㅎㅈ' enable service ssh-sesrver, SSH Server ㅠ '

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

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ㅓ **Telnet** ㅠ ˘ ˚ ㅏㅇ'

```
configure terminal
line tty 1 16
```

enable Â

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ƪ ƪ Web Â **no ip http authentication** ƪ ƪ
ƪ Â

ƪ ƪ ƪ Web local '

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

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enable service	

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2.1.9 ip telnet source-interface

ﻷ Э IP ﻓﺨﺴﻢ ﻱ Telnet ﻢﺨﺴﻢ ﺟﻢ ﻮﻟ ﻷ ﻷU **ip telnet source-interface** ھU ३'

ip telnet source-interface *interface-name*

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interface-name	ﻷ Э IP ﻓﺨﺴﻢ ﻱ Telnet ﻢﺨﺴﻢ ﻓﺨ Â

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ھU ३ ﻷ Э IP ﻓﺨﺴﻢ ﻱ Telnet ﻢﺨﺴﻢ Âﺟﻢ telnet ھU ३ ﻷ Telnet ﻷ ﻳ ﻱ ´ ﻷ ﻢﺨﺴﻢ Â **no ip telnet source-interface** ھU ३ ﻱ Â

ﻮ ھU ३ Loopback 1 ﻷ Э IP ﻓﺨﺴﻢ ﻱ Telnet ﻢﺨﺴﻢ'

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

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telnet	ﻷ Telnet ﻷ Â

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2.1.10 lock

ھ Э ۸ ३˘ EXEC ԻU ३ **lock** Â

lock

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ՈUЮ ʁ '

Â ' **lock** ԻU ३˘ ۸ ३'

Â γ ' ۸ ३˘ ۷ ՈU Â ۷˘ ۸ ३˘

۷˘ ˘ Ի' Locked Ի '

Â ˘ ۸ ३ Â

ھ Э ʁ ˘ ھ line Ю **lockable** ԻU ३˘ ھ

line Э ʁ Â

Ю й ʁ '

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

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lockable	ھ Э ʁ Â

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2.1.11 lockable

ㅎ Э **lock** ㅏㅇ ㅋ˘ ㄴㄱㅇㅎ line Ю **lockable** ㅏㅇ ㅋ˘ ㅎ
Ю a **lock** ㅏㅇ ㅋ Â **no** ㅏㅇ ㅋ ㄴ Â

lockable

no lockable

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ㅏㅇ ㅋ line

ㅏㅇ ㅋ ㅎ Э ㅂ ˘ ㅂ ㄴㄱ ㅎ EXEC Ю
lock ㅏㅇ ㅋ Â

Ю ㅎ ⁸ ㄴ ㄱ Э ㅂ ㅠ ˘ ㅂ ⁸ ㄴ'

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

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ㅏㅇ ㅋ	
lock	ㅂ Â

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login

no login

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line

ǚ AAA ‡ ƕυ ʅ ˀ ʅ Â ˀ ʅ VTY console ˀ ˀ ʅ Â

Ю VTY Э ˀ ʅ Â

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

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ƕυ ʅ	
password	line

ใบงาน line

	username ÞU ¾ ªª Â

	ÞO ¿ VTY Ø ªª Â
	`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	ªª Â

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2.1.15 privilege mode

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	¼ ê CLI ÞU ¾ Ì Â

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2.1.16 password

line ৲ ৩˘ line ঠু ৩ **password** Â ঠু ৩ **no** line ৲ ৩ Â

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

no password

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password	line ৲ ৩ Â

service password-encryption

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interface *interface-name*	Telnet ۸
/vrf *vrf-name*	VRF

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ھU ३ ۱ telnet ╞ ⌊ Â	
~	**/ipv6** ˘ ھ IPV6

1' Ю ˘ telnet IPV4 ھ فخ س ھ ھ 192.168.1.1˜ ۸ ˘ ۸ ھ ھ vlan 1˜ VRF ھ vpn1'

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

2' Ю ˘ telnet IPV6 ھ فخ س ھ ھ 2AAA:BBBB::CCCC'

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

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ھU ३	
ip telnet source-interface	۸ Э IP فخ س ھ ھ Telnet فخ س ھ'
show session	⌂ TTY '
exit	⌂ '

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2.1.19 username

password	ᴺ ᶾ Â
0|7	ᴺ ᶾ ╗ ᵛᵉʳ 0 ╗ ˘ 7 ´ ╗ Â
encrypted-password	ᴺ ᶾ Â
privilege-level	Â

message	

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

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2.2.2 banner motd

˘ ج Ю Ĥυ ३ ৲ **banner motd** Â ৷
˘ **no banner motd** Ĥυ ३ ৲ Â

banner motd *c message c*

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c	ĭ ˘ a
message	

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```
Ruijie#show boot system
system boot file: flash:/rgos.bin

Ruijie#dir
Directory of flash:/
   11015744 2008-01-01 08:00:46  rgos.bin
   12019754 2008-02-01 08:00:46  s5750_10_4.bin
       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
```

ŭ ╟ ˘ s5750_10_4.bin Â

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show boot system	Â

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2.2.4 clock set

˘ ㅅЛЫ ㅎㅇㅋ **clock set** ㅋ '

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

ㅋ

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hh:mm:ss	ŋń ˘ ń ˆ 24 ⁸˜ : ˆ :
day	ˆ 1-31˜ ˘ Â
month	ˆ 1-12˜ ˘
year	Ω ˆ 1993-2035˜ ˘ a Â

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clock set Э

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Ю ϰ й 2003 3 17 Э ' 10 20 30 '

```
Ruijie# clock set 10:20:30 3 17 2003
Ruijie# show clock
clock: 2003-3-17 10:20:32
```

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show clock	ϰ

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2.2.5 clock update-calendar

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clock update-calendar

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```
Ruijie# clock update-calendar
```

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Ю 10ǀ ƱƱ ƛ '

```
Ruijie# reload in 10
Router will reload in 600 seconds.
```

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2.2.10 session-timeout

ǿ LINE Э ǀ ˘ **session-timeout** ƬƱ ǯ Â
no session-timeout ƬƱ ǯ˘ ƛ LINE ЮǀǾ ˘ a Â

session-timeout *minutes* [**output**]

no session-timeout

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	minutes	ǀ '
	output	ǐ ≠ й ˘ ǐ '

й 0 min Â

ƬƱ ǯ LINE

ƫ ˘ ÿ ǿ LINE Э ǀ ˘
˘ ˘ LINE й ǻ Â

Ю line vty 0 й 5ǀ 30 '

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

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2.2.11 speed

ھھ ھھ ھھ ھھ ھھ **speed** *speed* ھھ ھھ ھھ **no speed** ھھ ھھ ھھ

speed *speed*

ھھ

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Speed	ھھ ھھ ھھ bps ھھ ھھ ھھ ھھ 9600 ھھ 19200 ھھ 38400 ھھ 57600 ھھ 115200 ھھ ھھ 9600 ھھ

ھھ 9600

ھھ ھھ

ھھ ھھ ھھ ھھ ھھ

ھھ ھھ ھھ ھھ 57600 bps

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

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```
[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]
```

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boot config	ㅎ ㅎ ㅎ ㅎ
copy	ㅎ ㅎ ㅎ
show running-config	

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2.3

2.3.1 show clock

ㅎ ㅎ **show clock** ㅎ

show clock

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ㅎ ㅎ detail ㅎ

ㅎ **show clock** ㅎ ㅎ

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

clock set	

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2.3.2 show line

show line Â

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

console	8
aux	aux
vty	vty
line-num	line

Â

console

```
Ruijie# show line console 0
CON     Type    speed   Overruns
* 0     CON     9600    45927
Line 0, Location: "", Type: "vt100"
Length: 24 lines, Width: 79 columns
Special Chars: Escape  Disconnect  Activation
             ^^x     none        ^M
Timeouts:      Idle EXEC    Idle Session
             never        never
History is enabled, history size is 10.
```

```
Total input: 53564 bytes
Total output:  395756 bytes
Data overflow:  27697 bytes
stop rx interrupt:  0 times
```

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2.3.3 show reload

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show reload

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ㅇㅗ ㅇㅜ ㅐㅏ '

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

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ใช้งานโดย	ค่า	
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2.3.4 show running-config

คำสั่ง show running-config ใช้สำหรับแสดงค่าการตั้งค่าปัจจุบันของอุปกรณ์ที่ใช้งาน

show running-config

ค่าเริ่มต้น	ค่า	
	-	-

ใช้งาน

ใช้งานโดย	ค่า	
	-	-

คำสั่ง

Y,ÕG!5B NVRAMÏ2ûçgÀÀÅÛL GñÛ5Ï.þ^AÛÊ XL ñÊ4pFüP*dÏ2ÊÊ)ÅAÛÂ1/j .%TAxL [ÊÊÊÊÊ2LA%ÛgH5Ÿ5B

```
By Ruijie Network
System start time: 1970-6-14 11:49:53
System uptime: 3:17:1:17
System hardware version: 2.0
System software version: RGOS 10.3.00(4), Release(34679)
System boot version: 10.2.34077
System CTRL version: 10.2.24136
System serial number: 1234942570001
```

命令模式

命令模式	
-	-

说明

使用指南

命令级别	
14	-

3 LINE

3.1 LINE

3.1.1 access-class

Line ƴ ACLˆ 8 ˜ Â **access-class** *acl-no* { **in | out** } Ƕ ʒ
Line ƴ 8 Â no **access-class** *access-list-number* {**in | out**} Ƕ ʒ ˅
LINE ƴ ACL Â

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

ƪ ३ ٦ ৶	৸	
	-	-

3.1.2 line

ᑊ LINE ˘ ΛƱƪ ३'

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

৸	৸	
	aux	৸˘ ج ৷ ᵽ Э
	console	⁸ ৸
	console	৸˘ ج ৷ ᵽ Э
	console	˘ telnet/ssh
	First-line	first-line ৸
	Last-line	last-line ৸

ƪ ३

LINE Â

ᑊ LINE VTY 1ᑊ 3 LINE '

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

ƪ ३	ƪ ३	
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৶

ƪ ३ ٦ ৶	৸	
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3.1.3 line vty

Ю ३ ৲ Л৬ ╗ ৩ঠ ৲ Л৬ VTY Â Ю ३ **no** ৭ ৲ Л৬ ৩ঠ ৲ Л৬ VTY Â

line vty *line-number*

no line vty *line-number*

৭	
-	-

Ю˜ ৲ VTY й 5˜ ৷ й 0--4 Â

Ю ३

╗ ৲ VTY ˘ ৲ Л৬ Э Ю ३ Â

1' ৲ VTY ╗ ˆ 20˜ ৲ VTY ৷ ন й 0--19 Â

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

2' ৲ VTY ˆ 10˜ ৲ VTY ৷ ন й 0—9 Â

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

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Ю ३	
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Ю ३ ৲ ৷

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-	-

3.1.4 transport input

Line Ю ৲ Л৬ ˜ ˘ **transport input** Ю ३ Line Ю ৲ Л৬ ˜ Â **default transport input** й LINE Ю ˜ й Â

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

default transport input

৭

৭	
all	Line Ю˜ ˜ Â
ssh	Line Ю˜ ৲ SSH ˜ Â

telnet	Line Ю˘ ৲ Telnet ˜ Â
none	Line Ю˘ a ˜ Â

˘ VTY ˜ Â ε ص TTY й NONE˘ a ˜ Â ˜ ৲Л৳ Л˘ ৲Л৳ **default transport input** Ъu ३ й Â

Ъu ३ Line

Ъu ३ Line Ю ˜ ÂVTY ج Ю˘ ˜ Â ˜ Л˘ ৲ ˜ ৲Л৳ج VTY Э ╗ Â **show running** Ъu ३ Line Ю Â

&	**default transport input** Ъu ३ Â **no transport input** Ъu ३˘ LINE Ю ˜ Â б **transport input none** ৲ Â

ج line vty 0 4 Ю˘ ৲ telnet ˜ '

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

Ъu ३

Ъu ३	
show running	Â

৲

˚ RGOS10.1 Л৳Э

Ъu ३ ৲

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4

4.1

4.1.1 ping

ԻԱ ՀՅ ՀՕ՝ ՀԱ ՀՅ

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

ՀՅ	

έ ᠲ DNS ᛠ Â

1ˈ ping ʻ

```
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
```

2ˈ ping ʻ

```
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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ƕυ ʅ ˥ ᛧ

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4.1.2 ping ipv6

ƕυ ʅ ˘ ᛧ ʃυ ╠ ȁ Æ Âƕυ ʅ
Юՙ

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

ᠲ

ᠲ	
ip-address	IPv6 ﻓﺨﺴ Â

length	˥ ↑
times	˥ ↑
seconds	
data	̓l
source	IPv6 ﻓﺨ ﺳﻢ ˄ Â ɛ̀ ˘ ﻫﻰ ˄ ﺳﻢ ﻓﺨ̂ ::1˜ a ﻫ̀ ﺳﻢ ﻓﺨ Â

ﺟﻢ ˆ ﻫ̀ 2 ˜ ˘ 5 ﻫ̀ 100Byte ↑ˀ IP ﺳﻢ ﻓﺨ Â

Ԧυ ʒ̧

Ping ipv6 Ԧυ ʒ̧ ﺟﻢ Ω ﻮ̆ ﺟﻢ ﻮ̆ ˄ ﻫﻫ
ping ipv6 ╗ ˘ ﺟﻢ ﻮ̆ ‡ ˥ Л υ ping ipv6 ╗ Â
ping ipv6 ╗ ˘ ˥ Л υﺟﻢ Ω ﻮ ˘ ﺟﻢ ˆ
ﻫ̀ 2 ˜ ˘ 5 ﻫ̀ 100Byte ↑ˀ IP ﺳﻢ ﻓﺨ˘ ˘ ‡
‘!² ˘ ‡ ‘.² б a ˥ ˘
‡ a ‘C² Л Â ping ipv6 ╗ ˘ ˄ ﺟﻢ ﻮ
˘ ﺟﻢ ping ˘ ˥ Л υ ˥ ↑ à ˘ ˘ Ω
ping ipv6 ╗ ˘ Л ≠ Â ╗

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ɦu ʒ جم ipv6 Э كا Â	

ɦu ʒ ٦ ɹ	ʌ	
	-	-

4.1.3 traceroute

traceroute ɦu ʒ˘ ɹ Лu ↑ ÿ فخ سم ʔفخ سم فخ سم .

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

ʌ	ʌ	
	vrf-name	VRF ɹ
	Ip-address	IPv4 فخ سم Â
	number	ɹ
	source	IPv4 فخ سم ʌ Â ɛ̀ ˘ هى ʌ سم ʔفخ 127.0.0.1˜ a ȉ فخ سم Â
	seconds	
	minimum maximum	

```
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
```

ÿ Э ˘ ˩ Л ں سم ˆ ˘ ÿ فخ سم IP فخ سم ى 61.154.22.36 ŷ ˘
↑ ف ˆ 1˙ 6˜ ˘ ˩ ˆ ˘
ˆ ˘ Â

2ˈ a traceroute '

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

ÿ Э ˘ ˩ Л ں سم ˆ ˘ ÿ فخ سم IP فخ سم ى 202.108.37.42 ŷ ˘
↑ ف ˆ 1˙ 17˜ ˘ ʒ 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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	-	-

4.1.4 traceroute ipv6

traceroute ipv6 ƕ ३˘ ৲ ᑎ ↑ ÿ ᠷᠣᠤᠲᠡᠷ ᠬᠣᠯᠪᠣᠭᠣᠨ
Â

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

৸	৸	
	Ip-address	IPv6 ᠬᠣᠯᠪᠣᠭᠣᠨ ᠬᠠᠶᠢᠭ ᠳᠤᠷ Â
	number	৲
	seconds	
	minimum maximum	ᑎ TTL

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Traceroute ipv6 ήυ ϡ ў ˘ ج ˥ ˘ Æ
˥ Æ Â ش ر ╗ ˘ ‡ ˝I ش ر ╚ ⅃˘ ή ˥ DNS
ї Â

ЛЫЮ й traceroute ipv6 ч ˘ й ˘ й ج
a Â

1' traceroute ipv6 '

```
Ruijie# traceroute ipv6 3004::1
  < press Ctrl+C to break >
Tracing the route to 3004::1
1     3000::1        0 msec  0 msec  0 msec
2     3001::1        4 msec  4 msec 4 msec
3     3002::1        8 msec  8 msec  4 msec
4     3004::1        4 msec  28 msec  12 msec
```

ÿ Э ˥ Л ش ї ˘ ÿ فخ ش IP فخ ش й 3004::1 ў ˘
↑ ف ^ 1˙ 4˜ ˘ ˥ ї ˘ ї ˘
Â

2' a traceroute ipv6 '

```
Ruijie# traceroute ipv6 3004::1
  < press Ctrl+C to break >
Tracing the route to 3004::1
1     3000::1        0 msec  0 msec  0 msec
2     3001::1        4 msec  4 msec 4 msec
3     3002::1        8 msec  8 msec  4 msec
4     * * *
5     3004::1        4 msec  28 msec  12 msec
```

ÿ Э ˥ Л ش ї ˘ ÿ فخ ش IP فخ ش й 3004::1 ў ˘
↑ ف ^ 1˙ 5˜ ˘ з 4 Â

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5

5.1

5.1.1 carrier-delay

ᴝ ᴻ ᴚᴏ ᴚᴗ ᴝ **carrier-delay** ᴝ ᴻ ˘ ᴚᴗ ᴝ **no** ᴝ
Â

carrier-delay [*seconds*]

no carrier-delay

	ᴻ	
ᴻ	*seconds*	˩ ᴻ ˘ ᴚᴗ ᴝ´ Æ˘ ᴝ 1˙ 60 Â

2 Â

ᴚᴗ ᴝ ᴻ Â

ᴻ ᴻ ᴻ DCD ÿ Down ˺ Up ˘
DCD ᴝ ˩ ˩ ˬ˘ ᴝ ˩ ˬ a Э
˜ ᴝ Â
DCD ˘ ᴝ ᴻ ˘ ˩ ᴚᴗ ˥ ˘ ᴚᴗ
˩ ᴚᴗ Â ˩˘ DCD ˘ ᴝ
ᴻ ˘ ᴚᴗ Â

-	-

5.1.2 clear counters

ˆ ˆ

clear counters [*interface-id*]

ˆ	
interface-id	ˆ ˆ ˆ ˆ Â

ˆ ˆ Â

ˆ ˆ ˆ ˆ ˆ **show interfaces** ˆ ˆ ˆ **clear counters** ˆ ˆ ˆ ˆ ˆ Â a ˆ ˆ ˆ ˆ Â

```
Ruijie# clear counters gigabitethernet 1/1
```

ˆ ˆ	
show interfaces	ˆ ˆ Â

ˆ

ˆ ˆ ˆ	
-	-

5.1.3 clear interface

ˆ ˆ Æ

clear interface *interface-id*

ˆ	
interface-id	ˆ ˆ ˆ ˆ Â

ใช้งาน

ใช้งานห Switch Port,L2 Aggregrate port ซึ่ง ห ,Routed port,L3 Aggregate port ซึ่ง ห Â ใช้งาน ห **shutdown** ถึง **no shutdown** ใช้งาน Â

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

ใช้งาน

ใช้งาน	
shutdown	ห

ห

ใช้งานกับห

ห	
-	-

5.1.4 descriptioin

ห ⋮ ห Â ใช้งาน no Â

description *string*

no description

ห

ห	
string	ห ⋮ ห Â

⋮ ห Â

ใช้งาน ห

show interfaces ใช้งาน ห ˘ ↑ ⋮ ห Â

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

ใช้งาน

ใช้งาน	
show interfaces	ห ถึง Â

ห

ใช้งาน ห

ห	
-	-

5.1.5 duplex

جه ห ใช้ ใช้งาน ห ง Â ใช้งาน **no**
ง Â

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

no duplex

ห	
auto	ง ก ` ง Â
full	ง Â
half	` ง Â

ง ก ` ง Â

ใช้งาน ห

ห ง б ห ص Â ง ใน **show interfaces** ใช้งาน ห ง
Â

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

ใช้งาน	

ใช้ [illegible] ⁸ Â ใช้ no [illegible] ห่ Â

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

no flowcontrol

ห	
auto	~ ไม่ [illegible] ⁸ Â
off	[illegible] ⁸ Â
on	[illegible] ⁸ Â

[illegible] ⁸ Â

ใช้ [illegible] ห

show interfaces ห [illegible] ⁸ Ω [illegible] ⁸ Â

[illegible] ไม่ [illegible] ห 1/1 [illegible] ⁸

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

ใช้	
show interfaces	ห Ω Â

ห

ใช้ ไม่ ห	
-	-

5.1.7 interface aggregateport

ใช้ ใช้ ... ห ห่ ห Â ใช้ no ห Â

interface aggregateport *port-number*

ห	
port-number	Aggregate port ห่ [illegible] Ω [illegible] Â

ใช้งาน

	ในโหมด ‡˘ è ห ๗ ๊ aggregate port Âaggregate port ˘ ห ให้ ˘ ˘ ห aggregate port ถ้า Â **show interfaces** **show interfaces aggregateport** ใช้งาน ห Â

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

ใช้งาน

ใช้งาน	
show interfaces	ห ∩ Â

ค่า

-

ใช้งานโดยผู้ดูแลระบบ

ค่า	
-	-

5.1.8 interface fastEthernet

ใช้งาน ใช้งาน˘ ในโหมด ห˘ ห Â

interface fastEthernet *mod-num/port-num*

	ห	
ห	*mod-num/port-num*	ระบุ ค่า /

৸ ৸ ৩

ใ ฺ ใ ฺ ฺ … ฺ ฺ

```
start cable-diagnoses,please wait...
cable-daignoses end!this is result:
4 pairs
pair state     length(meters)
---- ---------- --------------
A    Ok        1
pair state     length(meters)
---- ---------- --------------
B    Ok        2
pair state     length(meters)
---- ---------- --------------
C    Short     1
pair state     length(meters)
---- ---------- --------------
D    Short     1
```

pairs	↑ ü ˘ ห ني ห Â
state	ฑ ˘ ь ' OK˜ ˜ ˘ Short˜ ˜ ˘ Open ˆ ˜ Â ю˜ ˜l ห A à B ห ห OK˜ C à D ห ห Short Â˜ ˜l ห A à B à C à D ني ห ห OK Â
length	˘ ´ æ ห Â ห state ห OK Â ห ˘ ห ˘ ใช้ ห ˘ ใช้ ห جه Â ห Short Open length ห Â

ใช้		
	-	-

ห	-

5.1.12 medium-type

ห ص Â ใช้ **no** Â

medium-type { **fiber | copper** }

no medium-type

ห		
	fiber	˜l ห
	copper	ห

ห Â

ใช้งาน ห ˆ ห˘ a ↑ Ap Ω SVI˜

ล ห ล Π ˜l ห Ω ห ห ˜ص ห è Â
ص ส˜ جه ห ˘ à ล à ⁸ Ω ˘ ห ฑ
ص Â ล ห ص ส˜ ص ห ห่ è ˘ ล Π
Â

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

ใช้งาน

ใช้งาน	
show interfaces	ห Ω Â

ค

24SFP/12GT ´ 12 SFP ห Ω 12 10/100/1000M BASE-T ห ╟ ↑ Â
a ห ╟ ฑ جه SFP ห 10/100/1000M BASE-T ห Â

ใช้งานได้

ค	
-	-

5.1.13 mtu

ห mtu

Mtu *num*

ห

ห	
num	64˙ 9216(65536 p a ล a ล)

ห่ 1500 Â

ใช้งาน ห

ห mtuˆ ˜ Â ฑ ล ห Â

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

```
Ruijie(config-if)# mtu 9216
```

ใช้

ใช้	
show interfaces	ห ∩ Â

ห

ใช้ ไม่

ห	
-	-

5.1.14 shutdown

ตั้ง ห ˘ ใช้ ห Â ใช้ **no** ห Â

shutdown

no shutdown

ห	
-	-

ใช้ ห

ห^ Ju ห à Ap ห à SVI ห˜ ˘ ใช้ ห˘ ห è Ÿ
ตั้ง a Â **show interfaces** ใช้ ห Â

&	**no shutdown** ห ˘ ห ห ห Â

1' Ap 1'

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

2' Ap 1'

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

clear interface	ฺ ฺ Æ Â
show interfaces	ฺ Ω Â

ฺ

Ruijie(config-if)# **no snmp trap link-status**	ใช้ ห link trap ไม่ Â

ค่าเริ่มต้น

ค่าเริ่มต้น	
-	-

5.1.16 speed

ห Â ใช้ **no**

ห	
10	ห ให้ 10Mbps Â
100	ห ให้ 100Mbps Â
1000	ห ให้ 1000Mbps Â
10G	ห ให้ 10Gbps Â
auto	ห ให้ Â

ค่าเริ่มต้น

Â

ใช้งาน

ห

ห Ap ซึ่ง ‡ ห Ap ถ้า ไม่ ห ซึ่ง a Â ห Ap Â **show interfaces** ใช้งาน Â ห ส a ไม่ ซึ่ง ส a ไม่ Â ซึ่ง SFP ส ห a ให้ 10M 100M Â

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

ใช้งาน

ใช้งาน	
show interfaces	ห ดู Â

ค่าเริ่มต้น

ค่าเริ่มต้น	

-	-

5.1.17 switchport

æ¿ ˆ Ю a ˆ **switchport** Ìu ¾˘ ˆ ì 2 Â
a ˆ **no switchport** Ìu ¾ ˆ ì 3 Â

switchport

no switchport

ˆ	
-	-

æ¿ Ю ˆ æ¿ 2 ЮÂ

Ìu ¾ ˆ

Ìu ¾ ˇ ˆ ˆ Â switchport Ìu ¾ ˆ
˘ æ¿ ˆ Â ˆ ÿ 2 ¡ ¡ 3
˘ ˆ 2 Â

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

Ìu ¾	
show interfaces	ˆ Ω Â

ˆ -

Ìu ¾ ˆ ˆ	
-	-

5.1.18 switchport access

Ìu ¾ ˆ ì **access port**˘ ì VLAN ˘ ˆ Â
Ìu ¾ no ˆ ¡ VLAN Â

switchport access vlan *vlan-id*

no switchport access vlan

ห

ห	
vlan-id	ห ๊ VLAN ID Â

switch port ให้ access VLAN ให้ VLAN 1

ใช้

ห

VLAN ID Â VLAN ID ‡ … VLAN
ห ให้ VLAN Â ๊ VLAN ID ‡ ๊ VLAN
ห Â ห trunkport ‡ Â

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

ใช้

ใช้	
switchport mode	γ ห switch port Â
switchport trunk	ให้ trunkport native VLAN Ω Trunk ห ห VLAN Â

ห

ใช้ ไม่

ห	
-	-

5.1.19 switchport mode

ใช้ γ ห switch port ห ห ให้ access port ให้ trunk port, ให้ 802.1Q Â ใช้ **no** ห ให้ Â

switchport mode {**access | trunk**}

no switchport mode

allowed vlan *vlan-list*	Trunk ห ล VLAN Â ห vlan-list ล ใช้ VLAN ไม่ ล ใช้ VLAN ใช้ VLAN ID ช่ ใช้ VLAN ID ช่ ^ -~ ห Â ' 10-20 Â ล ใช้ ^ ,~ ห ช่ ' 1-10,20-25,30,33 all ยื่ ให้ ล VLAN ↑ ยื่ VLAN add VLAN ๊ ล VLAN ' remove VLAN ย ล VLAN ' except VLAN VLAN ๊ ล VLAN '
native vlan *vlan-id*	Native VLAN Â

ล VLAN all Native VLAN ‡ VLAN 1

ใช้งาน ห

Native VLAN

ให้ Trunk ห native VLAN Â native VLAN จะ ห Э ล UNTAG ช่ ให้ VLAN Â ช่ ห VLAN ID ^ . IEEE 802.1Q PVID native VLAN VLAN ID Â ล ช่ จะ Trunk Э ล native VLAN ช่ ‡ UNTAG Â

ล VLAN '

Trunk ห ล ใช้ VLAN 1 4094 Â ช่ ไม่ ล ใช้ Trunk ห ล VLAN ⁸ VLAN a Trunk ห Â

show interfaces switchport ใช้งาน Â

ให้ VLAN 2 ย ห 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
```

ใช้งาน	
show interfaces	ห Â
switchport access	ห ห statics accessport ห VLAN ห Â

ค่า

ใช้งานค่า	
ค่า	
-	-

5.2

5.2.1 show interfaces

ห ก ค่า ใช้งานห่ ห Â

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

ห	
interface-id	ห่ ห aggregateport ห SVI ห loopback ห่ Â
counters	ห Â
description link Â	ห ค link Â
status	ง ห ห ค ค ห Â
switchport	ง ห ค ห ง ห Â
trunk	trunking port ค ห Aggregate port Â

ห Â

ใช้งาน

a ห ค ‡ ห Â

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

```
Interface Switchport ModeAccess Native Protected VLAN lists
--------- ---------- --------- ------ ------ ---------
GigabitEthernet 0/1 enabled Access 11  Disabled  ALL
```

6 Aggregate Port

6.1

6.1.1 aggregateport load-balance

AP Â Ъυ ३ no й Â

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

no aggregateport load-balance

৭		
৭	**dst-mac**	AP Âজ ĵ ফজ সম MAC ল ĵ ল ফজ সম MAC ˘ ল Â ল a ĵ ĵ ল a MAC ˘৭
	src-mac	AP Âজ ĵ ফজ সম MAC ল ĵ ĵ ল a ফজ সম MAC ল a ˘ ল Â ল ফজ সম MAC ল ˘৭
	src-dst-ip	IP—— ল a Â ĵ IP б IP IP—— ল a ˘ল ৭ IP Ю˘ Ь জ Â ল IP Â
	dst-ip	ল ˘৭ ল ĵ ফজ সম IP ˘ ফজ সম IP ল Â ল a ĵ ĵ ল a IP ˘ল ৭ AP Âজ ĵ ফজ সম IP ল
	src-ip	ল ˘৭ ল ĵ ফজ সম IP ˘ ল a IP ফজ সম ĵ ĵ ল a ˘৭ AP Âজ ĵ ফজ সম IP ল
	src-dst-mac	ল ˘৭ ল ĵ Â a ল MAC б MAC ল Â MAC—— MAC ল a ল ৭ MAC—— Â ল MAC—— MAC ল

	∩ MAC ফজ সম ĵ Â
Ъυ ३	Â

show aggregateport load-balance ƪ ३ Â

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

ƪ ३

ƪ ३	
show aggregateport load-balance	aggregateport Â

ƛ

-

ƪ ३ ٦ ƛ

ƛ	
-	-

6.1.2 port-group

ƛ ƙ Aggregate Port ˘ ƛ Â ƪ ३ no ƛ Aggregate Port ˘ Â

port-group *port-group-number*

no port-group

ƛ

ƛ	
port-group-number	Aggregate Port ˘ ƛ ƛ˘ . Aggregate Port ƛ ƛ Â

ƛ a Aggregate Port Â

ƪ ३ ƛ Â

AP ˘ ƛ جه ٧ VLAN ˘ trunk port Â a ٧ native VLAN ƛ a AP

Ю Ƨ ƛ 1/3 AP 3 ˘ '

```
Ruijie(config)# interface gigabitethernet 1/3
Ruijie(config-if)# port-group 3
```

ƪ ३

ƪ ३	
-	-

⅄	-

ħu ३ ⅂ ⅄	⅄	
	-	-

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

7 VLAN

7.1

7.1.1 name

VLAN ɹ Â ħυ ३ **no** Â

name *vlan-name*

no name

৭	
vlan-name	VLAN ɹ

VLAN ɹ ѝ VLAN VLAN ID VLAN 2 ɹ ѝ ”VLAN0002”

ħυ ३ VLAN

show vlan ħυ ३ vlan

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

ħυ ३	
show vlan	VLAN ৎ ৭ Â

৶

ħυ ३ ৭ ৶	৸	
	-	-

7.1.2 switchport access

ħυ ३ ৭ ѝ access port ѝ VLAN ৎ ৭ Â ħυ ३ **no** ৭ ↑ VLAN Â

switchport access vlan *vlan-id*

no switchport access vlan

৭	
access	switch port ঋ access port Â
trunk	switch port ঋ trunk port Â
hybrid	switch port ঋ hybrid port Â

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

৭		
৭	**allowed vlan** *vlan-list*	Trunk ৭ ৲ VLAN Â ৭ vlan-list ৲ Л VLAN˘ ≠ ৲ Л VLAN˘ Л VLAN ID ˘ Л VLAN ID ˘ ˆ -˜ ৸ Â ' 10-20 Â ৲ Л ˆ ,˜ ৸ ˘ ' 1-10,20-25,30,33 all ŭ Ъ৯ ৲ VLAN ↑ ŭ VLAN' add VLAN ╗ ৲ VLAN ' remove VLAN ÿ ৲ VLAN ' except VLAN VLAN ╗ ৲ VLAN '
	native vlan *vlan-id*	Native VLAN Â

৲ VLAN all˘ Native VLAN ‡ VLAN 1

Ъu ३ ৭

Native VLAN'

й Trunk˘ ৭ native VLAN Â native VLAN˘ ج ৭ Э ৲ UNTAG ˘ й VLAN Â ˘ ৭ VLAN ID ˆ . IEEE 802.1Q PVID˜ native VLAN VLAN ID Â ৶ ˘ ج Trunk Э ৲ native VLAN ˘ ‡ UNTAG Â

৲ VLAN '

Trunk ৭ ৲ Л VLAN˘ 1˙ 4094˜ Â ˘ ≠ ৲ Л Trunk ৭ ৲ VLAN ⁸ VLAN a Trunk ৭ Â

show interfaces switchport Ъu ३ Â

Ю VLAN 2 ÿ ৭ 1/15 '

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

ใช้งาน	

-	-

7.2

7.2.1 show vlan

VLAN ˜ ^ Â

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

^

^	
vlan-id	VLAN ID /^ Â

ƪu ३

ھ ˘ **end** ƪu ३˘ **Ctrl+C** / Â

ھ ˘ **exit** ƪu ३

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

ƪu ३

ƪu ३	
name	VLAN / Â
switchport access	^ ╗ Vlan Â

/

ƪu ३ ˥ /

/	
-	-

8 Super-vlan

8.1

8.1.1 subvlan

ƬU ३ super vlan subvlan subvlan Â

subvlan *vlan-id-list*

no subvlan [*vlan-id-list*]

৭	
Vlan-id-list	VLAN subvlan ID, ৶ vlan

ƬU ३ VLAN

no subvlan supevlan subvlan

```
Ruijie(config)# vlan 3
Ruijie(config-vlan)# supervlan
Ruijie(config-vlan)# subvlan 5
Ruijie(config-vlan)# subvlan 7-19
```

ƬU ३	
show supervlan	supervlan Â

৶

ƬU ३ ৭ ৶	
-	-

8.1.2 subvlan-address-range

ƪU ३ subvlan ip فخ سم تن Â

subvlan-address-range *start-ip end-ip*

no subvlan-address-range

٩	
start-ip	SubVLAN IP فخ سم
end-ip	SubVLAN IP فخ سم

-

ƪU ३ VLAN

أهى ˘ **end** ƪU ३˘ **Ctrl+C** ٨ Â

أهى ˘ **exit** ƪU ३

```
Ruijie(config)# vlan 3
Ruijie(config-vlan)# subvlan-address-range 192.168.3.10
192.168.3.100
```

ƪU ३	
show supervlan	supervlan Â

٨

ƪU ३ ٦ ٨	
-	-

8.1.3 supervlan

ƪU ३ VLAN ѝ **supervlan** Â

supervlan

no supervlan

٩	
-	-

ƪu ३ VLAN

ھ ˘ **end** ƪu ३˘ **Ctrl+C** ʌ Â

ھ ˘ **exit** ƪu ३

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

ƪu ३

ƪu ३	
show supervlan	supervlan Â

ʌ

ƪu ३ ʅ ʌ

ʌ	
-	-

8.1.4 proxy-arp

ƪu ३ VLAN ARP ३ ॥ Â

proxy-arp

no proxy-arp

ʌ

ʌ	
-	-

ƪu ३ VLAN

ھ ˘ **end** ƪu ३˘ **Ctrl+C** ʌ Â

ھ ˘ **exit** ƪu ३

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

ħu ३

ħu ३	
show supervlan	supervlan Â

ৰ

ħu ३ ৭ ৰ

ৰ	
-	-

8.2

8.2.1 show supervlan

ħu ३ SuperVLAN ৰ ε SubVLAN Â **ñ1wçPĞavgjTm;VÄ%ÁarcBWNÍ1TtBWNR¥08N**

	ใบ ๓	
ใบ ๓		

9 Protocol VLAN

9.1

9.1.1 protocol-vlan ipv4 addr mask addr vlan id

IP ফ্রেম à Л৷ VLAN৷

৷	
addr	IP ফ্রেম Л৷ x.x.x.x
id	VLAN ID 1- p VLAN

ħu ३

Ruijie(config)# **protocol-vlan ipv4** *192.168.100.3* **mask** *255.255.255.0* **vlan** *100*

ħu ३	
show protocol-vlan ipv4	-
no protocol-vlan ipv4 *addr* **mask** *addr*	-
no protocol-vlan ipv4	-

৷

-

ħu ३ ৭ ৷	
-	-

9.1.2 protocol vlan ipv4

ক্ষ ৷ Э IP ফ্রেম à Л৷ VLAN৷

৭	

	-	-

9.2

9.2.1 show protocol-vlan

Protocol VLAN

show vlan protocol-vlan

命令		
	命令	
	-	-

配置说明	
	Ruijie# **show protocol-vlan**
配置说明	配置说明	
	-	-
平台	RGOS10.1 及以上
命令模式	模式	
	-	-

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

no private-vlan mapping

৭	
svlist	secondary VLAN list
no	

ƫ ३ Primary VLAN ৭

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

ƫ ३	
show vlan private-vlan	-

৶ RGOS10.1 ЛЪЭ

ƫ ३ ৭ ৶	
-	-

10.1.3 private-vlan type

VLAN ѝ VLAN

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

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

৭	
community	ѝ community VLAN
isolated	ѝ isolated VLAN
primary	ѝ primary VLAN
no	VLAN

ħu ३	
show vlan private-vlan	-

ৰ ˚ RGOS10.1 ЛЭ

ħu ३ ৲ ৰ	
-	-

10.1.5 switchport private-vlan host-association

private VLAN ў ৲ primary VLAN ৲ ج secondary VLAN

switchport private-vlan host-association *p_vid s_vid*

no switchport private-vlan host-association

৲	
p_vid	… primary VID
s_vid	… secondary VID
no	ÿ VLAN ў ৲

ħu ३ ৲

no

- -

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

primary	primary VLAN
community	community VLAN
isolated	isolated VLAN

private VLAN

```
Ruijie# show vlan private-vlan
```

-	-

RGOS10.1

-	-

10.3 Hybrid

10.3.1 switchport hybrid allowed vlan

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

no switchport hybrid allowed vlan

hybrid

no	hybrid

ħu ३ ^

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

ħu ३

ħu ३	
-	-

ʎ ˅ RGOS10.1 ЛЪЭ

ħu ३ ˥ ʎ

ʎ	
-	-

10.3.2 switchport hybrid native vlan

switchport hybrid native vlan *vid*

no switchport hybrid native vlan

hybrid ^ vlan

^

^	
no	hybrid VLAN

ħu ३ ^

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

ħu ३

ħu ३	
-	-

ʎ ˅ RGOS10.1 ЛЪЭ

ใช้งาน VLAN	✓	

11 QinQ

11.1

ﻫ tunnel ^ Qi/TTW* nTr 852/GS297418 ȣ 519 6.0ȣ2394ǻ4120.647/TţTf QTŰ3Ë2/GS30.36ǫ04519ǵ6ǵ92Tm ≥20

-	-

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

ह access trunk hybrid uplink ৲ ৩ ৯ ৯ ~ vid

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

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

৲	
v_list	vid
vid	৷ tag vid
no	৷

ƚυ ३ ৲

Ю tag vid ঋ 10-20 ˘ vid ঋ 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
```

ƚυ ३	
show translation-table [**interface** *intf-id*]	-

৷ ˘ RGOS10.3 ЛυЭ

ƚυ ३ ৭ ৷	৷
-	-

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

ह access trunk hybrid uplink ৲ ৩ ৯ ৯ ~ vid

ƪu 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
```

ƪu ३

ƪu ३	
show interface intf-name remark	-

ɴ -

ƪu ३ ˥ ɴ

ʌ	
-	-

11.1.5 frame-tag tpid tpid

˝ ك tpid

frame-tag tpid <*tpid*>

no frame-tag tpid

ʌ

ʌ	
no	ɴ tpid

ƪu ३ ^ (5760 p ɴ جه Ю)

Ю ˝ ك tpid ѝ 0x9100

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

```
ruijie(config-if)# frame-tag tpid 0x9100
```

	show inner-priority-trust	-

视图	-

缺省情况下	视图	

৭	
no	৸ uplink ৭

uplink ৭

ƬU ३ ৭

Ю ৭ ѝ uplink ৭

```
ruijie(config)#interface gigabitEthernet
                switchport mode 9.233 0 Td]T2 1 Tf_0 1 T.8474f0 Tc 14.97j/TT
```

ƚυ ३ ^

Ю dot1q-tunnel ^ vlan 3-6 ŷ ˩ vlanˇ tag

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

ƚυ ३

ƚυ ३	
show interface dot1q-tunnel	-

ɅI ˅ RGOS10.3 ЛЪЭ

ƚυ ३ ˥ ɅI

ЛI	
-	-

11.1.11 switchport dot1q-tunnel native vlan

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

ƬU ३

ƬU ३	
show interface dot1q-tunnel	-

配置	
show traffic-redirect	-

版本	RGOS10.3 及以上

命令模式	全局配置模式

show traffic-redirect	-

/I

ʃ	ˢ	RGOS10.1 ЛƱЭ

ƚƣ ʒ ʅ ʃ	ʃ	
	-	-

11.1.15 l2protocol-tunnel

dot1q-tunnel ʌ γ ˜

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

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

ʌ	ʌ	
	stp	stp
	gvrp	gvrp
	no	ʃ

ƚƣ ʒ

Ю γ ˜ gvrp ∩ stp ╥

```
ruijie#configure
ruijie(config)# l2protocol-tunnel stp
ruijie(config)# l2protocol-tunnel gvrp
ruijie(config)#end
```

ƚƣ ʒ	ƚƣ ʒ	
	show l2protocol-tunnel {**gvrp|stp**}	-

ʃ	ˢ	RGOS10.3 ЛƱЭ

ƚƣ ʒ ʅ ʃ	ʃ	
	-	-

11.1.16 l2protocol-tunnel *proto-type* enable

[illegible]

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

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

[illegible]

[illegible]	
stp	stp
gvrp	gvrp
no	[illegible]

[illegible]

配置说明 [illegible]

[illegible]

```
[illegible]
ruijie# configure
ruijie(config)# interface fa 0/1
ruijie(config-if)# l2protocol-tunnel gvrp enable
ruijie(config-if)# end
```

配置验证

配置验证	
show l2protocol-tunnel { **gvrp|stp** }	-

平台 [illegible] RGOS10.3 以上

命令模式

模式	
-	-

11.1.17 l2protocol-tunnel *proto-type* tunnel-dmac *mac-address*

[illegible]

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

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

ЛЯ	
stp	stp ЛЯЗЫ
gvrp	gvrp ЛЯЗЫ
no	ЛЯЗЫ ЙЙ

ЛЪ ЗЦ

ЮЛЯЗЫ ЛЯЗЫ ЛЯЗЫ ЛЯЗЫ

```
ruijie#configure
ruijie(config-if)#l2protocol-tunnel gvrp tunnel-dmac 011AA9 000005
ruijie(config-if)#end
```

ЛЪ ЗЦ	
show l2protocol-tunnel { **gvrp**|**stp** }	-

ЛЯ RGOS10.4 ЛЪЭ

ЛЪ ЗЦ ЛЯ	ЛЯ	
	-	-

11.2

11.2.1 show dot1q-tunnel

ЛЯ dot1q-tunnel ЛЯЗЫ

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

ЛЯ	
intf-id	ЛЯ

	-	-
⅄	RGOS10.1 ЛU Э	

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

intf-id	接口

```
ruijie# show interface dot1q-tunnel
Interface: Gi0/3
```

```
Ruijie# show interface intf-name remark
Ports         Type        From value  To value
------------ ----------- ----------- --------
Gi0/1         Cos-To-Cos  3           5
```

ЛЬ ЗЦ	
-	-

ЛЦ	
RGOS10.1 ЛЬЭ	

ЛЬ ЗЦ ЛЦ	
-	-

11.2.6 show interface mac-address-mapping x

MAC ЛЦЗЗ 8

show mac-address-mapping *x*

ЛЦ	
-	-

a 8

ЛЬ ЗЦ

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

ЛЬ ЗЦ	
-	-

ЛЦ	
RGOS10.1 ЛЬЭ	

配置限制	
-	-

11.2.7 show registration-table

功能说明 dot1q-tunnel 的 vid 信息

show registration-table [**interface** *intf-id*]

参数	
intf-id	接口

默认

配置

使用指导

```
ruijie# show registration-table
Ports        Outer-VID  Inner-VID-list
------------ ---------- ------------------
Gi0/7        5          7-10,15,20-30
```

显示	
-	-

平台	RGOS10.3 以上

命令模式	
-	-

11.2.8 show traffic-redirect

功能说明 vid 列表信息

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

参数	

intf-id	৲

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```
ruijie# show traffic-redirect
Ports          Type          VID   Match-filter
------------ ----------- ---- ------------
Gi0/3        Mod-outer   23   11
Gi0/3        Mod-outer   3    4
Gi0/3        Mod-outer   6    5
Gi0/3        Mod-inner   8    inner-to-8
Gi0/6        Mod-inner   9    100
Gi0/7        Nested-vid  13   nest-13
```

ƬU ३

L2protocol-tunnel : gvrp Disable

配置	
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版本 RGOS10.3 以上

版本	
-	-

12 Share VLAN

12.1

12.1.1 share

ƪ ३ share vlan Â

৭	
-	-

ƪ ३ vlan

৷ share vlan **no share** ƪ ३ Â

ঞ ˘ **end** ƪ ३˘ Ctrl+C ৷ Â

ঞ ˘ **exit** ƪ ३ Â

⅜

ƕ ३ فخ سم ˘ فخ سم Status original˘ ‡ فخ سم ৷ فخ سم’
فخ سم Status duplicated˘ ‡ فخ سم 8 فخ سم’ فخ سم Status
ѝ ˘ ‡ share vlan Â

৭	৭	
	-	-

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« ھی

13 MAC

13.1

13.1.1 address-bind

ip mac Â

address-bind *ip-address mac-address*

no address-bind *ip-address*

ip-address	IP Â
mac-address	mac Â

IP MAC ‡ IP IP MAC a IP MAC Â

Ю ip 3.3.3.3 mac 00d0.f811.1112

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

show address-bind	

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13.1.2 address-bind install

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address-bind install

no address-bind install

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IP فخ سم Ω MAC فخ سم ˘ ‡ ˆ IP فخ سم ÿ IP فخ سم ˘ MAC فخ سم a ÿ IP فخ سم MAC ˘ Â

Ю ip فخ سم ÿ 3.3.3.3 Ω mac فخ سم 00d0.f811.1112

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

	Ipv4
	IPV4+MAC
	IPV4+MAC
	IPV4+MAC

	IPV6	
	a ipv6	
	IPV6	
	MAC MAC IPV6	

IP 192.168.5.2 00d0.f822.33aa
IPV6

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

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-	-

ثو ٦

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

show mac-address-table dynamic	

13.1.7 clear mac-address-table filtering

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

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

show mac-address-table filtering

00d0.f800.0c0c

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

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

八	

no mac-address-table aging-time

৭	
seconds	╟ فخ سم لا ˘ ᏁU ìй´ Æ Â تن ā Â

300 Â

ᏂU ३

show mac-address-table aging-time ᏂU ३ Â

show mac-address-table dynamic ᏂU ३ ╟ فخ سم Â

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

ᏂU ३	
show mac-address-table aging-time	╟ فخ سم لا Â

a show mac-address-table filtering

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

clear mac-address-table filtering	
show mac-address-table filtering	

-	-

13.1.11 mac-address-table notification

MAC no

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

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

interval *value*	MAC Trap 1
history-size *value*	MAC 50

1 50

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

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

ثو ٦	

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

-

	-

13.1.13 snmp trap mac-notification

MAC Â no Â

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

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

added	Â
removed	Â

Â

Â

show mac-address-table notification *interface* Â

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

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

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13.1.14 mac-address-learning

ل فخ سم ـ F /

mac-address-learning

٨	٨	

	فخ سم ـ F Ü
ثو ع	ل
	a جم Ü Ɱ ل Э MAC فخ سم ـ F ـ فخ سم ـ F ل a Ɱ '
	1' ل فخ سم ـ F' Ruijie(config-if)# no mac-address-learning

ل

13.2

13.2.1 show address-bind

فخ سم Â

show address-bind

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ثو ع

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

address-bind	Â

-	-

13.2.2 show address-bind uplink

Â

show address-bind uplink


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

.....	

٦ ٤	٦ ٤	
	address-bind uplink	٨

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	-	-

13.2.3 show mac-address-table address

ص

show mac-address-table interface

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13.2.5 show mac-address-table count

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show mac-address-table count

৭	

13.2.7 show mac-address-table filtering

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

mac-addr	MAC Â
vlan-id	VLAN Â

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

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

-	-

13.2.8 show mac-address-table interface

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

interface-id	AggregatePort) Â

interface *interface-id*	Â MAC Â
history	MAC Â

MAC Â

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

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

-

-

13.2.10 show mac-address-table static

Â

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

mac-addr	MAC Â
vlan-id	VLAN Â
interface-id	AggregatePort)

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

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

-	-

13.2.11 show mac-address-table vlan

VLAN Â

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

vlan-id	VLAN ID Â

配置

```
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
```

配置	

1' 显示 MAC 地址学习 F'

Ruijie# show mac-address-learning

地址学习	

说明

显示 MAC 地址学习

说明	

14 DHCP Snooping

14.1 DHCP snooping

14.1.1 ip dhcp snooping

DHCP Snooping ╗ ˘ ج Ю Ĥu ३ ৷ Â Ĥu ३ ৷ no ˘ DHCP Snooping ╗ Â

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

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Ĥu ३ ৷	
	DHCP Snooping ╗ ʌ˘ ˩Ʌ **show ip dhcp snooping** Ĥu ३ ৷ DHCP snooping ╗ ĭ Â ~ DHCP Snooping б Private VLAN ╗ a Â

Ю DHCP snooping ╗ '

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping
Ruijie(config)# end
Ruijie# show ip dhcp snooping
Switch DHCP snooping status ' ENABLE
Verification of hwaddr field status ' DISABLE
DHCP snooping database write-delay time: 0 seconds
DHCP snooping option 82 status: ENABLE
0.9T2 09.22d( )62 357W* n3>T8 Tcg714.48r9j/T610 18T 0 315357fQ3>T8 Tcg71410
```

	show ip dhcp snooping	DHCP snooping Â

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	-	-

14.1.2 ip dhcp snooping bootp-bind

DHCP Snooping Bootp ╗ ˘ ج Ю ƒu ३ Â
ƒu ३ no ˘ DHCP snooping Bootp ╗ Â

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

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ħu ३	
show ip dhcp snooping	DHCP snooping

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14.1.4 ip dhcp snooping database write-to-flash

DHCP Snooping ╟ FLASH ˘ ˘ ج
ƗO ħu ३ Â

ip dhcp snooping database write-to-flash

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ħu ३ Â

ħu ३˘ ৶ ∫ Ω DHCP Snooping ╟ FLASH ˘ Â

ƗO DHCP ╟ flash '

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

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14.1.5 ip dhcp snooping information option

ॐ DHCP ╗ option82 ╗ ˘ ॐ ƗO ƪu ३ৃ Â
ƪu ३ৃ no ˘ ╗ Â

[no] ip dhcp snooping information option

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ƪu ३ৃ	
ƪu ३ৃ˘ ॐ DHCP ╗ option82 ˘ DHCP ╚ ৷ option82 ॐ ƫ ؈ Â	

ƗO ॐ 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
```

ʌ DHCP ˘ ج ʌ ƪO ƪ ३ Â ƪ ३
no ˘ ˅ ʌ ⁸ Â

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

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rate-value	˘ PPS[Packet Per Second]

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ƪ ३ ˝ ƪ ३ Â
˥ DHCP Snooping ⁸ VLAN ʌ ˘ ↑ ʌ Â
˙ p Э˘ CPP[CPU Protect Protocol]˥ Â CPP ˚ DHCP
⁸˘ ⁂ CPP ˝I DHCP Snooping ⁸ ˥ Â
CPP ˙ ˘ ɛ Â
˅ Л **show ip dhcp snooping** ƪ ३˘ ʌ Э ⁸ Â

ƪO ʌ 1 ⁸ ˝ 100pps˙

```
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip dhcp snooping limit rate 100
Ruijie(config-if)# end
Ruijie# show ip dhcp snooping
Switch DHCP snooping status' ENABLE
Verification of hwaddr field status' DISABLE
DHCP snooping database write-delay time: 0 seconds
DHCP snooping option 82 status: ENABLE
DHCP snooping Support Bootp bind status: ENABLE
Interface                  Trusted    Rate limit (pps)
------------------------   -------    ------------
FastEthernet0/1             NO         100
```

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show ip dhcp snooping	DHCP snooping Â

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14.2.2 ip dhcp snooping suppression

٨ ѝ suppression ˘ ج ٨ ЮO ƪu ३ Â ƪu ३ no ˘ ٨ ѝ no suppression Â

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

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ƪu ३ ٨ Â

ƪu ३˘ ৶ ٨ЮO DHCP ˘ . ٨ЮO DHCP فذسم Â

ЮO ٨ **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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14.2.3 ip dhcp snooping trust

ʌ DHCP snooping ǐ TRUST ʌ˘ ج ʌ ƮO ƪ ʒ Â
ƪ ʒ no ˘ ʌ ǐ UNTRUST ʌ Â

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

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ƮO˘ ʌ ǐ UNTRUST ʌ Â

ƪ ʒ ʌ Â

ƪ ʒ˘ ʎ DHCP ⊨ ⋗ ʌ ǐ TRUST ʌ ÂTRUST ʌ ↑
DHCP ؛ ˩˘ UNTRUST ʌ ↑ DHCP ؛ Â

ƮO ʌ **fastethernet** 0/1 ǐ TRUST ʌ '

```
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip dhcp snooping trust
Ruijie(config-if)# end
Ruijie# show ip dhcp snooping
Switch DHCP snooping status' ENABLE
Verification of hwaddr field status' DISABLE
DHCP snooping database write-delay time: 0 seconds
DHCP snooping option 82 status: ENABLE
DHCP snooping Support Bootp bind status: ENABLE
Interface                  Trusted    Rate limit (pps)
------------------------  -------    ------------
FastEthernet0/1            YES         unlimited
```

14.3 DHCP snooping

14.3.1 show ip dhcp snooping

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14.3.2 show ip dhcp snooping binding

DHCP Snooping ˘ ڝ Ю ƕʇ Â

show ip dhcp snooping binding

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ƕʇ˘ ɺɲ ɱ DHCP Snooping Â

Ю ˈ

```
Ruijie# show ip dhcp snooping binding
Total number of bindings: 1

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

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ƕʇ	
ip dhcp snooping binding	DHCP snooping
clear ip dhcp snooping binding	DHCP snooping ╟

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ह Э DHCP Snooping ╖ ˘ ह Ю ƪ ३ Â

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

15 IGMP Snooping

15.1

15.1.1 deny

ㄱ profile ‡ ˘ profile Ю ƪυ ३ deny Â

deny

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deny	ㄱ profile ‡ ফ স

profile deny Â

ƪυ ३ profile Â

"I ج profile Ю range ƪυ ३ ‡ Â ৲ ˘ й profile ˘ profile ↑ ৭ Э Â

Ю … ㄱ 224.2.2.2 profile '

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

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ƪυ ३	
ip igmp profile	… profile
range	‡ ফ স

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ƪυ ३ ৲ ৶

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15.1.2 permit

profile ˘ profile Ю ƪ ३ permit˘ profile
ৰ ৲ ৴ Â

permit

ৰ	
permit	৴ profile ˘ ফ ম Â

profile deny Â

ƪ ३ profile Â

˝I ج profile Ю range ƪ ३ ˘ Â ৲ ˘ й profile ˘
profile ↑ ƪ ३ Э Â

Ю … ৲ ৴ 224.2.2.2 profile '

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

ƪ ३	
ip igmp profile	… profile
range	˘ ফ ম

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ƪ ३ ৲ ৴	ৰ	
	-	-

15.1.3 range

profile ˘ profile Ю ƪ ३ range˘ ৴ Л ´ ম
ফ˘ ≠ ৴ Л ˘ ফ ম Â ƪ ३ no ফ ম Â

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

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

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high-ip-address	فخ سم تن

Â

ƪu ३ profile Â

فخ سم تن ʌ˘ ˇ profile ˇ deny Â ʌ ˇ
ˇ profile ˇ profile ʃ ʌ Э Â

Ю … تن ˇ 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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ƪu ३	
ip igmp profile	… profile
deny	profile ˇ ˇ deny
permit	profile ˇ ˇ permit

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ƪu ३ ʃ ʌ

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15.1.4 ip igmp profile

IGMP profile 8 ʎ Â profile ˇ ˝I جم Ю
profile Â ƪu ३ ƪu ३˘ profile-number˘ igmp profile Â

ip igmp profile *profile-number*

no ip igmp profile *profile-number*

ʌ

ʌ	
profile-number	profile ʌ˘ تن 1-65535

Â

ƪu ३ Â

IGMP Profiles Э ⅃˘ ľ SVGL فخسم تن ـا à ľ
ᴺ تن ـا à ľ IGMP Filtering تن ـا ᴺ ╗ Âج ˘ й profile
˘ profile Ω ╗ Â

Ю … ᴺ й 1 profile profile Â

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

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ħυ ३	
range	profile فخسم تن Â
permit	profile й й permit
deny	profile й й deny

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ħυ ३ ˥ ᴺ

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15.1.5 ip igmp snooping ivgl

igmp snooping ivgl ˘ ħυ ३ **ip igmp snooping ivgl** Â
ħυ ३ no igmp snooping Â

ip igmp snooping ivgl

no ip igmp snooping

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ᴺ	
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disable Â

ħυ ३ Â

جه Ю˘ ᴺ VLAN Â ў ᴺ б ᴺ VLAN
ᴺ ' جه ˆ VLAN ˘ ᴺ
ᴺ VLAN ˘ ᴺ ᴺ Â

	pim snooping igmp snooping IVGL IVGL-SVGL ˘ جھ no ip igmp snooping igmp snooping ╗ ˘ pim snooping جھ ‡ ˝l pim snooping˘ ɜ a ╗ Â

Ю جھ Э igmp snooping ivgl '

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

Ħυ ३	Ħυ ३	
	ip igmp snooping svgl	igmp snooping svgl Â
	ip igmp snooping ivgl-svgl	igmp snooping ⅄ Â

⅄

Ħυ ३ ˥ ⅄	⅄	
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15.1.6 ip igmp snooping ivgl-svgl

igmp snooping ivgl-svgl ˘ Ħυ ३ **ip igmp snooping ivgl-svgl** Â Ħυ ३ no igmp snooping Â

ip igmp snooping ivgl-svgl

no ip igmp snooping

⅄	⅄	
	-	-

disable Â

Ħυ ३ Â

˘ ‡ IVGL à SVGL ч Â IVGL Ω SVGL ч ˥ Λυ ⅄ جھ˘
˥ Λυ IGMP Profile ˆ فخ سم تن SVGL˘ جھ فخ سم تن ˘
˥ ˘ ⅄ ˥ Λυ VLAN ˥ ˘ ع فخ سم تن ˥
˘ ⅄ ⅄ VLAN Â

й IVGL-SVGL

~

Shared VLAN Â

SVGL Ю˘ IGMP Profile ƒ فخسم تن SVGL˘ جه فخسم
تن ˘ ৲ ˘ ৸ ৲ Л৳ VLAN ৲' Ю تن a
جه SVGL تن˘ Â

й SVGL ˘ a ˝Ą Ь ╗ ˘ . a
ip multicast-routing Â ৲ ˘ Ь ╗ ˘ a
SVGL Â

~ pim snooping igmp snooping IVGL IVGL-SVGL
˘ جه ip igmp snooping svgl ƒ ˘ pim
snooping جه ‡ ˝I pim snooping˘ з ƒ
a ╗ Â

Ю جه Э igmp snooping svgl ˘ profile й 1'

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

Ъu ३

Ъu ३	
ip igmp snooping svgl vlan	Shared VLAN Â
ip igmp snooping svgl profile	SVGL profile Â

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Ъu ३ ৲ ৸

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15.1.8 ip igmp snooping vlan

جه vlan Э igmp snooping ivgl ˘ Ъu ३ **ip igmp snooping vlan** Â Ъu ३ no igmp snooping Â

ip igmp snooping vlan vid

no ip igmp snooping vlan vid

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৸	
vid	vlan id

disable Â

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~	ج Ю˘ ج vlan Э ŭ ╟ IGMP Snooping ╥ ˘ ƪ ३ Â				
		vlan Э pim snooping		igmp snooping	˘ ج
		no ip igmp snooping vlan	vlan Э	igmp snooping ╥	˘
		pim snooping ج VLAN	‡	˝I	pim snooping˘
		3 a ╥ Â			

Ю ج vlan 2 Э igmp snooping'

Ю جھ vlan 2 й igmp snooping svgl vlan'

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

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ƬU ३	
ip igmp snooping svgl	igmp snooping svgl Â
ip igmp snooping ivgl-svgl	igmp snooping ⅄ Â

⅄

ƬU ३ ⅂ ⅄

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15.1.10 ip igmp snooping svgl profile

جھ profile تن SVGL ˘ ƬU ३ **ip igmp snooping svgl profile** Â ƬU ३ no ⅄ Â

ip igmp snooping svgl profile *profile-number*

no ip igmp snooping svgl profile

⅄

⅄	ƐÄ
profile-number	profile ⅄˘ ⅄ تن<1-65536>

Ю svgl profile Â

ƬU ३ Â

ƬU ३ ⅄ جھ SVGL IVGL-SVGL Ю Â

Ю جھ й igmp snooping svgl

ƪ ३ ٦ ৶	٨	
	-	-

15.1.11 ip igmp snooping dyn-mr-aging-time

╟ ˜ ˆ ٨ ע Â

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

no ip igmp snooping dyn-mr-aging-time

٨	٨	
	time	╟ ˜ ٨ ע ˘ ৶ تن<1-3600> Â

	300s
ƪ ३	Â
	╟ ٨ جھ ع ע ɱ ˆ IGMP PIM Hello ˘ ٨ ÿ ৸ ٨ Âجھ ╟ ٨ ˜ Ю˜ ৶ ∫ƪ ƪ ३ ╟ ٨ ע ˘ جھ ע ˘ ৶ ╗ ∩ Â
	Ю جھ ╟ ˜ ٨ ע й 100s˙ `Ruijie(config)#` **`ip igmp snooping dyn-mr-aging-time`** *`100`*

ƪ ३	ƪ ३	

৶

ƪ ३ ٦ ৶	٨	
	-	-

15.1.12 ip igmp snooping fast-leave enable

igmp snooping ╗ ˘ ƪ ३ **ip igmp snooping fast-leave enable** Â ƪ ३ no igmp snooping fast-leave Â

ip igmp snooping fast-leave enable

no ip igmp snooping fast-leave enable

৭	
-	-

disable Â

Ĥu ३ Â

৭ ÿ ৭ ĵ ў ৸ IP IGMP
˘ ৭ ÿ ৸ ৭ Â ৲˘ ĵ
IP IGMP ˘ a ̈Ą ৲ ৭ ৸ Â ह Э˘
৭ Ю ৭ ˘ ‡ ৸ Л ৭ ৭ ‖ Л Ω Â

Ю ह Э igmp snooping fast-leave'

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

Ъu ३ Â

جم ĺ IGMP ʌ˘ ˘ ʌ ʏ ʎ˘
ʎ ŭ ; ˘ ʎ ŭ 0 ˘ ‡ ŭ ʌ a ̈Ą ˘ ˘
γ ʌ ÿ IGMP Snooping ˩ Â
جم ĺ IGMP ʌ˘ ˘ ʌ ŭ ╟ ʏ
ʎ˘ ʎ ŭ ; ˘ ʎ ŭ 0 ˘ ‡ ŭ ʌ a ̈Ą ˘
˘ ʌ ÿ IGMP Snooping ˩ Â
IGMPv3 ˘ a ʎ Â

Ю جم ╟ ˘ ʌ ʏ ŭ 100s'

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

Ъu ३

Ъu ३	

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Ъu ३ ʅ ʌ

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15.1.14 ip igmp snooping source-check default-server

IP 8 ˩ IP فخ سم ╚ ʎ Â igmp snooping ip ╖ ˘ Ъu ३ **ip igmp snooping source-check default-server** Â Ъu ३ no ip ╖ Â

ip igmp snooping source-check default-server *address*

no ip igmp sooping souce-check

ʌ

ʌ	
address	فخ سم ˆ ╚ ʎ فخ سم ˜ Â

╖ Â

Ъu ३ Â

IP ˘ ˘ فخ سم ʌ فخ سم˘ ĭ ‡
Â فخ سم˘ ˩ ʃʊ ʌ

	Server Â ৲ Serverĭ IP ╗ Â
~	ŭ ╟ IP ╗ ৲ˇ Ь ৲ ╗ ؛ Â ৲ ˇ Ь ╗ ˇ a IP ╗ Â

Ю ip ip ŭ 192.168.4.243 Â

```
Ruijie(config)# ip igmp snooping source-check default-server
192.168.4.243
```

ƪu ३

ƪu ३	
ip igmp snooping limit-ipmc	╗ ip Â

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ƪu ३ ৲

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15.1.15 ip igmp snooping limit-ipmc

╗ IP ˇ ƪu ३ **ip igmp snooping limit-ipmc vlan** ˇ ƪu ३ no IP Â

ip igmp snooping limit-ipmc vlan *vid* **address** *gaddress* **server** *saddress*

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

৴

৴	
vid	ip vlan id Â
gaddress	فخ سم Â
saddress	فخ سم (ᴸ ᴶ) Â

Â

ƪu ३ Â

ˇI IP ╗ ╗ Â

Ю ╗ ip Â

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

```
server 192.168.4.243
```

ใบ ๓	

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15.1.18 ip igmp snooping mrouter learn pim-dvmrp

╟ ŭ̆ IGMP Query/Dvmrp/PIM Hellp ˘ Л υ ╟ ⁞ ٨˘
Ħυ ३ **ip igmp snooping mrouter learn** Â Ħυ ३ no ٧ ╟ ˘ Â

ip igmp snooping mrouter learn pim-dvmrp

no ip igmp snooping mrouter learn pim-dvmrp

٨	

╥ Â

Ħυ ३ Â

٨ б ὲ ٨ Â Ю˘ ╟
٨ ˘ ╥ ˘ ٧ Л υ ╟ ٨ ˘ ╥ ˘ no
Ħυ ३ ╟ ˘ ˘ ╟ ˘ ˚ ٨ Â
╟ ٨ ˘ ╥ Л˘ vlan ٨ ╟ ˘ ╥ Â
٧ ˘ ╟ ٨ ˘ ╥ Ю˘ vlan ٨ ˘ ╥
˘ vlan ╟ ٨ ˘ ╥ ѝ Â
٨ ˘ ٧ ÿ ٨ Л ˘
٧ ٧ ”Ą ٨’ ÿ ٨ ѝ ˘ Â جه
٨ ╥ Ю˘ ╟ ٨ ˘ ˘ ٧ Л υ igmp snooping
Â

Ю جه ╟ ٨ ˘ ╥ '

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

Ħυ ३	

15.1.19 ip igmp snooping vlan mrouter interface

ʌ б è ʌ, ʌˇ
Ħυ ३ **ip igmp snooping vlan mrouter interface** Â Ħυ ३ no ʌ Â

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

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

ʌ

ʌ	
vid	ʌ vlan id Â
interface-id	ʌ id

Â

Ħυ ३ Â

ˉ Л υ Э ʌ й Ы ʌˇ ÿ Э ˆ IP
ˉ Л υ ʌ ˉ ˉ Ы Â ج ʌ Ю ˇ ˉ ʌ ÿ ʌ
ˉ ˇ è Â
ج ʌ ╟ ˉ ˉ ╥ Ю ˇ ˉ Л υ ʌ Â

Ю ج ʌ'

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

Ħυ ३

Ħυ ३	
ip igmp snooping source-check port	ʌ

ˉ ʌ

Ħυ ३ ˉ ʌ

Л	
-	-

15.1.20 ip igmp snooping vlan mrouter learn pim-dvmrp

╟ ŭ IGMP Query/Dvmrp/PIM Hellp ˇ Л υ ╟ ⁞ ʌˇ
Ħυ ३ **ip igmp snooping vlan mrouter learn** Â Ħυ ३ no ˉ ʌ ╟
ˉ Â

๔	
vid	๔

IGMP Profile ج ৲ ƬƠ ৲ ĵ IGMP Report ˘ ‡
৲ ╗ فخ سم ĭ ج IGMP Profile تن Â ˘ ‡ ╗ ˘
৴ ৴ Â ˝I … profile˘ ৴ filter Â

ƬU ३

ƬU ३	
ip igmp snooping filter	৲ Â

৲

ƬU ३ ৲ ৲

৲	
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15.2

15.2.1 show ip igmp snooping

igmp snooping Â

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

৲

৲	
	igmp snooping ৷৷ Â
gda-table	৷ ‡ Â
interfaces	igmp snooping filtring Â
mrouter	৲ Â
statistics [**vlan** *vlan-id*]	snooping Â
vlan	vlan ƬO snooping

ƬU ३ EXEC

ƬU ३

ƬU ३	
-	-

৲

ใช้งานได้	
-	-

15.2.2 show ip igmp profile [profile-number]

คำสั่ง	
	profile
profile-number	profile

ใช้งาน	EXEC
	ทุกๆ profile

ใช้งาน	
-	-

คำสั่ง	
ใช้งานได้	
-	-

15.2.3 debug igmp-snp

IGMP Snooping Debug Â ใช้งาน no Â

debug igmp-snp

debug igmp-snp event

debug igmp-snp packet

debug igmp-snp msf

debug igmp-snp warning

undebug igmp-snp

undebug igmp-snp event

undebug igmp-snp packet

undebug igmp-snp msf

undebug igmp-snp warning

ƛ	
	IGMP Snooping
event	IGMP Snooping Y˚
packet	IGMP Snooping
msf	IGMP Snooping б
warning	IGMP Snooping ˆ

ƚƣ EXEC

ƚƣ	
-	-

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-	-

ƚƣ ˥ ƛ

16 PIM-Snooping

16.1 PIM-Snooping

16.1.1 ip pim snooping ō Ŏ

ह ŏ PIM-Snooping **ip pim snooping** ħυ ३ Â ħυ ३ no PIM-Snooping Â

ip pim snooping

no ip pim snooping

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PIM-Snooping Â

ħυ ३

&

PIM-Snooping ╗ IGMP-Snooping IVGL IVGL-SVGL ˘ ह ЮO ŏ IGMP-Snooping ॐ PIM-Snooping ⌟ ŏ ╟ IGMP-Snooping IVGL ’ ЮO ŏ ╟ IGMP-Snooping SVGL ‡ PIM-Snooping a ╗˘ ˝I IGMP-Snooping SVGL Â

PIM-Snooping ॐ VLAN Э PIM-Snooping ╗ Â

```
Ruijie# configure terminal
Ruijie(config)# ip pim snooping
```

ħυ ३	

ħu ३ ٦ ٧	٨	
	-	-

16.1.2 ip pim snooping ō Ŏ

ह ٨ Э ŭ PIM-Snooping **ip pim snooping** ħu ३ Â ħu ३ no ह ٨ Э PIM-Snooping Â

ip pim snooping

no ip pim snooping

٨	٨	
	-	-

	ह ٨ Э PIM-Snooping Â
ħu ३	٨
&	PIM-Snooping ╗ IGMP-Snooping VLAN Э IGMP-Snooping ŭ ╟ ऋ PIM-Snooping ˝I ŭ ╟ VLAN IGMP-Snooping ३ a ╗ Â PIM-Snooping ऋ VLAN Э PIM-Snooping ╗ Â

```
Ruijie# configure terminal
```

16.1.3 show ip pim snooping

PIM-Snooping ˘ **show ip pim snooping** ħυ ३ Â

show ip pim snooping [**detail**]

ħu ३

ЛuЮħu ३ PIM-Snooping VLAN199 '

```
Ruijie#show ip pim snooping vlan 199
4 neighbors (0 DR priority incapable)
DR is 214.199.199.4
```

ħu ३	

17 DHCPV6 Snooping

17.1

17.1.1 ipv6 dhcp snooping

dhcpv6 snooping ╗ ˘ Â ƬU ३ **no** dhcpv6 snooping ╗ Â

╟ ╗Ĭ ˇ ╗ Â ƪ ३ no ˘
╗ Â

ipv6 dhcp snooping binding-delay *seconds*

no ipv6 dhcp snooping binding-delay

৭	৭	
	time	Ĭ ˇ ˘ ´ Æ'

ƪ ३

Ю˘ ╟ ╗Ĭ ˇ Â ╗ ৸˘ ╟
˘ ج IPv6 فذ سم ğ ˘ Ĭ ˇ Â

1' ╟ 10 ̈Ạ ╗Ĭ ˇ Â

```
Ruijie(config)# ipv6 dhcp snooping binding-delay 10
```

ƪ ३	ƪ ३	

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ƪ ३ ৭ ৸	৸	
	10.4	ƪ ३

17.1.3 ipv6 dhcp snooping database write-delay

dhcpv6 snooping flash ˇ Â ƪ ३ **no**
╗ Â

ipv6 dhcp snooping database write-delay *time*

no ipv6 dhcp snooping database write-delay

৭	৭	
	time	flash ˇ

ƪ ३

dhcpv6 snooping flash ˚ ˘ ⌟ ⎍ ŏ ╟
⌟˘ ˘ ⌟ IP ⌟ ⎍ Â

1' flash й 100

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

ƪ ३

ƪ ३	
show ipv6 dhcp snooping	dhcpv6 snooping ╗

⌟

ƪ ३ ⌉ ⌟

⌟	
10.4	ƪ ३

17.1.4 ipv6 dhcp snooping database write-to-flash

dhcpv6 snooping flash ˚ Â

ipv6 dhcp snooping database write-to-flash

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⌟	
-	

ƪ ३

ƪ ३˘ ⌟ ⎍ dhcpv6 snooping flash ˚ Â
ŏ ⌟˘ ╟ ÿ flash ⌟ flash Â

1' dhcpv6 snooping flash

```
Ruijie(config)# ipv6 dhcp snooping database write-to-flash
```

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ƪ ३	

ƪ

ƪ ३ ৲ ƪ

ƪ	
10.4	ƪ ३

17.1.5 ipv6 dhcp snooping filter-dhcp-pkt

ƪ ƚ dhcpv6 Â ƪ ३ no ˘ ˥ Â

ipv6 dhcp snooping filter-dhcp-pkt

no ipv6 dhcp snooping filter-dhcp-pkt

ƪ	ƪ	

ƪ ३ ƪ

ƪ ३ ƛ˘ ৲ ƛ ƪ ƚ dhcpv6 ˘ . ƪ ƟƠ dhcpv6 ফ Â

1' ƪ **fastethernet** 0/1 dhcpv6

```
# interface fastethernet 0/1
Ruijie(config-if)# ipv6 dhcp snooping filter-dhcp-pkt
```

ƪ ३	ƪ ३	

H

Ĺ ٨ Ł Â ħυ ३ no ˘ DHCPv6 ؛ ٨ Â

ipv6 dhcp snooping ignore dest-not-found

no ipv6 dhcp snooping ignore dest-not-found

٨	٨	

ħυ ३

DHCPv6 ؛ ٤˘ MAC فخ سم ˘ DHCPv6 ؛ جم Э a؟ MAC فخ سم ٨˘ й ˘ a ٤ Â جم ⁞ ˘ ٤ يج à à تجى ٨ ٨ يج˘ MAC سم فخ ˘ ٤ ˘ ٤ ٤ Э Y ˘ جم Э .

Ĺ DHCPV6_SNOOPING-5-DEST_NOT_FOUND: Could not find destination port. Destination MAC [mac-address] Ł˘ ˘ й DHCPv6 ˘ ٤ Лυ Ю ˘ a؟ MAC فخ سم ٨ Лυ ٤ ؟ VLAN ٨ Â

1' ٨ Â

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

ħυ ३

ħυ ३	
show ipv6 dhcp snooping	dhcpv6 snooping ╗

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ħυ ३ ٦ ٨

٨	
10.4	ħυ ३

17.1.7 ipv6 dhcp snooping link-detection

٨ LINK DOWN ˘ ٨ Э ╟ Â ħυ ३ no ˘ ╗ Â

ipv6 dhcp snooping link-detection

no ipv6 dhcp snooping link-detection

৭	

Ĥu ३

Ю˘ ৭ LINK DOWN ˘ a ৭Ю ╟ Â ŭ ╥ ⅄˘ ৭ LINK DOWN ˘ ╟ ৭Ю ╟ Â

1' ৭ LINK DOWN ˘ ╟ ৭Ю ╟ Â

```
Ruijie(config)# ipv6 dhcp snooping link-detection
```

Ĥu ३	
show ipv6 dhcp snooping	dhcpv6 snooping ╥

⅄

Ĥu ३ ⅂ ⅄	⅄	
	10.4	Ĥu ३

17.1.8 ipv6 dhcp snooping trust

৭ dhcpv6 snooping ङ trust Â Ĥu ३ no ˘ ৭ ङ untrust Â

ipv6 dhcp snooping trust

no ipv6 dhcp snooping trust

৭	

৭ ङ untrust

Ĥu ३ ৭

⅄ dhcpv6 ⅃⅄ ৭ ङ trust ৭˘ trust ৭ ⅊ dhcpv6 Server ⅊ ⅃' untrust ৭ ⅊ dhcpv6 Server ⅊ Â

1' ʌ fastethernet 0/1 ѝ trust ʌ

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

ƪ ʒ

ƪ ʒ	
show ipv6 dhcp snooping	dhcpv6 snooping ╥

ʌ

ƪ ʒ ʅ ʌ

ʌ	
10.4	ƪ ʒ

17.1.9 Ipv6 dhcp snooping vlan

ج vlan Ɔ ŏ dhcpv6 snooping ╥ ˘ ƪ ʒ Â ƪ ʒ no ˘ vlan Ɔ dhcpv6 snooping ╥ Â

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

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

ʌ

ʌ	
vlan-list	vlan ˘ 1,3-5,7,9-11
vlan-min	vlan id
vlan-max	vlan id vlan

	-	-

10.4	ƚυ ३

17.1.11 ipv6 verify source

ᴺ ƒƨ ᴺ Â ƚυ ३ no ˘ ᴺ ƒƨ Â

ipv6 verify source [**port-security**]

no ipv6 verify source

ᴺ	ᴺ	
	port-security	MAC ƒƨ + IPV6 ƒƨ ' ᴺ MAC ƒƨ ∩ IPV6 ƒƨ ʌ ˘ ' ᴺ ˘ ᴺ IPV6 ƒƨ ˘ ᴺ IPV6 ƒƨ ʌ ˘ . '

ƚυ ३ ᴺ

ƒƨ ʌ˘ ⊥ ∩ IPV6 ƒƨ˘ ᴺ DHCPV6 ᴺ IPV6
ƒƨ˘ ˘ ⊥ ∩ Â

1' ᴺ **fastethernet** 0/1 ŭ MAC+IPV6 ƒƨ

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

ƚυ ३	ƚυ ३	

ʌ

ƚυ ३ ʅ ʌ	ʌ	
	10.4	ƚυ ३

17.2

17.2.1 show ipv6 dhcp snooping

dhcpv6 snooping ๊ ๗ Â

show ipv6 dhcp snooping

๑	๑	
	-	-

ใบ ๓

vlan *vlan_id*	VLAN ŋ́
interface *interface_name*	৲ ŋ́

ƬU ३

ƬU ३˘ ৲ ƱU dhcpv6 snooping ŋ́ Â

```
  1' show ipv6 dhcp snooping prefix
Total number of prefix: 1
Mac Address     IPv6 Prefix  Lease(s)  VLAN  Interface
-------------   ----------   -------   ----  -----------
00d0.f801.0101  2001:2002::/64  42368     2    fa 0/1
```

ƬU ३ [redacted]

╗ Ω dhcpv6 snooping ╟ Â

show ipv6 source binding [*ipv6-address*] [*mac-address*] [**vlan** *vlan_id*] [**interface** *interface_name*] [**dhcp-snooping** | **static**]

ৰ intTj//T]TJM 00rg Tc0t05 18. 706Tf0m05 18. 685.52 l296.7 685.52 l296.7 706Tf0l291.6 706Tf0l291.6

. 1

17.3.1 clear ipv6 dhcp snooping binding

dhcpv6 snooping Â

clear ipv6 dhcp snooping binding [*ipv6-address*] [*mac-address*] [**vlan** *vlan_id*] [**interface** *interface_name*]

۸	۸	
	ipv6-address	ipv6 فخ سه
	mac-address	mac فخ سه
	vlan *vlan_id*	VLAN
	interface *interface_name*	۸

&a†'0,f bRe8XbRe8Xbs S '0…1q,S bS bs BH f bRc I0mBH bS "1YV Ã„ •

ھو ۶ Π «ïBs ïRRnñ%&ï s î'0ŽâS G«%0 pRs ƐBH õ%&h Ô$€ç %0ƋD!YV Ã„ • Ƥ ۸ ۶ ھو

ipv6-prefix	ipv6 ŋń ŋń
mac-address	mac ƒذ سه ŋń
vlan *vlan_id*	VLAN ŋń
interface *interface_name*	^l ŋń

ƒu ३

ƒu ३˘ ⌟ ⎍u dhcpv6 snooping ŋń Â

1' dhcpv6 snooping ŋń

```
Ruijie# clear ipv6 dhcp snooping prefix
```

ƒu ३

ƒu ३	

⌟l

ƒu ३ ˥ ⌟l

⎍l	
10.4	ƒu ३

17.3.3 clear ipv6 dhcp snooping statistics

dhcpv6 snooping dhcpv6 Â

clear ipv6 dhcp snooping statistics

^l

^l	
-	-

ƒu ३

ƒu ३˘ ⌟ ⎍u dhcpv6 snooping dhcpv6 Â

功能	功能	

说明

功能配置说明	版本	
	10.4	功能

10.4(2)	ƚυ ३

18.1.2 ipv6 nd snooping vlan

VLAN IPv6 ND snooping ╥ Â ┘Λυ ƚυ ३ no VLAN IPv6 ND Snooping ╥ Â

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

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

৭		
৭	*vlan-rng*	vlan ন
		vlan

ƚυ ३ ٦ ۷	10.4(2)	ƚυ ३

18.1.3 ipv6 nd snooping trust

۷ ѝ trust ۷ Â ۷ Л ƚυ ३ no ۷ ѝ untrust ۷

ipv6 nd snooping trust

no ipv6 nd snooping trust

۷		

۷ ѝ untrust ۷

ƚυ ३ ۷

18.1.4 ipv6 nd snooping check address-resolution

ND فخ سم Â ⌟ ⎍ ħυ ३ no ND فخ سم
Â

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

no ipv6 nd snooping check address-resolution

٩	
key-node-only	ND فخ سم

18.1.5 ipv6 nd snooping detect gateway

ŭ ╟ ˜ Â ┘Л ħυ ३ no ╟ ˜ Â

ipv6 nd snooping detect gateway ra

no ipv6 nd snooping detect gateway ra

৭	

ħυ ३

ھ VLAN Э ŭ Â

' ŭ ╟ ╟ ┘ ╖

```
Ruijie#
```

৭	
vlan-rng	vlan ন
vlan-min	vlan Э
vlan-max	vlan Ю

ƪ ३

Ŭ

' Ŭ ╟ VALN ╟ ৲ ╗

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

ƪ ३	
show ipv6 nd snooping	nd snooping ╟ ৲ Â

৲

ƪ ३ ৲	
10.4(2)	ƪ ३

18.1.7 ipv6 nd snooping key-node

╗ ND ফ Â ৲ ∫ƪ ƪ ३ no ╗ Â

ipv6 nd snooping key-node [link-local *vid***]***ipv6_address/prefix_len*

no ipv6 nd snooping key-node [link-local *vid***]** *ipv6_address/prefix_len*

৭	
vid	link-local ফ VID

ipv6_address/prefix_len	IPv6 ـسم فخ ـا ـè ـم

ƚυ ३

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#ipv6 nd snooping key-node  2003::1/128
```

ƚυ ३	
show ipv6 nd snooping key-node	nd snooping

ـا

ƚυ ३ ٦ ـا	
10.4(2)	ƚυ ३

18.1.8 ipv6 nd snooping monitor stateless-user

ـسم فخ ـّـ Â ـا ـلـ ƚυ ३ no ـسم فخ ـّـ Â

ipv6 nd snooping monitor stateless-user

no ipv6 nd snooping monitor stateless-user

ـا	

ƕʋ ʒ

ǘ↑ فخ سم ɺ ND ꓵ

ˈ ǘ

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#no ipv6 nd snooping monitor stateless-user
```

ƕʋ ʒ

ƕʋ ʒ	
show ipv6 nd snooping stateless-user	ǘ↑ فخ سم ꓵ

ɺl

ƕʋ ʒ ˥ ɺ

ʎl	
10.4(2)	ƕʋ ʒ

18.1.9 ipv6 nd snooping stateless-user combine-security

فخ سم ʮ ʎ Â ɺ ʃu ƕʋ ʒ no ╥ Â

ipv6 nd snooping stateless-user combine-security

no ipv6 nd snooping stateless-user combine-security

ʮ

ʮ	

ƕʋ ʒ

ʮ ╥ 802.1X ʎ˘ ʮ ǘ ╟ ɱ ╥ ˘. ǘ ╥ ˘

è Â

' Ŭ ╟ ৲ ৴

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# ipv6 nd snooping stateless-user combine-security
```

ƪ ३

ƪ ३	
show ipv6 nd snooping	ipv6 nd snooping

৴

ƪ ३ ৭ ৴

৴	
10.4(2)	ƪ ३

18.1.10 ipv6 nd snooping stateless-user address-bind

Ŭ IPv6 ╟ Â ৲ ƪ ३ no ╖ Â

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

no ipv6 nd snooping stateless-user address-bind

৷

৷	
strict	link-local link-local a ৷ link-local Â
ip-mac	IP+MAC a ৷ IP Â

ƪ ३

1' Ŭ

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# ipv6 nd snooping stateless-user address-bind
```

2' ш فذ سم IP+MAC

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#ipv6 nd snooping stateless-user address-bind strict ip-mac
```

ھ ۶

	ھ ۶	
	show ipv6 nd snooping	ipv6 nd snooping

```
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# ipv6 nd snooping stateless-user station-move
```

ħu ३	

show ipv6 nd snooping	ipv6 nd snooping

ھ

ھو ३ ٦ ھ	٨	
	10.4(2)	ھو ३

18.1.13 ipv6 nd snooping stateless-user per-vlan prefix-limit

VLAN IPv6 ٨ Â

ipv6 nd snooping stateless-user per-vlan prefix-limit *num*

no ipv6 nd snooping stateless-user per-vlan prefix-limit

٨	٨	
	num	VLAN IPv6 ٨

2

ھو ३

' VLAN 4 IPv6 ٨

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#ipv6 nd snooping stateless-user per-vlan
prefix-limit 4
```

ھو ३

ھو ३	
show ipv6 nd snooping	ipv6 nd snooping

ھ

ھو ३ ٦ ھ

٨	
10.4(2)	ھو ३

18.1.14 clear ipv6 nd snooping key-node

Â

clear ipv6 nd snooping key-node [vlan *vid*]

۹	
vid	٤ VLAN

ھو ۶

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

ھو ۶	

۷

۸	
10.4(2)	ھو ۶

ھو ۶ ٦ ۷

18.1.15 clear ipv6 nd snooping stateless-user

Â

clear ipv6 nd snooping stateless-user [vlan *vid*]

۹	
vid	٤ VLAN

ھو ۋ

ھو ۋ

'

Ruijie# **clear ipv6 nd snooping stateless-user**

ھو ۋ

ھو ۋ	

ۋا

ھو ۋ ۋا ۋا

ۋا	
10.4(2)	ھو ۋ

18.1.16 clear ipv6 nd snooping prefix

VLAN ۇ ۋ

clear ipv6 nd snooping prefix [vid *vlan***]**

ۋا

ۋا	
vlan	ۋ VLAN

ھو ۋ

'

ۇ IPv6

Ruijie# **clear ipv6 nd snooping prefix**

ھو ۋ

ھو ۋ	

ھ

ھو ३ ٦ ھ

ھ	
10.4(2)	ھو ३

18.2

18.2.1 show ipv6 nd snooping

IPv6 nd snooping

show ipv6 nd snooping [interface]

ھ

ھ	
interface	ھ

ھو ३

' IPv6 nd snooping

```
Ruijie# show ipv6 nd snooping
```

18.2.2 show ipv6 nd snooping key-node

show ipv6 nd snooping key-node


```
Ruijie# show ipv6 nd snooping key-node
```


10.4(2)	配置

18.2.3 show ipv6 nd snooping stateless-user

ئۇ ipv6 سىز فىز

show ipv6 nd snooping stateless-user

ۋ	ۋ	

ھۇ ۋ

' ئۇ ipv6 سىز فىز

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

ھۇ ۋ	ھۇ ۋ	

ۇ

ھۇ ۋ ۇ ۇ	ۇ	
	10.4(2)	ھۇ ۋ

18.2.4 show ipv6 nd snooping prefix

ئۇ ۋىن

show ipv6 nd snooping prefix

ۋ	ۋ	

ND Snooping ƕ ३

19 MSTP

19.1

19.1.1 bpdu src-mac-check

ʌ bpdu mac Â ˩ Л Ĥ ʒ no ʌ bpdu mac ˥ Â

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

no bpdu src-mac-check

ʌ	
H.H.H	ʌ mac ـسم فخ ـسم ـسم فخ bpdu Â
no	ʌ bpdu Â

Â

8 RSTP BPDU BPDU 8 Â

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

interface-id	

Â

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

show spanning-tree interface	STP Â

-	-

19.1.3 spanning-tree

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

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

ƀυ ३

Â

forward-time à hello-time à max-age Ь ت ˘ ع !

	-	-

19.1.6 spanning-tree bpduguard

ᴺ BPDU Guard Â ⁻ Λυ ħυ ३ enabled disabled
ᴺ BPDU Guard Â

spanning-tree bpduguard [| disabled]

		EA 7
	enabled	
	disabled	ᴺ BPDU Guard Â

	Â
ħυ ३	ᴺ Â

Bäÿ×a ìÿ# Ã ðÀ % 3• Ð• HNbÿ9€ ƒ”7Nf9€ v B NöhD‡vò ÿNû4B ñ e‰" 0Œ G3L> ×â4Ãb3\ LN b2‘f"R C„

-	-

ĥu ३ ^

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

ĥu ३

ĥu ३	
-	-

^

ĥu ३ ˥ ^

^	
-	-

19.1.8 spanning-tree guard loop

^ Э loop guard Â ĥu ३ no loop guard Â ŭ loop guard ˥ ˘ ^ ^ ج aĵ bpdu ˩ Â

spanning-tree guard loop

no spanning-tree guard loop

^

^	
-	-

loop guard ˥ Â

ĥu ३ ^ Â

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

ऽ root guard

ھو ३ ^ Â

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

ھو ३

ھو ३	
show spanning-tree interface	STP ^

^

ھو ३ ٦ ^

^	
-	-

19.1.12 spanning-tree loopguard default

loop guard Â ھو ३ no loop guard Â ŭ loop guard ╗ ˘ ^ ^ ج aĵ bpdu ˩ Â

spanning-tree loopguard default

no spanning-tree loopguard default

^

^	
-	-

loop guard ╗ Â

ھو ३

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

ھو ३

ھو ३	
-	-

19.1.14 spanning-tree mode

ह ƪ ƪ ३ STP Â no ৲ ƛ 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

ƪ ३ .

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

ƪ ३	
show spanning-tree	

ƪ ३ ৲ ৲	
-	-

19.1.15 spanning-tree mst configure

ह ƪ ƪ ३ ৲ ƛ MST ˘ MSTP Region Â no ৲ ƛ
ƪ ३ ƪ ৲ ^ name à revision à vlan map˜ Â

spanning-tree mst configuration

no spanning-tree mst configuration

৲	
-	-

instance Ω vlan Vlan ج Instance 0 Â
name ŷ Â
revision ŷ 0 Â

ƪ ʒ .

ھ ˘ end ƪ ʒ˘ Ctrl+C ʌ Â
ھ ˘ exit ƪ ʒ Â
MST ʌ˘ ˩ Ʌ ƱƪƱ ʒ ˥ '
instance *instance-id* **vlan** *vlan-range*' Vlan ╗ MST Instance Â
instance-id تن ŷ 0˙ 64 Âvlan تن ŷ 1˙ 4095 Âvlan-range ˩ Ʌ vlan
ʌ˘ VLAN ID ʌ ˘ VLAN ID ˩ Ʌ ¡˙ Ľ ч VLAN ID
˘ ' instance 10 vlan 2,3,6-9 ƧƧ VLAN 2˘ 3˘ 6˘ 7˘ 8˘ 9 ╗ Instance
10 Â VLAN ك ج Instance 0 Â VLAN ÿ Instance
no ƪ ʒ' **no instance** *instance-id* [**vlan** *vlan-range*] Â (no ƪ ʒ
Instance تن ŷ 1˙ 64)
name *name*' MST ʌ ˘ ˩ Ʌ ˩ Ʌ ŭ 32 Â ˩ Ʌ no name
ȅ Â
revision *version*' MST ˘ تن 0˙ 65535 Â ˩ Ʌ no revision ȅ
Â
show' ɲ MST region Â

Ю MST ˘ VLAN 3, 5-10 ˥ MST Instance 1.

```
Ruijie(config)# spanning-tree mst configuration
Ruijie(config-mst)# instance 1 vlan 3˘ 5-10
Ruijie(config-mst)# name region 1
Ruijie(config-mst)# revision 1
Ruijie(config-mst)# show
MST configuration
Name [region1]
Revision 1
Instance  Vlans Mapped
----------  ---------------------
0       1-2,4,11-4094
1       3,5-10
-----------------------------------
Ruijie(config-mst)# exit
Ruijie(config)#
```

VLAN 3 ÿ Instance 1 ˘ ж MST Л˘ Ю

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

Instance 1 ˘ Ю'

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

˩ Л˘ MST Ъ ʒ show Э Â

Ъ ʒ	

MSTP

- Region [illegible] Â ˜I ˩ ˘ Л
[illegible] Â

[illegible] 20 Gigabitethernet 1/1 ˥ ˜I ˀ 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* Ъ ˧ Э Â

.

Ю Instance 20 ˝І й 8192˜

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

˥ Л show **spanning-tree mst instance interface interface-id** Ъ ३ Э Â

show spanning-tree interface	STP ৲ Â

৲

ħυ ३ ৲ ৲	
৲	
-	-

19.1.20 spanning-tree portfast

৲ Portfast Â ৲ ৸ ħυ ३ disabled ৲ Portfast Â

spanning-tree portfast [**disabled**]

৲	
৲	
disabled	৲ Portfast Â

Â

ħυ ३ ৲ Â

-

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

ħυ ३	
ħυ ३	
show spanning-tree interface	৲ STP Â

৲

no spanning-tree portfast bpdufilter default

৭	
-	-

BPDU filter

ħυ ३ Â

BPDU Filter ⅄˘ ৭ a ৲ ≠ a BPDU Â **show spanning-tree** ħυ ३ Â

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

ħυ ३	
show spanning-tree interface	STP Â

⅄

ħυ ३ ৲ ⅄	
-	-

19.1.22 spanning-tree portfast bpduguard default

BPDU guard Â ৲ ⅄υ ħυ ३ no BPDU guard Â

spanning-tree portfast bpduguard default

no spanning-tree portfast bpduguard default

৭	
-	-

BPDU Guard.

ħυ ३ Â

BPDU guardʹ ৯ ৭ Ɜ ˆ BPDUʹ ‡ error-disabled Â **show spanning-tree** ħυ ३ Â

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

ھو ۳

19.1.24 spanning-tree reset

spanning-tree ѝ Â ħυ ३ no Â

spanning-tree reset

৭	
-	-

ħυ ३ Â

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

ħυ ३	
show spanning-tree	STP Â
show spanning-tree interface	STP ৭ Â

ħυ ३ ৭	
-	-

19.1.25 spanning-tree tc-guard

৭ tc- guard Â ħυ ३ no tc- guard Â ŭ tc-guard ৭ ˘ tc Â

spanning-tree tc-guard

no spanning-tree tc-guard

৭	
-	-

tc- guard Â


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

-	-

-	-

19.1.26 spanning-tree tc-protection

tc- protection no tc- protection

spanning-tree tc- protection

no spanning-tree tc- protection

-	-

tc- protection

ĥu ३ ৭ ৶	৸	
	-	-

19.1.27 spanning-tree tc-protection tc-guard

tc- guard Â ĥu ३ no tc- guard Â ŭ tc-guard ৷৷ ˘ tc Â

spanning-tree tc-protection tc-guard

no spanning-tree tc-protection tc-guard

৭	৭	
	-	-

tc- guard Â

ĥu ३ Â

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

ĥu ३	ĥu ३	
	-	-

৶

ĥu ३ ৭ ৶	৸	
	-	-

19.1.28 spanning-tree tx-hold-count

STP TxHoldCount ˘ ৷ BPDU Â ĥu ३ no Â

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

no spanning-tree tx-hold-count

۹	
tx-hold-count	TxHoldCount Â ژ تن 1↑ 10 Â

3 Â

ھU ३ Â

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

ھU ३	
show spanning-tree	

tx-hold-count	TxHoldCount Â
pathcost method	Â

ƕ ३ Â

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

ƕ ३	
spanningtree pathcost method	
spanning-tree forward-time	BridgeForwardDelay Â
spanning-tree hello-time	BridgeHelloTime Â
spanning-tree max-age	BridgeMaxAge Â

link-type	৲ linktype

ĥu ३ Â

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

ĥu ३

19.2.3 show spanning-tree mst

ह्र ƗO ƬU ३ ৲ ᒍU MST ˘ Instance Â

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

৭	
configuration	mst
instance-id	*Instance ᒍ*
interface-id	৷ ᒍ

Instance Â

ƬU ३ .

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

ƬU ३

20 SPAN

20.1

20.1.1 monitor session

… SPAN ˆ ˜ Ω ˆ ˜ . Ĥu ʒ no
´ Â

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

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

no monitor session all

session_number	SPAN Â
source interface *interface-id*	Â *interface-id* ˇ a SVI Â
destination interface *interface-id*	Â *interface-id* ˇ a SVI Â
mac source *mac-addr*	MAC
mac destination *mac-addr*	MAC
both **acl** *name*	Ω Â **acl** *name/id*
rx	Â
tx	Â
all	
encapsulation	, 8 Ω tag a
switch	ˇ a

ʌ ÂSPAN a :
port Ɔ˘ ˘ SPAN a

Â
Â

˘ ´ SPAN

ɅI ˘
Ethernet 1/1 ⁸⁾

erface gigabitEthernet

estination interface

ń SPAN Â

igabitEÕ5.48 æ-

session *session_number*	SPAN ʌ

SPAN

ħu ३

Ю **show monitor** ħu ३ SPAN 1 ɱ

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

ħu ३

ħu ३	
monitor session	… SPAN ʌ ˆ ʌ˜ Ω ʌˆ ʌ˜ Â

ʌ

ħu ३ ˥ ʌ

ʌ	
-	-

21

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

ħυ ३

ħυ ३	
show monitor	Â

৶

a ৲ ৷ p reflector-port Â

ħυ ३ ৲ ৶

৷	
-	-

21.1.2 remote-span

ħυ ३ RSPAN VLAN

[**no**] **remote-span**

৷

৷	
-	-

ħυ ३

VLAN

ঔ ˘ **end** ħυ ३˘ Ctrl+C ৴ Â

ঔ ˘ **exit** ħυ ३

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

ħυ ३

ħυ ३	

	show vlan	Vlan Â

۷	S5750 p a ۷ ۸ Â

ھو ३ ٦ ۷	۸	
	-	-

22 IP

22.1

22.1.1 ip address

ƖƱ ʇ ˧ IP ﻔﺨﺴﻣ˘ ˧ Ꮑ no ˧ IP ﻔﺨﺴﻣ Â ƖƱ ʇ Ю

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

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

˧	
ip-address	32 Æ IP ﻔﺨﺴﻣ˘ 8 Æ ˘ Ꮑ ⁸ ˘ Â
network-mask	32 Æ ˘ “1” Æ˘ “0” ў Æ Â 8 Æ ˘ Ꮑ ⁸ ˘ Â
secondary	IP ﻔﺨﺴﻣ Â

˧ IP ﻔﺨﺴﻣ Â

ƖƱ ʇ ˧ Â

˧ IP ﻔﺨﺴﻣ˘ ˧ Ꮑ Ո ˧ IP ˘ ˧ IP ﻔﺨﺴﻣ˘ ˧ IP ˜ Â

≠ 32 Æ ˘ IP ﻔﺨﺴﻣ ف й ᛏ Â ˘ й Ɩ’ 1 Ŀ IP ﻔﺨﺴﻣ Æ й ᛏ ˘ й Ɩ’ 0 Ŀ IP ﻔﺨﺴﻣ Æ й ў ﻔﺨﺴﻣ ᛏ Â A й Ɩ’ 255.0.0.0 Ŀ Â ˧ Ꮑ ¯ ᛏ ˘ ᛏ ў ﻔﺨﺴﻣ ᛏ Æ ≠ й ᛏ ˘ ў ˘ ╗ ˘ й Â

RGOS ˙ ˧ Ꮑ ˧ IP ﻔﺨﺴﻣ˘ ἐ й ў IP ﻔﺨﺴﻣ˘ ἐ й IP ﻔﺨﺴﻣ Â IP ﻔﺨﺴﻣ Э ⁸˘ ˧ Ꮑ ˘ ˧ ˧ ў IP ﻔﺨﺴﻣ /I IP ﻔﺨﺴﻣ Â IP ﻔﺨﺴﻣ ˧ Ꮑ б ў IP IP

C فخ سم Â ч ˘ Лu IP فخ سم Â
Â ھھ γ ˘ ĵ Â IP فخ سم ⌟ Лu
˘ ĵ ھھ IP Â ˘ IP فخ سم Â
Â ч ۸ ˘ ⌟ Лu... ˘
IP فخ سم ˘ Â a جم ч ч
ЛuЭ ۸ Â

ЛuЮ ˘ ۸ ў IP فخ سم й 10.10.10.1˘ й 255.255.255.0 Â

```
ip address 10.10.10.1 255.255.255.0
```

ħU ३

ħU ३	IP سم Ê Ä ˘ فخ سم ۸
show interface	۸

Â ƒ ƒ˘ ЛυЮ ⁸'

Â Лυ ƒ a ƒ ƒ Â

Â ƒ SLIP àHDLC àPPP àLAPB àFrame-relay ˘ ˩ Лυ ƒ ƒ Â

˘ ˩ ↑ ƒ ƒ ƒ ƒ Â X.25 a

ƒ ƒ Â

Â a ping ƀυ ३ ƒ ƒ ї ˘ ج ѝ ƒ ƒ IP فذ سم Â

SNMP ˩ Лυ ↑ ƒ ƒ Â

Â a ƒ ƒ ů ╟ Â

ЛυЮ ˘ ƒ ѝ ƒ ƒ˘ ƒ ѝ FastEthernet 0/1 Â ƒ

IP فذ سم Â

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

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ƀυ ३	
show interface	ƒ Â

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ƀυ ३ جم γ Э a Â

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22.2

22.2.1 arp

ƀυ ३˘ ˩ Лυ جم ARP

ARP ă Â

[redacted] Â

RGOS ARP ă ˘ 32 Æ IP [redacted] 48 Æ MAC [redacted] Â ў ╟ ARP ˘ Л a ARP Â ¯ **clear arp-cache** [redacted] ARP Â

ЛЮ ˘ й Л Э ў ARP Â

```
arp 1.1.1.1 4e54.3800.0002 arpa
```

[redacted]	
clear arp-cache	ARP ă

[redacted]

Ю 3 CPU Â

Â

ARP IP IP Â **arp anti-ip-attack** *num* Â Ю **arp anti-ip-attack** *num* Â

1 ЛЫЮ ARP IP й 5 Â

```
Ruijie(config)# arp anti-ip-attack 5
```

2 ЛЫЮ ARP IP

```
Ruijie(config)# arp anti-ip-attack 0
```

-	-

Ь

10.4(2	10.4(2)

22.2.3 arp gratuitous-send interval

arp Â no Э Â

arp gratuitous-send interval *seconds*

no arp gratuitous-send

seconds	ARP Æ <1-3600> Â

ARP Â

Â

ٮ ٨ ٮ ٨ ARP ˘ ˘ Â

1' ЛЫЮ ˘ ˩ SVI 1 ٮ ARP Â

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

2' ЛЫЮ ˘ ˩ SVI 1 ٮ ARP

```
Ruijie(config)# interface vlan 1
Ruijie(config-if)# noARP858T1Tebqbqbt@ ubqc˜bt@5FTXG' 4 TeE„q×g' c T0€ T tB 1uC
```

```
arp retry interval 30
```

ثلا

ثلا	
Arp retry times *number*	ARP

لا

ثلا ٦ لا

لا	
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22.2.6 arp timeout

ARP ƒƒ ƒƒ ARP ƒƒ ƒƒ ƒƒ ƒƒ ƒƒ no ƒƒ ƒƒ ƒƒ

arp timeout *seconds*

no arp timeout

ƒƒ

ƒƒ	
seconds	ƒƒ ƒƒ ƒƒ ƒƒ ƒƒ 0-2147483 ƒƒ

ƒƒ 3600 ƒƒ

ƒƒ ƒƒ ƒƒ

ARP ƒƒ ƒƒ ƒƒ IP ƒƒ ƒƒ MAC ƒƒ ƒƒ ƒƒ
ARP ƒƒ ƒƒ ARP ƒƒ ƒƒ ƒƒ ƒƒ ƒƒ
ƒƒ ƒƒ ƒƒ ƒƒ a ARP ƒƒ

ƒƒƒƒ ƒƒ ƒƒ ƒƒ FastEthernet 0/1 ƒƒ ƒƒ ARP ƒƒ
120 ƒƒ

```
interface fastEthernet 0/1
arp timeout 120
```

ƒƒ ƒƒ	

22.2.7 arp trusted aging

ARP no

arp trusted aging

no arp trusted aging

-	-

GSN ARP a

arp timeout

ARP ARP

service trustedarp	ARP

-	-

22.2.8 arp trusted *number*

ARP no

arp trusted *number*

no arp trusted

number	ARP

ЛЫЮ й 500 Â

```
arp unresolved 500
```

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	-	-

22.2.10 ip proxy-arp

ARP **ip proxy-arp** no ARP Â

ip proxy-arp

no ip proxy-arp

	-	-

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-	-

22.2.11 service trustedarp

ŭ ƒ ARP ╗ ˘ ƒЛu **service trustedarp** ƒu ३ Â ƒu ३ no ƒ ARP ╗ Â

service trustedarp

no service trustedarp

ƒ

ƒ	
-	-

ƒ ARP Â

ƒu ३

ƒ ARP ╗ ARP ╗ ˘ й GSN ˘ Ω GSN Â

ЛuЮ ˘ ج Ю˘ ŭ **service trustedarp** ╗ Â

```
config
service trustedarp
```

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ƒu ३	
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ƒu ३ ٦ ƒ

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-	-

no ip directed-broadcast

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access-list-number	^ ৲ ~ ⁄৲˘ ج تن ÿ 1-199 ˘ 1300 - 2699 Â ЪЖ ⁄৲˘ ৲ ٦ IP ৲ Â

Â

ЪU ३ ৭

IP ৲ فخ سم ЙI IP فخ سم IP ˘ فخ سم ЙI
172.16.16.255 ЙI ৲ Â ৭ a
˘ Â

б ⁄ IP ৲ ˘ ৲´ ৲
Â ৲ ⁄ ⁄˘ ৲ ЙI
^ IP فخ سم ЙI ľ 1 Ł ~ ˘ ৲ Л৬ ৲
Э ў Â
৲ Л৬ جم ৭ Э˘ ЙЙ ╟ ৲ ⁄ ╥ ˘ ৭ ৲ Л৬ ৲
⁄ ৲ Â ЪU ३ ৲ ⁄ ⁄ ৲ ⁄ ˘
a ⁄ ٤ ৲ ৲ Â
جم ৭ Э˘ ৲ Л৬ ЪЖ ⁸ ৲ ف ৲ Â ЪЖ ˘
৲ ⁄ ЪЖ ↑ ৲ ⁄ Â
جم ৭ Э **no ip directed-broadcast** ˘ RGOS ⁄
৲ Â

ЛЪЮ ˘ FastEthernet 0/1 ৭ ЙI ৲ ৲ Â

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

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22.4.2 clear ip route

IP IP ˘ ᅥ ᄅU جم **clear ip route** ЪU ३ Â

clear ip route { * | *network* [*netmask*] }

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ᅥ	
*	
network	فخ سم
netmask	ˆ ᅥ ˜

ЪU ३

ᅥ ˘ ᅥᄅU . 9 ˆ Â
˘ Â

ᄅUЮ ˘ ᅥ 192.168.12.0 Â

```
clear ip route 192.168.12.0
```

ЪU ३

ЪU ३	
show ip route	IP IPf 66..411.5BE.02 78.36 451.7003 T

فخ سم ~ ˆ ARP˜ ğ Â

show arp [[**vrf** *vrf-name*] [**trusted**] **ip** [**mask**] | **static** | **complete** | **incomplete** | **mac-address**]

৭	
vrf *vrf_name*	VRF ˘ VRF ARP Â
trusted	৲ ARP ˘ ŋń ৷ VRF ৲ ARP Â
ip	IP فخ سم˘ IP فخ سم ARP ' ***trusted*** ˘ ‡ ৷ ৲ ARP ˘ ĭ ‡ ৲ ARP Â
mask	IP ARP ; trusted ˘ ‡ ৷ ৲ ARP ˘ ĭ ‡ ৲ ARP Â
static	arp Â
mac-address	mac فخ سم ARP Â
complete	╟ arp Â
incomplete	╟ arp Â
oob	৷ (interface of mgmt) ARP Â

ĺU ३ Â

1' ЛЫЮ ŷ show arp '

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

ARP

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

2 show arp 192.168.195.68

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

3 **show arp** 192.168.195.0 255.255.255.0

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

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

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

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22.4.4 show arp counter

ARP arp Â

show arp counter

৭	

৭

complete	arp
incomplete	arp

ARP ARP

show arp detail

```
Ruijie# show arp detail
```

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

Port	б ARP γ Λ Â

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	10.4	10.4

22.4.6 show arp timeout

Λ ARP

show arp timeout

	Λ	
	-	-

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

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	-	-

22.4.7 show ip arp

فخ سم ~ ^ ARP~ ğ ˘ جم ĥU ३ Â

show ip arp

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ARPA Â й کا فخ سم Лu ˘صر فخ س

Â ۸ فخ سم

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nber]

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...

```
IP address is:
192.168.5.133/24 (primary)
```

hU ३	hU ३	
	-	-

23.1.2 ip mtu

IP ↑ ´ ˆ MTU˜ ˘ ∧ ƿ ३ **ip mtu** Â ƿ ३ no ⅃ ⅄ƿ Â

ip mtu *bytes*

no ip mtu

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a ˘ ˩ ÿ ʌ ˺ ˑ˘ ÿ ʌ ˩
˩ Â ˑ ÿ ʌ ˩ ˩˘ ˩ ICMP
˩ ˘ ˆ ˺ فخ سم ˩ Э ˥ ˥ Â
˥ ˑ ˩ ˩ Â
RGOS ˚ Ů ICMP ˩ Â

ЛЫЮ ˘ FastEthernet 0/1 ʌ ICMP ˩ Â

```
interface fastEthernet 0/1
no ip redirects
```

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23.1.4 ip source-route

RGOS ˚ IP ˘ **ip source-route** Â

no ˥ Â

ip source-route

no ip source-route

ใบ ๓

RGOS IP Â ๎ IP ↑ ˘ IP ш à
à ˘ ج RFC 791 Â ๎
↑ ษ ε ˘ ! ╟ ' ๎ ˘
ฺ ICMP ฺ ˘ ม ↑ Â
RGOS ˚ Ю

24 DHCP

24.1 DHCP

24.1.1 bootfile

ЮЖ DHCP ЪЪ ╟ ˇ ˇ DHCP ЯЪЪ ЪЪ ЗЦ **bootfile** Â ЪЪ ЗЦ **no** ЛЛЪ ЛЛ ЮЖ Â

bootfile *file-name*

no bootfile

ЛЛ	ЛЛ	
	file-name	ЮЖ ЪЪ ╟ ˇ Â

	ЮЖ ЪЪ ╟ ˇ Â
ЪЪ ЗЦ	DHCP ЯЪЪ ЪЪ .
	DHCP ЪЪ ╟ ЮЪ ˇ ˇ DHCP ЪЪ ЪЪ ╟ ˇ DHCP ЛЛЪ ЪЪ TFTP˜ ЮЪ ˇ Â ЪЪ **next-server** ЪЪ ЗЦ ЮЖ Â
	ЛЪЮ ˇ ЮЖ router.conf ЪЪ ╟ ˇ Â `bootfile router.conf`

ЪЪ ЗЦ	ЪЪ ЗЦ	
ЪЪ ЗЦ	**ip dhcp pool**	ЮЖ DHCP ЯЪЪ ˇ DHCP ЯЪЪ Â
	next-server	DHCP ЪЪ ╟ ЮЪ ЪЪ IP ЯЪЪ Â

ЛЛ

ЪЪ ЗЦ ЛЛ	ЛЛ	
	-	-

24.1.2 client-identifier

Ĥ DHCP ˆ Ĵu ˘ Ω 8 ˜ ˇ DHCP فخ سم Ĥu ʒ **client-identifier** Â Ĥu ʒ **no** ˩ Ĵu Â

client-identifier *unique-identifier*

no client-identifier

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ƒu ३ ٦ ƒ

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24.1.3 client-name

ƒ DHCP ƒ ˘ DHCP ƒ ƒu ३ **client-name** Â ƒu ३ no DHCP ƒ Â

client-name *client-name*

no client-name

ƒ

ƒ	
client-name	ƒ DHCP ƒ Â ƒ ƒu ASCII Â ƒ a ƒ ƒ ƒ˘ ƒ river ƒ DHCP ƒ ˘ a ƒ river.i-net.com.cn Â

ƒ ƒ Â

ƒu ३

DHCP ƒ Â

ƒ DHCP ˘ ƒ ƒu ¯ ƒu ३ ƒ DHCP ƒ Â ƒ a ƒ ƒ ƒ Â

ƒuƒ ˘ ƒ river ƒ ƒ Â

`client-name river`

ƒu ३

ƒu ३	
host	ƒ IP ƒ ƒ Â DHCP Â
ip dhcp pool	ƒ DHCP ƒ ƒ ˘ DHCP ƒ Â

ƒ

ƒu ३ ٦ ƒ

ƒ	
-	-

24.1.4 default-router

ԻՐՈ DHCP ՝ DHCP ՍՀՍ ԻՍ ՀՅ **default-router** Â ԻՍ ՀՅ **no** ՀՅ ՄՍ ԻՐՈ Â

default-router

৭	[redacted]
domain-name	⊮ DHCP ⅄ ⅄ Ц √ =

type	DHCP ˚ ৲ ˜ ˘ ৲ ᎠᏁ ᏂᏍ Â ' Â ethernet Â ieee802 ' Â 1ˆ 10M ethernet˜ Â 6ˆ IEEE 802˜

Â فخ سم ˚

ᏂᏍ ˚ فخ سم ˘ й ethernet Â

Ԧ ३ DHCP فخ سم Â

৲ جم DHCP ᏂᏍ ˘ ৲ ᎠᏁ Ԧ ३ Â

Δ Δ ح ص й .

	৲ a DHCP IP ফ্রস Â
ƀυ ३	৲
	RGOS ˚ DHCP ˘ ج IP ফ্রস ˘ DHCP ╚ ৲ ৲ ' 1˜ DHCP 1˜ ' 2˜ DHCP 3˜ ৶ Э ' 3˜ DHCP 6˜ DNS ╚ ৲ ' 4˜ DHCP 15˜ ŷ ৴ ৷ ৶' DHCP 44˜ WINS ╚ ৲ Â RGOS ˚ ج PPP à FR à HDLC Э dhcp ফ্রস˘ ╚ ৲ ˘ ŋ╚ ╚ ৲ ╗

	ЛυЮ ˘ FastEthernet 0 ৲ ╟ IP ফ্রস Â
	`interface fastEthernet 0`
	`ip address dhcp`

ƀυ ३

ƀυ ३	
dns-server	ƀ DHCP DNS ╚ ৲
ip dhcp pool	ƀ DHCP ফ্রস ৶ ˘ DHCP ফ্রস Â

৶

ƀυ ३ ৲ ৶

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24.1.10 ip dhcp excluded-address

ƀ IP ফ্রস˘ DHCP ╚ ৲ a è DHCP ˘ ƀυ ३ **ip dhcp excluded-address** Â ƀυ ३ **no** ৶ Лυ ৴ ƀ 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 ফ্রস˘ IP ফ্রস তন IP ফ্রস Â
high-ip-address	ফ্রস তন IP ফ্রস Â

DHCP ╚ ⅛ ǐ فخ سم IP فخ سم Â

Ъ ę Â

IP فخ سم ˘ DHCP ╚ ⅛ ق ǐ DHCP فخ سم IP فخ سم Â
Ъ ę ┘ Л ù ў IP فخ سم ˘ فخ سم ǐ DHCP Â سم
Ъ IP فخ سم ˘ ≠ ┘ Л DHCP ╚ ⅛ ǐ فخ سم ď Â

ЛЮ ˘ DHCP ╚ ⅛ a ق ǐ 192.168.12.100~150 تن IP فخ سم Â

```
ip dhcp excluded-address 192.168.12.100 192.168.12.150
```

Ъ ę

ЛЪЮ ˘ ping ↑ й 600ms Â

```
ip dhcp ping timeout 600
```

[redacted]

Ĥu ३

Ĥu ३	
host	ĤŘ IP ƒƢ ƨ Ω Â DHCP Â
ip dhcp excluded-address	ĤŘ DHCP ĻƢ a ĵ IP ƒƢ ƨ Â
networkˆ DHCP˜	ĤŘ DHCP ƒƢ ƨ /ł Ω Â

ł

Ĥu ३ ˥ ł

/ł	
-	-

24.1.14 lease

ĤŘ DHCP ĻƢĵ ƒƢ ƨ ˘ DHCP ƒƢ ƨ Ĥu ३ **lease** Â Ĥu ३ **no** Â

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

no lease

Ł

Ł	
days	ĤŘ ˘ ƱƢ ƨ´ Æ Â
hours	ˆ ˩ ˜ ĤŘ ˘ ƱƢ ƨ´ Æ Â ĤŘ ɣ ĤŘ Â
minutes	ˆ ˩ ˜ ĤŘ ˘ ƱƢĵ ƨ´ Æ Â ĤŘĵ ɣ ĤŘ Ω Â
infinite	ĤŘ 8 Â

ƨ Â

Ĥu ३ DHCP ƒƢ ƨ

ĵ ˘ DHCP ˩ Â DHCP ĻƢ ˘ ƒƢ ƨ a ˩ Â

ƱƢƟ ˘ DHCP ƨ 1 Â
`lease 0 1`

ЛЫЮ ˘ DHCP й 1ʈ Â

lease 0 0 1

	ip dhcp pool
✓	
ใช้งาน ✓	✓
	-

24.1.16 netbios-node-type

ใช้คำสั่ง DHCP ใช้งาน **netbios-node-type** Â ใช้งาน

netbios-node-type

type0 Td( )Tj/TT1 1 Tf30.0 e-t)-10(y)13(p)-1(e)

Ã

Â

Ю˘ صر ǐ صر ʌ صر Â WINS ĻĻ˘ ǐ صر ' WINS ĻĻ˘ ǐ ʌ صر Â NetBIOS صر ǐ Hybrid Â

ЛuЮ ˘ DHCP NetBIOS ǐ ʌ صر Â
`netbios-node-type h-node`

Ĥu ǯ

Ĥu ǯ	
ip dhcp pool	Ĥ DHCP فخ سم ʌ ˘ DHCP فخ سم Â
netbios-name-server	DHCP NETBIOS WINS ʌ ĻĻ

ʌ

Ĥu ǯ ʌ

ʌ	AÈ •AĐ
-	-

24.1.17 network ō DHCP Ŏ

Ĥ DHCP فخ سم ʌ Ω ˘ DHCP فخ سم Ĥu ǯ **network** Â Ĥu ǯ

[illegible] **show ip dhcp binding** [illegible] **show ip dhcp conflict** [illegible]

[illegible] DHCP [illegible] 192.168.12.0 [illegible] 255.255.255.240

```
network 192.168.12.0 255.255.255.240
```

[illegible]

[illegible]	
ip dhcp excluded-address	[illegible] DHCP [illegible] a [illegible] IP [illegible]
ip dhcp pool	[illegible] DHCP [illegible] DHCP [illegible]

[illegible]

[illegible]

[illegible]	
-	-

24.1.18 next-server

[illegible] DHCP [illegible] DHCP [illegible] **next-server** [illegible] **no** [illegible]

next-server *ip-address* [*ip-address2…ip-address8*]

no next-server

[illegible]

[illegible]	
ip-address	[illegible] IP [illegible] TFTP [illegible]
ip-address2…ip-address8	[illegible] 8 [illegible]

[illegible]

[illegible] DHCP [illegible]

[illegible] DHCP [illegible]

ЛЪЮ ˘ й DHCP ŭ ╟ ╞ ⅄ 192.168.12.4 Â

```
next-server 192.168.12.4
```

Ĥu ʒ

Ĥu ʒ	
bootfile	ⱱ DHCP ŭ ╟ ˚ ⅃ Â
ip dhcp pool	ⱱ DHCP ⅿ ⅃ ˘ DHCP ⅿ Â
ip help-address	∧ ⱱ Helper ⅿ Â
option	RGOS ˚ DHCP ├ Ĥu ʒ -ÂðWð

≠ ѝ Â ɲń DHCP option ЪЯ ৲ RFC 2131 Â

1' ЛЪЮ ˘ ३ 19 ЪЯ ā DHCP ĭ ŭ
IP ↑ ৲ Â 0 IP ↑ ৲' 1 ŭ IP ↑ ৲ Â ЛЪЮ ˘ DHCP
ŭ IP ↑ ৲ Â

```
option 19 hex 1
```

2' ЛЪЮ ˘ ३ 33 ЪЯ 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
```

ЪU ३	
ip dhcp pool	ЪЯ DHCP فخ سم ɹ ˘ DHCP فخ سم Â

৶

คำสั่งนี้ใช้สำหรับเปิดใช้งาน DHCP ที่ถูกปิดใช้งานไว้ก่อนหน้านี้

ตัวอย่างการใช้งานคำสั่ง DHCP ที่ถูกปิดใช้งานไว้ก่อนหน้านี้

```
service dhcp
```

ใช้งาน

ใช้งาน	
show ip dhcp server statistics	แสดงสถิติการทำงานของ DHCP

ค่าเริ่มต้น

ใช้งานโหมด

ค่าเริ่มต้น	
-	-

24.2

24.2.1 clear ip dhcp binding

ใช้งานคำสั่ง DHCP **clear ip dhcp binding** และ **clear ip dhc(bidn)6ding**

show ip dhcp binding	DHCP ĥ ǰ ǰ Â

ǰ

Ĥu ǯ ǰ ǰ

ǰ	
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24.2.2 clear ip dhcp conflict

DHCP ǎ ˘ ǰ **clear ip dhcp conflict** Ĥu ǯ Â

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

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*	DCHP ǰ ǎ Â
ip-address	IP ǰ ǎ Â

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ǰ Â

Ĥu ǯ

Â

DHCP ĥ ǰ ǰ ǎ ping ˘ DHCP ǰ ǎ ǰ ˜ ˆ ARP˜ Â **clear ip dhcp conflict** ǰ ǰ ǎ Â

ǰ

ǰ ˘ ǰ ǎ Â

```
clear ip dhcp conflict *
```

Ĥu ǯ

Ĥu ǯ	
ip dhcp ping packets	ĥ DHCP ĥ ǰ ǰ ˘ ǰ ǎ ping ǰ ↑ Â
show ip dhcp conflict	DHCP ĥ ǰ ǰ ˘ ǰ ǎ Â

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Ĥu ǯ ǰ ǰ

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24.2.3 clear ip dhcp server statistics

Æ DHCP ╞ ⅄ ⅄˘ ج **clear ip dhcp server statistics** ƪ ३ Â

clear ip dhcp server statistics

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ỳ Â

ƪ ३

DHCP ╞ ⅄ ˘ DHCP فذ سه à ╟ à ˘
∩ ৻ DHCP ⁄ Â**clear ip dhcp server statistics** ƪ
३ ৻ ⅄ ৭ ⁄ ˘ ÿ Â

⅄ƱO ˘ DHCP ╞ ⅄ Â

```
clear ip dhcp server statistics
```

ƪ ३	
show ip dhcp server statistics	DHCP ╞ ⅄ Â

⁄

ƪ ३ ৭ ⁄	
-	-

24.2.4 debug ip dhcp client

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

debug ip dhcp client

no debug ip dhcp client

৭	
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Ĥu ३ Â

Ĥu ३ dhcp client ह ⊨ ⊻ ŭ ˘ Л ৭ Â

ЛЫЮ ˘ Э dhcp Â

```
debug ip dhcp client
```

Ĥu ३

Ĥu ३	
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Ĥu ३ ৭ ৸

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24.2.5 debug ip dhcp server

DHCP Server ˘ ह **debug ip dhcp server** Ĥu ३ Â

debug ip dhcp server

no debug ip dhcp server

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Ĥu ३

Ĥu ३ dhcp server ह ŭ ˘ Л ৭ Â

ЛЫЮ ˘ Э dhcp ⊨ ⊻ Â

```
debug ip dhcp server
```

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Ĥu ३	
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24.2.7 show ip dhcp binding

DHCP فذ سم ˘ EXEC ħυ ३ **show ip dhcp binding** Â

show ip dhcp binding [*ip-address*]

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৭		
	ip-address ˘	Ò Ë –SBÛVw"[illegible]f-4[illegible]paiZPGfj[illegible]f-4[illegible]ip-aIP/C2_0 1 Tf0 Tc 15.4-3 1e13.62 0 7[<

ħυ ३ ٦ ৶	٨	
	-	-

24.2.8 show ip dhcp conflict

DHCP ⊨ ৶ ŏ ˘ EXEC ħυ ३ **show ip dhcp conflict** Â

show ip dhcp conflict

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24.2.9 show ip dhcp server statistics

DHCP ⊨ ⋊ ⋏ ˘ EXEC ħυ ३ **show ip dhcp server statistics** Â

show ip dhcp server statistics

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ϋ Â

ħυ ३

ħυ ३ ⋎ ⋀υ DHCP ⊨ ⋊ ⋏ ⋏ Â

⋀υЮ ϋ **show ip dhcp server statistics** ħυ ३ 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
```

⋏ ϋ ⋈ Ю Â

Manual bindings	จำนวน Â
Expired bindings	จำนวน Â
Malformed messages	DHCP ผิดพลาด a Â
Message Received or Sent	DHCP ได้รับ หรือ ส่ง Â

ใช้งาน	
clear ip dhcp server statistics	DHCP ล้าง Â

ค่า

ใช้งานโดย	
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25 DHCP Relay

25.1

25.1.1 ip dhcp relay check server-id

DHCP Relay check server-id ╗ ˘ ┘Л ƪ ३ Â ƪ ३ no
DHCP Relay check server-id ╗ Â

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

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ƪ ३

ƪ ३˘ DHCP Relay ج ┘ DHCP option server-id
┘ DHCP ╞ ⅄ Â ƪ ३˘ ‡ ┘ DHCP ╞ ⅄ ┘ DHCP
Â

ЛЫО ˘ DHCP relay check server-id ╗ Â

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

ƪ ३	

DHCP Relay option dot1x ╗ ˘ ┘Л╙ ħu ३ Â ħu ३ no ╗ Â

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

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ħu ३

ħu ३ ˝l DHCP ╗ ˘ ٨ ٨ 802.1x Â

Л╙Ю ˘ ج DHCP Э option dot1x ╗ Â

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

ħu ३	
service dhcp	DHCP
ip dhcp relay information option dot1x access-group *acl-name*	option dot1x acl

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ħu ३ ˥ ٨	
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25.1.3 ip dhcp relay information option dot1x access-group

DHCP Relay option dot1x ACL˘ ┘Л╙ ħu ३ Â ħu ३ no DHCP Relay option dot1x ACL Â

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

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a ACL

ЪU ३

ЪU ३ ACL б ৲ Э ACL ACE a ৴ ج ŏ Â

ЛЪЮ ˘ dhcp option dot1x acl Â

```
Ruijie# configure terminal
Ruijie(config)# ip access-list extended DenyAccessEachOtherOfUnauthrize
Ruijie(config-ext-nacl)# permit ip any host 192.168.3.1
//  ৴
Ruijie(config-ext-nacl)# permit ip any host 192.168.4.1
Ruijie(config-ext-nacl)# permit ip any host 192.168.5.1
Ruijie(config-ext-nacl)# permit ip host 192.168.3.1 any
//  IP فذسه ٨
Ruijie(config-ext-nacl)# permit ip host 192.168.4.1 any
Ruijie(config-ext-nacl)# permit ip host 192.168.5.1 any
Ruijie(config-ext-nacl)# deny ip 192.168.3.0 0.0.0.255 192.168.3.0 0.0.0.255
//
Ruijie(config-ext-nacl)# deny ip 192.168.3.0 0.0.0.255 192.168.4.0 0.0.0.255
Ruijie(config-ext-nacl)# deny ip 192.168.3.0 0.0.0.255 192.168.5.0 0.0.0.255
Ruijie(config-ext-nacl)# deny ip 192.168.4.0 0.0.0.255 192.168.4.0 0.0.0.255
Ruijie(config-ext-nacl)# deny ip 192.168.4.0 0.0.0.255 192.168.5.0 0.0.0.255
Ruijie(config-ext-nacl)# deny ip 192.168.5.0 0.0.0.255 192.168.5.0 0.0.0.255
Ruijie(config-ext-nacl)# deny ip 192.168.5.0 0.0.0.255 192.168.3.0 0.0.0.255
Ruijie(config-ext-nacl)# deny ip 192.168.5.0 0.0.0.255 192.168.4.0 0.0.0.255
Ruijie(config-ext-nacl)# exit
Ruijie(config)# ip dhcp relay information option dot1x access-group DenyAccessEachOtherOfUnauthrize
```

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ЪU ३	
service dhcp	DHCP

ip dhcp relay information option dot1x	DHCP option dot1x ╗

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25.1.4 ip dhcp relay information option82

DHCP Relay option82 ╗ ˘ ৲ Л υ ħυ ३ Â ħυ ३ no ╗ Â

[**no**] **ip dhcp relay information option82**

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╗ б option dot1x ╗ ˘ a ৲ ৲ Â

ЛυЮ ˘ ج DHCP Э˘ ŭ opion82 ╗ '

```
Ruijie# configure terminal
Ruijie(config)# Ip dhcp relay information option82
```

ħυ ३

ħυ ३	
Service dhcp	DHCP ३
ip dhcp relay information option dot1x	DHCP option dot1x ╗

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ħυ ३ ৭ ৰ

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25.1.5 ip dhcp relay information option vpn

DHCP Relay DHCP Relay Aware VRF ╖ ˘ ┘ ᒍ ƪ ३ Â
ƪ ३ no ╖ Â

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ЛЫЮ ˘ ч ╘Ӽ ﻔﺨﺴﻣ'

1¨ ╘Ӽ 192.168.1.1'

2¨ ﻣ vrf й dep1 ╘Ӽ 192.168.2.1'

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

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ƚᴜ ʅ	
service dhcp	DHCP Â

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ƚᴜ ʅ ˥ ɹ

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25.1.8 service dhcp

ﺞ Э ΰ DHCP ╥ ˘ ɹ Л ƚᴜ ʅ Â ƚᴜ ʅ no ╥ Â

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

[redacted]	
-	-

ƚᴜ ʅ

DHCP ╥ ɹ Л DHCP ɹ DHCP ╘Ӽ˘ DHCP ؛ ɹ DHCP ˘ DHCP Â

ЛЫЮ ˘ ΰ DHCP ╥ Â

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

ค่าเริ่มต้น	ค่าเริ่มต้น
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26 DNS

26.1

26.1.1 ip domain-lookup

DNS Â no DNS Â

ip domain-lookup

no ip domain-lookup

-	-

DNS Â

DNS Â

DNS Â

DNS

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

show hosts	DNS Â

-	-

26.1.2 ip name-server

IP/IPv6 Â no Â

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

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

ip-address	IP
ipv6-address	IPV6

DNS Server IP/IPv6 DNS Server DNS Server DNS Server ip-address ipv6-address 6 DNS Server DNS

```
Ruijie(config)# ip name-server 192.168.5.134
Ruijie(config)# ip name-server
2001:0DB8::250:8bff:fee8:f800 2001:0DB8:0:f004::1
```

show hosts	DNS

-	-

ip-address	IP

ĥu ३

ў ˘ ˩ Л **no ip host host-name ip-address** ĥu ३ Â

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

ĥu ३

ĥu ३	
show hosts	DNS Â

˩

ĥu ३ ˥ ˩

˩	
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26.1.4 ipv6 host

ĥu ३ ў ˩ Ω IPV6 Â ĥu ३ no ў Â

Ipv6 host *host-name ipv6-address*

no ipv6 host *host-name ipv6-address*

˹

˹	
host-name	ў ˩
Ipv6-address	IPV6

ĥu ३

ў ˘ ˩ Л **no ipv6 host host-name ipv6-address** ĥu ३ Â

```
Ruijie(config)# ipv6 host ruijie 2001:0DB8:700:20:1::12
```

26.2.2 show hosts

DNS Â

show hosts [*hostname*]

	-	-

DNS Â

```
Ruijie# show hosts
Name servers are:
static
host            type        address
switch          static      192.168.5.243
www.ruijie.com  dynamic     192.168.5.123
```

ip host	IP
Ipv6 host	IPV6
ip name-server	DNS

-	-

27 SNTP

27.1

27.1.1 sntp enable

Ĥ ȝ SNTP ╗ ˘ Ĥ ȝ **no** ѝ —Disable Â

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

˅	
-	-

SNTP Disable

Ĥ ȝ

show sntp Ĥ ȝ SNTP ˅

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

Ĥ ȝ	
show sntp	SNTP
clock update-calendar	˚ ˩ ˚
clock set	˚

˩ ˚ RGOS10.0 ЛЪЭ

˅
-

27.1.2 sntp interval

Ĥ ȝ SNTP Client Ґ NTP/SNTP Server ˩ Â

sntp interval *seconds*

ħυ ३

show sntp ħυ ३ SNTP ৲

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

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ħυ ३	
show sntp	SNTP
sntp enable	SNTP

৶ RGOS10.0 ЛυЭ

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27.2

б ↑ ЛυЮħυ ३'

Â show sntp

27.2.1 show sntp

ħυ ३ SNTP ৲ Â

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ħυ ३

show sntp ħυ ३ SNTP ৲

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

```
SNTP sync interval   : 60
Time zone            : +8
```

ħu ३

ħu ३	
sntp enable	SNTP
show sntp	SNTP ৲

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RGOS10.0 Л Э

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28 NTP

28.1 NTP

28.1.1 no ntp

ntp ⌟ ⊨˘ б ⊨⌊ ⌟ ˘ ntp Â

no ntp

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Ю NTP ⊨ Â

Ъu ३ Â

ج Ю NTP ╗ ˘ ⌟ NTP ⊨⌊ NTP ⋮ ⁸˘
NTP ╗ Â

ЛЪЮ ˘ NTP ⊨Â
no ntp

Ъu ३	
ntp server	NTP ⊨⌊

⌟

Ъu ३ ⌉ ⌟	
-	-

28.1.2 ntp access-group

NTP ⊨ ⁸ ˘ Ъu ३ no ⌟ ⁸ 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*

৭	
peer	ম NTP Ь Ω ⁸ ˘ ≠ ম б ⌠ ^ ~ Â
serve	ম NTP Ь Ω ⁸ ˘ a ম б ⌠ Â
serve-only	ম NTP Ь Â
query-only	ম NTP Ь ⁸ Â
access-list-number	IP ⁸ ⁄৭' ন ৸ 1˙ 99 Ω 1300˙ 1999
access-list-name	IP ⁸ ⌡ Â

Ю NTP ⁸ ‡ Â

Ъу ३ Â

ম NTP Ь ⁸ Â ˘
NTP ⁸ Â
⌡ ˘ NTP Ь ÿ ⁸⌡ ⁸ ৭
‡˘ Л ৭ ⌡ ‡ ৸ Â ৭ ৸ peer à serve à serve-only à query-only Â

~	⁄৭ ⁸ ╗ Â Э ‡ ৭ ˘ ⁄৭⌡ б ⁸ Â
	⁸ ‡˘ ‡ Â ⁸ ‡˘ ‡ ‡ Â

ЛЮ 1 ⁄৭ ম à ⁸ Ω ⌡ ' ⁸ 2 ⁄৭ ম Â

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

Ъу ३	
ip access-list	… IP ⁸ Â

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ЮЗ ГЛ	Л	
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28.1.3 ntp authenticate

NTP ╘ NTP ⁸ Â

ntp authenticate

no ntp authenticate

Л	Л	
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	Ю NTP ⁸ Â

ЮЗ	Â

	⁝ ⁸˘ ‡ a ⅃ ╗ Â ⁝ ⁸˘ ⅃ è ˘ ⅃ ⅃ ╘⅄ ╗ Â **ntp authentication-key** à **ntp trusted-key** Â

	ج è ѝ ⅄˘ ⁸ Â
	`ntp authentication-key 6 md5 wooooop`
	`ntp trusted-key 6`
	`ntp authenticate`

ЮЗ	ЮЗ	
	ntp authentication-key	
	ntp trusted-key	Â

⅄

ЮЗ ГЛ	Л	
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28.1.4 ntp authentication-key

й NTP ⊨ NTP Â

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

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

৭	
key-id	ID’
key-string	’
enc-type	ˆ ˅ ˜ ї ╗ ˘ 0

	-	-

<18791B5B6B161C4]TΔTT1 1 Tf-2.9940 Td( )TjET60.84 7404.5 0.24 20.43 ref66.84 7404.5 063.2

ใบ ๓

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ج ╟ ⌡ ˘ . ⌡ ˘ ‡ ⌡Л Ъu ъ Â

ЛЪЮ ˘ NTP ⌡ Â

```
Ntp synchronize
```

Ъu ъ

Ъu ъ	
ntp server	NTP ╚ ⌠ ⌡

⌡

Ъu ъ ⌉ ⌡

⌡	
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28.1.9 ntp trusted-key

ID й

ntp trusted-key *key-id*

no ntp trusted-key *key-id*

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⌡	
key-id	ID Â

Ю Â

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Ku ३

NTP Ł ˘ ṃ NTP ˘ ॐ ╗ ৲ Ł ৲ ṃ
Ku ३ a . Â

ЛЮ ˘ ṃ NTP Â
show ntp status

Ku ३

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Ku ३ ৲

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29 FTP Server

29.1

29.1.1 debug ftpserver

FTP ⊨ ⊻ ˘ ƚυ ३ no Â

debug ftpserver

no debug ftpserver

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debug ftpserver ƚυ ३ ⊣ ⅃υ ح FTP ⊨ ⊻ Â

1' ⅃υЮ ⊨ ⊻ '

```
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' ⅃υЮ ⊨ ⊻ '

```
Ruijie# no debug ftpserver
```

ƚυ ३

ƚυ ३	
debug - ftpserver	-

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29.1.2 ftp-server enable

ŭ FTP ⊨ ⋊ˇ ƪ ३ no FTP ⊨ ⋊ Â

ftp-server enable

no ftp-server enable

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й Â

ƪ ३ Â

FTP ⊨ ⋊ ŭ ˇ FTP ⊣ ⋀ ƺ ˇ ˅ Э Ю Â

~ ⊣ ƪ ३ ∩ **ftp-server topdir** ƪ ३ FTP FTP ⊨ ⋊ Э ˅ Â

1' ⋀ЮЮ ŭ ╟ FTP ⊨ ⋊ 8 syslog '

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

2' ⋀ЮЮ FTP ⊨ ⋊'

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

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ƪ ३ ⅂ ⊣	
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29.1.3 ftp-server password

FTP ⊨ ⋊ ˇ ƪ ३ no ⊣ Â

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

no ftp-server password

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type	ƪ ╗ ص' 0 7 Â0 ३ ╗ ˆ ~ ' 7 ३ ѝ ╗ Â
password	⊨ ⋊

Â

ƪ ३ Â

FTP ⊨ ⋊ ⋏ ∩ ⋏∪ ˘ ৭
Â
↑ ü ˘ ⋏ ⋏ ⋏∪ ˘ ' ѝ
↑ Â
ѝ 1 ã ѝ 25 ' ѝ 4
ã ѝ 52 Â

~	FTP ⊨ ⋊ a ˘ ⊨ ⋊ Â

1' ⋏∪Ю ѝ pass'

```
Ruijie(config)# ftp-server password pass
```

'

```
Ruijie(config)# ftp-server password 0 pass
```

2' ⋏∪Ю ѝ 8001'

```
Ruijie(config)# ftp-server password 7 8001
```

3' ⋏∪Ю ৭ '

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

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29.1.4 ftp-server topdir

8 FTP ˘ تن Â ƚu ३ no
FTP ᵻ ᵻ ᵻ ˘ Â

ftp-server topdir *directory*

no ftp-server topdir

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directory	FTP

ˆ a ˜ Â

ƚu ३ Â

FTP

no ftp-server timeout

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time	ˆ ´ Æ' ˆ ' ‘ن' 1-3600˜

ѝ 30ˆ Â

Ħυ ३ Â

FTP Â ‚ƒ ج ˆ ~~
FTP ╞ ⅄ ⅃ ѝ ˘ б Â

ج FTP ÿ Э FTP ⅄ˆ Ю FTP Â ج ⅄ ╞ FTP Ħυ ३ ╞ ⅄ˆ ~ ˚ ⅄˜ ÿ 0 ' ج Ю Ħυ ३ˆ Â ج a ˚ ! Â	

1' ЛЪЮ ѝ 5ˆ '

```
Ruijie(config)# ftp-server timeout 5
```

2' ЛЪЮ ѝ ˆ 30ˆ ˜ '

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

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Ħυ ३ ⅂ ⅄

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-	-

29.1.6 ftp-server username

FTP ╞ ⅄ ⅃˘ Ħυ ३ no ⅄ ⅃ Â

ftp-server username *username*

no ftp-server username

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username	⅃

ใช้งาน

Â

FTP ล็อกอิน ¥ K€

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

配置	
udp-helper enable	启用 UDP
ip forward-protocol	启用 UDP 转发

	RGOS10.1

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30.1.3 udp-helper enable

udp-helper enable UDP **no udp-helper enable** UDP

UDP

UDP

udp-helper enable

no udp-helper enable

	-	-

UDP

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

UDP

Y

8

SNMP ใน ३

no snmp-server chassis-id

৭	
text	ʌ ˘ ˩ ʃ Â

ʌ 60FF60

Ĥ ३

SNMP ʌ ɮ ʌ˘ ʃ ⁝ Â ʌ ˩ ʃ
show snmp Ĥ ३ Â

Ю SNMP ʌ ѝ 123456:

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

Ĥ ३	

aclnumber	ˆ 1-99˜ ˘ ˘ MIB ipv4 NMS فخ سم تن Â
aclname	˘ ˘ MIB ipv4 NMS فخ سم تن Â
ipv6_aclname	ipv6 ˘ ˘ MIB ipv6 NMS [illegible]

৭	
text	

ù Â

ƚυ ३

Ю SNMP ù i-net800@i-net.com.cn '

```
Ruijie(config)# snmp-server contactsnmp-server contact
```

ħu ३ б ħu ३ **snmp-server host** ˘ ч Â

Ю ŭ ў ╟ ч SNMP Y˘ '

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

ħu ३	

ipv6_aclname	ipv6 ˇ ˇ MIB ipv6 NMS فخ سم تن Â

port-num	snmp ў ٨
notification-type	ў ╟ ٤ ص˘ snmp Â

Ю˘ SNMP ў Â

ص˘ ‡ ↑ ص Â

Ĥu ३

Ĥu ३ б Ĥu ३ **snmp-server enable traps** ˘ ў ╟ NMS ٤ Â

٤ Л ا a ٤ SNMP ў ˘ ў ٤ Л ا a ٤ ص ٨˘ a ٤ ٨˘ a ٤ vrf ٤ ˘ ٤ ў [٤ ٨ à ٤ vrf] ٨ Ω ή ٨ ˘ . ٤ ў ٤ a ٤ ˘ ٤ Лў ⁞ a ٤ ˘ ٨ ↑ Â

Ю SNMP ў ˘ SNMP Y˘ '

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

Ĥu ३

Ĥu ३	
snmp-server enable traps	Ŭ ٤

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31.1.8 snmp-server location

SNMP Æ ˘ Ĥu ३ **snmp-server location** Â Ĥu ३ no ٤ SNMP Æ Â

snmp-server location *text*

no snmp-server location

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text	Â

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

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ħu ३	
snmp-sever contact	SNMP

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31.1.9 snmp-server packetsiz

8 SNMP ↑ ˘ ħu ३ **snmp-sever packetsize** Â ħu ३ no Â

snmp-server packetsize *byte-count*

no snmp-server packetsize

ৰ

ৰ	
byte-count	↑ ˘ ÿ 484 ↑ 17876 Â

1500

ħu ३

Ю SNMP ↑ ѝ 1492'

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

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ħu ३	ħu ३	

snmp-server queue-length	SNMP

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ƀu ३ ٦ ƀ

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31.1.10 snmp-server queue-length

˘ ƀu ३ **snmp-server queue-length** Â

snmp-server queue-length *length*

ƀ

ƀ	
length	˘ ÿ 1↑ 1000 Â

10

ƀu ३

ŭ SNMP ╖ ˘ Ĥu ३ **snmp-server system-shutdown** Â
Ĥu ३ no ৲ SNMP ╖ Â

snmp-server system-shutdown

no snmp-server system-shutdown

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SNMP ╖

Ĥu ३

Ĥu ३ ŭ SNMP ╖ ˘ RGOS ৯ reload/reboot Ʌu ɱ NMS
৲ Â

Ю ŭ SNMP ╖ '

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

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31.1.12 snmp-server trap-source

SNMP

SNMP ใน ३

ĥu ३	ĥu ३	
	snmp-server queue-length	
	snmp-server enable host	NMS ў

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ĥu ३ ৲	(Ë ৲	AÈ
	-	-

31.1.14 snmp-server user

SNMP ˘ ĥu ३ **snmp-servesnmp-servme grou 06(pna)-6(me).84 719.36 0.24**

aclnum	/\˘ ˘ MIB ipv4 NMS فخ سم تن Â
aclname	ɻ ˘ ˘ MIB ipv4 NMS فخ سم تن Â
Ipv6_aclname	ipv6 ɻ ˘ ˘ MIB ipv6 NMS فخ سم تن Â

Â

Ъυ ३

ЮO snmpV3 ˘ md5 ˘ Ω DES ╗ '

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

Ъυ ३

	default ˜ MIB Â
ƪ ३	
	Ю ˜ ↑ MIB-2 ˆ oid ѝ 1.3.6.1˜ '
	`Ruijie(config)# snmp-server view mib2 1.3.6.1 include`

ƪ ३	ƪ ३	
	show snmp view	SNMP ˜

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ƪ ३ ৲	৲	
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31.1.16 snmp trap link-status

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31.2

31.2.1 show snmp

SNMP ˘ ƪ ३ **show snmp** Â

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

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ƪ ३	
	show snmp ƪ ३ SNMP '

show snmp mib snmp mib ’

show snmp user snmp ’

show snmp view snmp في ’

show snmp group snmp ’

show snmp host ’

ƪO SNMP '

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

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ƪu ३	
snmp-server *chassis-id*	SNMP

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32.1.2 rmon collection history

Л∪ ∧ ˥ ⅄ ħu ३ Â **no** ⅄ Â

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

no rmon collection history *index*

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ƬU ३ ৭

ЛЬЮ ˘ ⅃ Ль Ль ৭ 1 # #Áłß _B Xâ Ɔ Ю

ЛЪЮ ˘ ЊЖ Y ˚ ╟ ' Y ˚ à ↊ trap Â

```
Ruijie(config)# rmon event
```

```
Event type : log-and-trap
Community : public
Last time sent : 0d:0h:0m:0s
Owner : zhangsan
Log : 1
Log time : 0d:0h:37m:47s
```

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

ħu ३	
ħu ३	**rmon event** *number* [**log**] [

```
显示结果 ˘                    '
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
```

配置	配置
rmon collection history *index* [**owner** *ownername*] [**buckets** *bucket-number*] [**interval** *seconds*]	启用 RMON 历史统计

说明	

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ЛЫЮ ˘ '

```
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
```

ƫ ३	
rmon collection stats *index* [**owner** *owner-string*]	৭

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33 DHCPv6 Client

33.1

33.1.1 ipv6 dhcp client pd

جھ ۸ Ɔ ŭ DHCPv6 client سم فخ ɲń ˘ **ipv6 dhcp client pd** ħu ३ Â ħu ३ **no** سم فخ ɲń Â

ipv6 dhcp client pd *prefix-name* [**rapid-commit**]

no ipv6 dhcp client pd

DHCPv6 client

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33.2

33.2.1 clear ipv6 dhcp client

ج ৸ Э ŭ DHCPv6 ˘ **clear ipv6 dhcp client** ƪ ३ Â

clear ipv6 dhcp client *interface-type interface-number*

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৸	
interface-type interface-number	৸ ص Ω

ƪ ३

clear ipv6 dhcp client ƪ ३ ج ৸ Э ŭ DHCPv6 ᴱ ৶ ᴱ ৷ Â

ЛЫЮ ŭ DHCPv6 '

```
Ruijie# clear ipv6 dhcp client vlan 1
```

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DHCPv6 Relay Agent ħυ ३

show ipv6 dhcp relay destination { **all** | **interface** *interface-type interface-number* }	Relay

-

10.4	

34.2

34.2.1 show ipv6 dhcp relay destination

DHCPv6 Relay Agent

show ipv6 dhcp relay destination

all	
interface *interface-type interface-number*	

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ƀu ३ ⁊ ⸗	⸗	
	10.4	ƀu ३

34.2.2 show ipv6 dhcp relay statistics

ɱ ŏ DHCPv6 Relay ╥ ⸗ ⸗ ⸗ ˘ ƀu ३'

show ipv6 dhcp relay statistics

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ƀu ३ ⸗ ⸗ ɱ DHCPv6 Relay ⸗ ⸗ Â

DHCPv6 Relay Agent ƀu ३ '

```
Ruijie# show ipv6 dhcp relay statistics
Packets dropped              :  2      //
   Error                    :  2      //
   Excess of rate limit     :  0    //            ╒
Packets received            :  28    // ⸗      DHCPv6 ˜
   SOLICIT                  :  0
   REQUEST                  :  0
   CONFIRM                  :  0
   RENEW                    :  0
   REBIND                   :  0
   RELEASE                  :  0
   DECLINE                  :  0
   INFORMATION-REQUEST      :  14
   RELAY-FORWARD            :  0
   RELAY-REPLY              :  14
Packets sent                :  16    // ⸗      DHCPv6 ˜       ⸗
   ADVERTISE                :  0
```

```
RECONFIGURE            :  0
REPLY                  :  8
RELAY-FORWARD          :  8
RELAY-REPLY            :  0
```

ใบ ๓	
clear ipv6 dhcp relay statistics	

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	10.4	ใบ ๓

34.2.3 clear ipv6 dhcp relay statistics

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	10.4	ใบ ๓

35 TCP

35.1 TCP

35.1.1 ip tcp path-mtu-discovery

ŭ TCP ´ (PMTU) ┤ ╗ ˘ ج Ю **ip tcp path-mtu-discovery** Â ˘ ج Ъu ३ ŋ ╗ **no** Â Ъu ३ Ю

ip tcp path-mtu-discovery [**age-timer** {*minutes* **| infinite**}]

no ip tcp path-mtu-discovery [**age-timer** {*minutes* **| infinite**}]

┤	
age-timer *minutes*	┘ Â TCP ج ┤ PMTU ┘˘ Â´ Æ¦ Â 10¦ Â ┘ تن 10˙ 30¦ Â
age-timer infinite	┘ Â TCP ج ┤ PTMU ┘˘ a Â

	╗ ŭ Â
Ъu ३	Ю˘ ⌂ Â

TCP ´ ┤ ╗ RFC1191 ˘ ╗ ┤ Л
– Â TCP ج ˘ ╗ ┤ Л ˆ
˘ Â

╗ ŭ б ˘ ج TCP a

show tcp pmtu	TCP PMTU

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Ъu ъ ˥ Л

Л	
RGOS 10.4	RGOS 10.4 Â

35.2 TCP

35.2.1 show tcp pmtu

TCP PMTU ˘ ЮЪu ъ'

show tcp pmtu

Л

Л	

Ъu ъ Â

TCP PMTU ˘ ˩Л show tcp pmtu Ъu ъ Â

show tcp pmtu Ъu ъ 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.	Л
Local Address	فخ سمسم б Л Л Â Л “.” Л Л Л Â “2002::2.23” б “192.168.195.212.23” “23” Л Л Â

36 RIP

36.1

36.1.1 address-family ō RIP Ŏ

فخ سم RIP ~ ˘ فخ سم ĥu ३ **address-family**ˇ
~ فخ سم ˘ ĥu ३ **no** Â

address-family ipv4 vrf *vrf-name*

no address-family ipv4 vrf *vrf-name*

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Ĥu ३	
exit-address-family	فخ سه Â
ip vrf	… VRF Â

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36.1.2 auto-summary (RIP)

ŭ RIP ╟ ╥ ˘ ˜ Ĥu ३ **auto-summary** Â Ĥu ३ **no** ╟ ╥ Â

auto-summary

no auto-summary

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Ĥu ३ Â

RIP ╟ ˘ ˘ ╟ Â
RIPv1 ∩ RIPv2 Ю ╟ Â
RIP ╟ ╥ ˘ ∩ Â جه ˘جه
a↑ ↑ ŭ جه ˘ ৲ Л Â
˘ ˘ ´ ˘ ў ЛЮ يج '
Â ' RIP ˘ RIP ∩↑ Л ˝I ' م عى p ز ↑ ⅜ (

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

Ĥu ३

Ĥu ३	
version	Ĥ RIP ˇ Â v1 Ω v2 ч ˘ ⌋ v1&v2 Â

⌋

Ĥu ३ ⌉ ⌋

⌊	
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36.1.3 bfd all-interfaces (RIP)

RIP ⌊ BFD ˘ ج RIP Ю **bfd all-interfaces** Â Ĥu ३ no Â

bfd all-interfaces

no bfd all-interfaces

⌊	

Ĥu ३ Â

ج RIP Э ŭ ╟ BFD ╥ ⌊˘ й RIP (RIP فذ سم)
BFD ˘ BFD ˘ RIP ˘ a ̈Ą ⌊ б
⌋ Â
ج й RIP ˜ BFD ⁸ ˘ ⌊ б RIP ч ⌋ IP ج فذ سم
⌋ ˘ ج BFD Â
≠ ⌋ Л ⌊ Ĥu ३ **ip rip bfd** [**disable**] ŭ ╟ ⌊ BFD
╥ ˘ ⌊ ̈I Ю **bfd all-interfaces** Ĥu ३ Â

Ĥu ǯ

Ĥu ǯ	
router rip	ŭ ╟ RIP Â
ip rip bfd [**disable**]	RIP ˥ ŭ ╟ BFD Â

˥

Ĥu ǯ ˥

˥	
-	-

36.1.4 default-metric (RIP)

ĦŦ RIP ˘ Ĥu ǯ **default-metric** Â Ĥu ǯ **no** Â

default-metric *metric-value*

no default-metric

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˥	
metric-value	˘ ǐ 1ˆ 16 Â *metric-value* 16ˇ RGOS ǐ a ˩ Â

ǐ 1 Â

Ĥu ǯ Â

Ĥu ǯ б ˜ Ĥu ǯ **redistribute** ˥ Â ÿ ˥ ˜ ˘ ˆ ˆ RIP ˘ a ˩ ˜ ⁸ a ˘ Â ج ج ˘ ĦŦ ˆ ج RIP ج Â ˆ ˜ ˘ ĦŦ ˘ RIP default-metric ĦŦ ' ĦŦ ˘ default-metric ĦŦ Â a Ĥu ǯ ‡ default-metric ǐ 1 Â

ЛЫЮ ˘ RIP ˜ OSPF ˜ ˆ ˆ ˘ ˆ RIP ǐ 3 Â

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

	redistribute	ÿ Â

	-	-

36.1.5 default-information originate (RIP)

RIP **default-information originate** **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 1 Â

RIP a **default-information originate** Â

always RIP a

RIP ƪ ३ ˘ ȝ RIP a ˝Ą ˜
˜ Â
~ **ip default-network** ˘ ÿ
default-information originate ƪ ३ ˛ RIP Â

ЛƱЮ ˛ RIP Â

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

ƪ ३

ƪ ३	
ip rip default-information	جم ٧ ˜
redistribute	ȅ ˜ RIP

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36.1.6 distance

RIP ˘ ƪ ३ **distance** Â ƪ ३ **no**
Â

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

no distance [*distance ip-address wildcard*]

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٧	
distance	RIP ˘ <1-255>
ip-address	IP سم فخ ɱ
wildcard	ƜƜ IP سم فخ Æ˘ ˚ ٦ ˘ ˝ a Â

й 120 Â

ƪ ३ Â

ƪ ३ RIP Â
٤ ЛƱ ƪ ३ ... سم فخ ɱ ˘ RIP جم فخ سم ɱ تن

˘ ‡ ˘ ї ‡ RIP Â

ЛЬЮ ˘ RIP й 160, ÿ 192.168.12.1 ˜ ˆ 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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36.1.7 distribute-list in ō RIP Ŏ

8 ˘ Лυ ˘ ħυ ३ **distribute-list in** Â ħυ ३ **no** ħ Â

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

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

ৰ	
access-list-number | *name*	Â ৰ ˘ ৲ Лυ Â

Â ৲˘ ৲ Â

ЛЫЮ ˘ 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
```

ħu ३

ħu ३	
access-list	ħ ‡ Â
prefix-list	ħ Â

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ħu ३ ৲

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36.1.8 distribute-list out ō RIP Ŏ

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connected	(⌟) ⌈ ˘ ˜ ⁸ ⌟ ⌫ ÿ Â
isis [*area-tag*]	(⌟) ⌈ ˘ ˜ ⁸ ⌟ ⌫ ÿ isis ˘ *area-tag* ἑ isis Â
ospf *process-id*	(⌟) ⌈ ˘ ˜ ⁸ ⌟ ⌫ ÿ ospf ˘ *process-id* ἑ ospf Â
rip	(⌟) ⌈ ˘ ˜ ⁸ ⌟ ⌫ rip Â
static	(⌟) ⌈ ˘ ˜ ⁸ ⌟ ⌫ ÿ

conn 0 Td (6(cte)4<2B051CCf 03335 0 -AFC0CFC04A2>9.5870

36.1.9 exit-address-family

فخ سم ˘ فخ سم جم Ю **exit-address-family** Ĥu ३ Â

exit-address-family

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Ĥu ३ ङ

فخ سم Â

فخ سم جم Ю Ĥu ३ فخ سم Â
Ĥu ३ ৲ Л ङ **exit** Â

ЛЮ ˘ Ոٮ فخ سم '

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

Ĥu ३	
address-family	فخ سم Â

৶

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36.1.10 ip rip authentication key-chain

Ŭ RIP ˘ RIP ˘ ৭ Ĥu ३ **ip rip authentication key-chain** Â Ĥu ३ **no** Â

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

no ip rip authentication key-chain

৭	
name-of-keychain	৶ ˘ RIP Â

Â

ħu ३ ৲ Â

ج ৲ ˘ ¯ **key chain** ħu ३
ħ⌧ a RIP ↑ Â
RIPv1 a RIP ↑ ˘ ৲ RIPv2 Â

ЛuЮ ˘ Serial 0 ৲ ŭ RIP ˘ й ripchain Â

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

ħu ३	
ip rip authentication mode	ħ⌧ RIP Â

text	RIP й Â
md5	RIP й MD5 Â

й Â

ЪU ३ ৲ Â

RIP ˘ RIP ˘ RIP
˘ ї ‡ RIP ↑ Â
˘ ˘ ˘
˘ a й ৲ Â ৴ ˘ MD5 ˘
˘ ˘ ≠ a й ৲ Â
RIPv1 a RIP ↑ ˘ ৲ RIPv2 Â

ЛЪЮ ˘ Serial 0 ৲ RIP й MD5 Â

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

ЪU ३	
ip rip authentication key-chain	ї RIP ˘ RIP Â ৲ RIPv2 RIP ↑ Â
ip rip authentication text-password	ї RIP ˘ RIP Â ৲ RIPv2 RIP ↑ Â
key chain	… ˘ Â

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ЪU ३ ৲ ৴	
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36.1.12 ip rip authentication text-password

ї RIP ˘ RIP ˘ ৲ ЪU ३ **ip rip authentication text-password** Â ЪU ३ **no** Â

ip rip authentication text-password *password-string*

no ip rip authentication text-password

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ЧЛ	
password-string	˘ 1˙ 16 Â

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ЮУ ЗЧ ЧЛ Â

ЪЎ RIP ˘ ЛЦ ЮУ ЗЧ ˘ ≠ ЛЦ
ЛЛ ˘ Л ˝l ЮЧ Â
RIPv1 a RIP ↑ ˘ ЛЛ RIPv2 Â

ЛЦЮО ˘ Serial 0 ЧЛ ЪЎ RIP ˘ й ruijie Â

```
Ruijie(config)# interface serial 0/0
Ruijie(config-if)# ip rip authentication text-password ruijie
```

ЮУ ЗЧ

ЮУ ЗЧ	
ip rip authentication mode	ЮЖЗ RIP Â
ip rip authentication key-chain	ЪЎ RIP ˘ RIP Â ЛЛ RIPv2 RIP ↑ Â

ЛЛ

˘ Л RIP Ю BFD ѝ Â

Ъυ ३ ^ Â

ƪu ३ ∧ Â

ج ∧ ƪu ३ ⅄˘ ˘ ÿ ∧ ˆ Â ⅃ ∧ Ю **ip rip default-information** Ω RIP **default-information originate**˘ ‡ ∧ ˆ ∧ Â

~ ∧ ∧ **ip rip default-information**˘ RIP a ̈Ą ˘ ˆ Â	

ЛƱЮ ˘ ج ∧ ethernet0/0 Э… ˘ ∧ ⅄ ˆ Â

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

ƪu ३

ƪu ३	
default-information originate	ج RIP

⅄

ƪu ३ ˥ ⅄

⅄	
-	-

36.1.15 ip rip receive enable

RIP ج ∧ Э RIP ↑˘ ∧ ƪu ३ **ip rip receive enable** Â ƪu ३ **no** RIP ج ∧ Э RIP ↑ Â

ip rip receive enable

no ip rip receive enable

∧

∧	
-	-

∧ RIP ↑

ƪu ३ ∧ Â

∧ RIP ↑˘ ج ∧ ∧ Ю ƪu ३ **no** Â ƪu ३ ƪu ३ ∧ Â ⅄ ƪu ३ **default** ∧ RIP ↑ Â

ЛЬЮ ˘ Fastethernet 0/0 ^ RIP ↑ Â

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

ƪ ३

ƪ ३	
version	ƪ ४ ५ RIP ↑ Â

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ƪ ३ ৭ ४

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36.1.17 ip rip send enable

RIP ह ४ Ɔ ५ RIP ↑˘ ४ ƪ ३ **ip rip send enable** Â ƪ ३ **no** RIP ह ४ Ɔ ५ RIP ↑ Â

ip rip send enable

no ip rip send enable

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-	-

४ ५ RIP ↑

ƪ ३ ४

४ ५ RIP ↑˘ ह ४ ४ ƪO ƪ ३ **no** Â ƪ ३ ƪ ३ ४ Â ५ ƪ ३ **default** ४ ५ RIP ↑ Â

ЛƪO ˘ Fastethernet 0/0 ४ ५ RIP ↑ Â

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

ƪ ३

ƪ ३	
ip rip receive enable	४ RIP ↑
passive-interface	RIP ╟ ४

४

36.1.19 ip rip send version

ƪ RIP ج ٧ Э ٧ ف RIP ↑˘ ٧ ƪ ३ **ip rip receive version** Â ƪ ३ **no** Â

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

no ip rip send version

٧	
1	ˆ ٧ ˜ ٧ RIPv1 ↑ Â
2	ˆ ٧ ˜ ٧ RIPv2 ↑ Â

ϋ ٧ ā **version** ƪ ३ Â

ƪ ३ ٧ Â

ƪ ३ ˘ ٧ Л **vesion** ƪ ३ Â ƪ ३ ٧ ! ٧ ٧ RIP ϋ˘ ٧ Л ٧ ٧ ٧ RIPv1 Ω RIPv2 ↑ Â ƪ ३ a ٧ ‡ ϋ ٧ ā version Â

ЛƪЮ ˘ Fastethernet 0/0 ٧ ٧ Л ٧ RIPv1 Ω RIPv2 ↑ Â

```
Ruijie(config)# interface fastethernet 0/0
Ruijie(config-if)# ip rip send version 1 2
```

ƪ ३

no ip rip split-horizon

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Ю˘ ĭ → ج ৭ Э Â

Ĥu ३ ৭ Â

৶ ج IP ص Э˘ ৭ ৶ ~ ˘ ĭ
→ ⁸ Л Â ĭ → ৶ Л ÿ ˘ ĭ
৭ ˆ ৷˘ ѝ ѵ Â
ˆ à X.25 ~ ˘ ĭ → ৶ ĭ
˘ aĭ Â ج Ю˘ ৶ ĭ → Â ৭
IP فخ سم˘ ≠ ĭ → Â
RIP ~ ৶ ~ ˘ ج ĭ → Â a
৭ ĭ˘ ŭ ĭ →˘ ৶ Л show ip rip Ĥu ३ Â ৸ **neighbor**
Ĥu ३ Ĥ˘ ˘ a ৶ĭ RIP ĭ → ؛ Â

ЛЮ ˘ Fastethernet 0/0 ৭ RIP ĭ → ৷৷ Â

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

Ĥu ३	
neighbor˘ RIP˘	Ĥ˘ RIP IP فخ سم Â
Validate-update-source	ŭ RIP فخ سم Â

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Ĥu ३ ৭ ৶	
-	-

36.1.21 ip rip summary-address

ج ৭ Ю RIP ৭ ˘ ج ৭ Ю Ĥu ३ **ip rip summary-address** Â Ĥu ३ **no** فخ سم Â

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

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

৭	
ip-address	IP فخ سم
ip-network-mask	ѝ IP فخ سم

RIP ╟ ↑

ƪu ३ ৭ Â

ƪu ३ **ip rip summary-address** جم ৭ ƪO فخ سم ÂRIP ╟ ↑ Â ৭ ৭ Â

&	ƪu ३	a تن Â	˘ . a

ЛƪO ˘ RIPv2 ╟ Â ৭ ˘ ৭ FastEthernet 1/0 ˜ ৷ 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
```

ƪu ३	
auto-summary	Ŭ RIP ╟

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RIP ใบ ๆ 3

Ъu ʒ Â

network-number Ω wildcard ٭ ˘ جم فخ سم تن ٭ فخ سم ٭ ⌋Л⌋ б RIP Â

wildcard ٭ ˘ RGOS فخ سم تن ˘ جم فخ سم تن ٭ فخ سم ٭ б RIP Â

٭ ٭ فخ سم جم RIP Ъ⌘ ˘ ٭ ⌋Л⌋ ⌋ RIP ˘ RIP Â

ЛЪЮ ˘ Ъ⌘ б RIP ч ⁄٭˘ جم 192.168.12.0/24 Ω

ȟυ ʒ

RIPv1 IP ᴓ ᴓ 255.255.255.255˜ ˆ ˘ RIPv2 ᴓ ᴓ 224.0.0.9˜ ˆ Â a Э ˘ ʃ ˩ ˺ ˘ ˩ ʃ ȟυ ʒ **passive-interface** ˥ ˙ ╟ ˥˘ ˩ ˥ ȟ ˩ ʃ ˺ ˩ ʃ ˺ Â ȟυ ʒ a ˸ RIP Â passive ˥˘ ŭ ˩ ≠ a ˩ Â

ȟυ ʒ Â ʃυЮ ˘ ȟ RIP ˥ ˩ 192.168.1.2 ˆ Â

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

offset Â

Ĥu ३ Â

RIP ৲ ৷ offset-list Лu ৷ ৷ offset-listĭ ‡ RIP ╗ ৷ offset-list metric Â

ЛuЮ ˘ جه acl 7 تن RIP metric ╗ 7 Â

```
Ruijie(config-router)# offset-list 7 out 7
```

ЛuЮ ˘ fastEthernet1/0 ˜ جه acl 8 تن RIP metric ╗ 7 Â

```
Ruijie(config-router)# offset-list 7 in 7
Ruijie(config-router)# offset-list 8 in 7 fastEthernet 1/0
```

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36.1.26 output-delay

৷ RIP ৷ ˘ Ĥu ३

output-delayĭ Ĥu ३ **no** ৷ ৷ Â

output-delay *delay*

no output-delay

৷

৷	
delay	৷ ˘ ´ Æ ৷ ˘ تن <8-50>

ৗ ৷ Â

Ĥu ३ Â

ЮĭRIP ৗ 512 ˘ ৷Лu ↑ ৗ 25 ˘

25˘ ˅ ˇ Ю ˅ ˅ Â
˘ ˅ æ ˅ ˅ æ ˅ a
˘ Â ˘ **output-delay** ƪ ३ ╗
˅ ˇ æ Â

rip receive enable ⁸ Â

ЛЪЮ ʌ й passive ˘ л ethernet0/0 й passive

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

ħυ ३

metric *metric-value*	ƚ ৲ metric˘ metric-value metric ˘ ৲ ‘ন 1-16
route-map *route-map-name*	ƚ ‡

Ю˘

ƚ OSPF˘ ‡ ƚ ص ’

ƚ ISIS˘ ‡ ƚ level-2 ص ’

ɛ Ю˘ ƚ ص ’

ƚ ৸ metric ঋ 1’

a route-map Â

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ƪυ ३ ƚ ƚ RIP Â

ƚ ˘ ~ ৭ ~ ˘ ج

ঋ a ৶ ~ a ৶ ÂRIP ৬

36.1.29 router rip

… RIP ˘ Ĥu ३ **router rip** Â Ĥu ३ **no** RIP Â

router rip

no router rip

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RIP ج Â

Ĥu ३ Â

RIP ˘ Ĥ Ⱥ Ⱥ Â Э ╟ ˜ ˘ ج ৭ **async default routing** Â

ЛuЮ ˘ … RIP ˘ Â

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

Ĥu ३	
network (**RIP**)	Ĥ RIP Ⱥ Â

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Ĥu ३ ৭ ৶	
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36.1.30 timers basic

RIP ˘ Ĥu ३ **timers basic** Â Ĥu ३ **no** Â

timers basic *update invalid flush*

no timers basic

৭	

update	˘ Ɲ Âupdate ԧ ৲ ˘ invalid Ω flush Æ Â 30 ৲ Â

invalid

-	-

36.1.31 validate-update-source

ĵ RIP ˘فخ سم ˘ Ĥu ३ **validate-update-source** Â Ĥu ३ **no** فخ سم Â

validate-update-source

no validate-update-source

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ৰ	
-	-

ŭ فخ سم Â

Ĥu ३ Â

ৰ Л RIP ˘فخ سم Â ŷ RIP ˘ ৰ ৰ IP Â

ج ৰ Э ĵ →˘ RIP فخ سم ˘ a ĭ Ĥu ३ **validate-update-source** Â

ৰ ip unnumbered ৰ˘ RIP a فخ سم ˘ a ĭ Ĥu ३ **validate-update-source** Â

ЛЮ ˘ فخ سم Â

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

Ĥu ३

Ĥu ३	
ip rip split-horizon	ৰ ŭ RIP ĵ → Â
ip unnumbered	Ĥ IP ৰ ৰ Â
neighbor (**RIP**)	Ĥ RIP IP فخ سم Â

ৰ

Ĥu ३ ৰ

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36.2.1 show ip rip

RIP ~ ~ ~ ˘ **show ip rip** Â

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

৭	
vrf *vrf-name*	ˆ ৲ ~ VRF RIP

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৲ RIP ~ Ь ৯ à ˆ ৲ à ˆ ৲ à ৭ rip à rip ৭ б ন à metric б distance Â VRF˜ VRF ৶ ৭ VRF-id

1' ЛЫЮ ˘ RIP ~ ~ ˘ à Â

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

2' ЛЫЮ ˘ vrf˜ RIP '

```
Ruijie(config-router)# sh ip rip vrf 1
VRF 1  VRF-id:1
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 4 seconds
```

```
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' ЛЫЮ ˘ RIP 192.168.121.0/24 فذ سم
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' ЛЫЮ ˘ RIP ص ۸

```
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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ƬU ३	
show ip rip	ɱ ~ Â

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ƬU ३ ٦ ۸

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36.2.3 show ip rip external

RIP ↑ ۹ ˘ **show ip rip external**G¡ Ú ¥,X êF¼CÃ+ µ C ÈAË S*ü**ÑÍ3nBjf**

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

ħυ ३ à à Â

ЛυЮ ˘ RIP ˆ Â

```
Ruijie# show ip rip external connected
Protocol connected route:
[connected] 1.0.0.0/8 metric=0
nhop=0.0.0.0, if=2
[connected] 3.0.0.0/8 metric=0
nhop=0.0.0.0, if=16391
[connected] 4.4.0.0/16 metric=0
nhop=0.0.0.0, if=16388
[connected] 5.0.0.0/8 metric=0
nhop=0.0.0.0, if=16386
[connected] 192.168.195.0/24 metric=0
nhop=0.0.0.0, if=1
```

```
BFD: Enabled
V2 Broadcast: Disabled
Multicast registe: Registed
Interface Summary Rip:
  Not Configured
IP interface address:
  2.2.2.111/24
```

配置

配置	
show ip rip	略

说明

配置说明

说明	
-	-

37 OSPF

37.1

37.1.1 area

	Ш ॐ˘	ƀυ ३	**no**	OSPF Ш ॐ Â
area	3			7

Ю ३ ٦ ٫

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10.4(1)	Ю ३

37.1.2 area authentication

ŭ OSPF Ш ॐ ˘ Ю ३ **area authentication** Â Ю ३ **no** OSPF Ш ॐ Â

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

no area *area-id* **authentication**

٩	
area-id	ŭ OSPF Ш ॐ ٨ ÂШ ॐ ٨ ٫ ЛЦ ˜ 8 ˘ ≠ ٫ ЛЦ IP ॐ Â
message-digest	ˆ ٫ ˜ MD5˜ message digest 5˜ Â

Â

Ю ३ Â

RGOS ˚ ٫ ЛЦ Ь ॐ˙˝ ˜ ॐ˚ ˘ a ˘ Ю ३ ŭ OSPF ˘ OSPF ↑ ॐ й˚ ' ˘ ˜ ॐ˝ ˘ й ˘ Ю ३ ˘ message-digest ' ' ˜ ॐ˘ ˘ й MD5 ˘ Ю ३ ˘ message-digest Â

OSPF Ш ॐ ˘ ٫ ॐ Â ŭ ˘ ॐ ٨ ٨ ३ Â ٨ Ю ३ **ip ospf authentication-key** ٫ ЛЦ ٨ ३' ٨ Ю ३ **ip ospf message-digest-key** ٫ ЛЦ MD5 ٨ ३ Â

ЛЦЮ ˘ OSPF Ш ॐ 0˜ Ш ॐ˜ MD5 ˘ ٨ ३ й backbone Â

```
Ruijie(config)# interface FastEthernet 0/0
Ruijie(config-if)# ip address 192.168.12.1 255.255.255.0
Ruijie(config-if)# ip ospf message-digest-key 1 md5 backbone
#      OSPF      ˜
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# area 0 authentication message-digest
```

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ھو ३	
ip ospf authentication-key	ھ OSPF ۸ ३ Â
ip ospf message-digest-key	ھ OSPF MD5 ۸ ३ Â
area virtual-link	ھ Â

۸

```
Ruijie(config-router)# area 1 default-cost 50
```

Ъу ъ

Ъу ъ	
area stub	OSPF Ш ююю й ююю Â
area nssa	OSPF Ш ююю й NSSA Ш ююю

Л

Ъу ъ Л Л

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37.1.4 area filter-list

ABR Э ˘ Л Л area filter-list Ъу ъ a Л Ш ююю 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**]

Л

Л	
area-id	Ш ююю Л Â
¸ *acl-name*	acl Л
¸ *prefix-name*	prefix-list Л
¸ **access** | **prefix**	prefix list ACL
¸ **in** | **out**	˚ | Л Ш

Ъу ъ Â

Ъу ъ Л ююю ABR Ш ююю ˜ Э Â
ююю ABR Э a Л Ш ююю ˙ ˚ ˘ Ъу ъ Â

ЛЪЮ Ъу ъ˘ area 1 Л ˙ ˚ 172.22.0.0/8 тп Ш Â

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

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ใบ ๓ ๅ ค	
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37.1.5 area nssa

OSPF ซ ๆ ห NSSA ใบ ๓ **area nssa** Â ใบ ๓ **no** NSSA ซ ๆ NSSA ซ ๆ 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**]

๑	
area-id	NSSA ซ ๆ ซ ๆ ค Â
ๆ **no-redistribution**	^ ๅ ~ NSSA ABR ˇ ค ๅ ใบ ๓ ซ a NSSA ซ ˇ ๅ ใบ ๆ Â
ๆ **default-information-originate**	^ ๅ ~ ๗ 7 LSA NSSA ซ ˇ ค ๆ NSSA ABR ASBR ๆ Â
ๆ **metric** *value*	^ ๅ ~ LSA metric ˇ ค ๆ 0-16777214
ๆ **metric-type** <*1-2*>	^ ๅ ~ LSA ๗ E-1 E-2
ๆ **no-summary**	^ ๅ ~ nssa (ABR) ๅ summary LSAs ˆ Type-3 LSA ˇ Â

ใช NSSA ซ ๆ Â

ใบ ๓ Â

ค **default-information-originate** Type-7 LSA ˇ ๆ NSSA ABR ใช ASBR ๆ ˇ ๆ ABR ๆ ๆ ๆ ˇ Type-7

LSA ˘ ج ASBR Э(۶ ≠ a ABR) ج ˘ Type-7 LSA Â

ৰ **no-redistribution** ج ASBR Э OSPF redistribute ԧ ২ è a ৰ ۱ NSSA ʊ Â NSSA ASBR ৰ ABR ˘ ۶ Ռ NSSA Â

ঁ ৰ ۱ NSSA ʊ ھ ˆ LSA˜ ˘ ۶ Ռ ج ABR Э no-summary ˘ ABR ۶ NSSA ʊ ھ ৰ summary LSAŝ Type-3 LSA˜ Â

ৱ **area default-cost** ج ج NSSA ʊ ھ ABR Э Â ԧ ২ ʊ ھ ৰ ۱ NSSA ʊ ھ Â Ю˘ ৰ ۱ NSSA ঁ 1 Â

ՌЮ ঁ Ḍ ھ ۸ ھ ھ ב

OSPF Ш ॐ й ॐ ॐ Ԧ ३ **area stub** Â Ԧ ३ **no** ॐ ॐ Â

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

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

৭	
area-id	STUB Ш ॐ Ш ॐ ৭ Â
no-summary	^ ৲ ~ ABR ॐ ৲ ^ ˘ ॐ ৲ й ॐ Â ৲ ABR ৭ Â

Ԩ ॐ Â

Ԧ ३ Â

OSPF ॐ area stub Ԧ ३ Â ABR ৲ ৲ ॐ ৲ Ь (LSA)' 1˘ ص 1˘ LSA' 2˘ ص 2˘ LSA' 3˘ ص 3˘ LSA Â ÿ ˘ ॐ ৲ ˘ ↑ OSPF ॐ ˘ ↑ ABR Â ॐ a ˘ ↑ OSPF ॐ Â ॐ˘ ৲ ج ABR Э area stub Ԧ ३ ˘ no-summary Â ॐ ৲ ↑ Ш ॐ ˘ Л৭ ABR Â OSPF Ш ॐ й ॐ ч Ԧ ३ area stub Ω area default-cost Â ↑ ॐ Э˘ area stub Ԧ ३˘ area default-cost Ԧ ३ ৲ ج ABR Э Â area default-cost Ԧ ३ Ԩ ^ . ~ Â

ЛЮ ˘ Ш ॐ 1 й ॐ˘ Ш ॐ 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 stub
```

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Ԧ ३	
area default-cost	Ԩ ^ STUB Ш ॐ ^ OSPF ~ Â

৭

Ԧ ३ ৲ ৭

৭	

-

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message-digest	صر й MD5 Â
null	й a Â

dead-interval ' 40 '

hello-interval ' 10 '

retransmit-interval ' 5 '

transmit-delay ' 1 '

a '

è ٧ Â

Ĥu ʒ Â

ج OSPF ˘ Ш б ˘ ˘

˘ ї ‡ Â ج ч Ш

^ ABR˜ … ˘ ч ABR ٧ Ш й Ш Â ^ Stub Area˜

Ո NSSA a й Ш Â ≠ ٧ Л è Ш Â

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

neighbor Ĥu ʒ Â ٧ Л Loopback فخ Â

area virtual-link Ĥu ʒ ٧ Ĥ ˘ Ŭ Ш OSPF

˘ Ĥu ʒ **area authentication** Â

1' ЛЮ ˘ ЛШ 1 й Ш ˘ б 2.2.2.2 Â

```
Ruijie(config)# router ospf 1
Ruijie(config-router)#0.599 0 d(ospf)J/3 1 I72.b A0 7C2_(ro/C253.j/JJ0-rout
```

OSPF ใน ๓

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Ĥu ३ ৲ ৗ

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37.1.10 bfd all-interfaces (OSPF)

OSPF ৲ BFD ˘ ह OSPF Ю **bfd all-interfaces** Â Ĥu ३ no Â

bfd all-interfaces

no bfd all-interfaces

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Ĥu ३ Â

OSPF ˜ Hello ╟ ৷ ˘ OSPF ŭ ╟ BFD ╗ ৷˘ ŭ ˆ FULL BFD ˘ BFD [8] ˘ BFD ˘ OSPF [2] Â

≠ ৷ ∫∪ ৲ Ĥu ३ **ip ospf bfd** [**disable**] ŭ ╟ ৲ BFD ╗ ˘ ৲ ˝I Ю **bfd all-interfaces** Ĥu ३ Â

37.1.11 clear ip ospf process

ŭ OSPF Â

clear ip ospf [*process-id*] **process**

٩		
٩	process-id	OSPF ٨ ˘ ŭ OSPF Â ˘ ŭ ھ OSPF Â

RFC2328 ‡ Â

ȟυ ʒ Â

Æ OSPF ˘ ˘ ˜ ؛ ' ΛΟ ȟυ ʒ ˘ ĭ '

ΛΟΗΟ ȟυ ʒ ŭ OSPF 1

```
Ruijie# clear ip ospf 1 process
```

ȟυ ʒ	ȟυ ʒ	
	-	-

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ȟυ ʒ ˥ ٨	٨	
	-	-

37.1.12 compatible rfc1583

ھ ˆ ٨ AS ھ ˘ ˘ ȟυ ʒ RFC1583 ˝l ‡ RFC2328 ˝l ‡ Â

commpatible rfc1583

no commpatible rfc1583

٩	٩	

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RFC1583 ‡ Â

ЪU ३ Â

ЛЪЮ ˘ rfc 2328 ‡ Â

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

ЪU ३

ЪU ३	
show ip ospf	ospf

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ЪU ३ ৲ ৰ

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37.1.13 default-information originate ō OSPF Ŏ

OSPF ˘ ЪU ३ **default-information originate** Â ЪU ३ **no** Â

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

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

৭

৭	
always	ˆ ৲ ~ OSPF ˚ ˘ a ৯ ĭ ج Â
metric *metric*	ˆ ৲ ~ ˘ ৰ ৯ 0-16777214 Â

metric-type *type*	ˆ ˩ ˜ صر Â OSPF ч صر' صر 1˘ a ˩ Э ˆ a ' صر 2˘ ˆ Â صر 1

ৰ

Ĥu ३ ৭ ৰ

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37.1.14 default-metric

OSPF ĵ ˘ Ĥu ३ **default-metric** Â Ĥu ३ **no** Â

default-metric *metric*

no default-metric

৭

৭	
metric	Ĥ OSPF ĵ ˘ ৰ ˈتن 1-16777214 Â

й 20 Â

Ĥu ३ Â

default-metric Ĥu ३ б **redistribute** Ĥu ३ ৰ ˘ ৲ Ĵu ĵ ৮ Â

default-metric Ĥu ३ ˘ Ĵu **default-information originate** OSPF ھ a Â

ĴuЮ ˘ OSPF ĵ ৮ й 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
```

Ĥu ३

Ĥu ३	

redistribute	ՙ ὲ Â
show ip ospf	ospf Â

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ԽՍ ३ ՀՍ	ՀՍ	
	-	-

37.1.15 discard-route

discard ╗՝ ˘ no ՀՍ discard ╗՝ Â

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

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

	ՀՍ	
ՀՍ	**internal**	╗ ש ԽՍ ३ area range discard Â
	external	╗ ԽՍ ३ summary-address discard Â

╗ discard Â

ԽՍ ३ Â

جم ˘ ՀՍ تن ՀՍ تّن ՀՍ

تن a جم ˘ ՀՍ ՀՍ ╗ ԳՍ ԳՍ غ χ

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ƪU ३ ٦ ƛ

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37.1.16 distance ospf

a ƛ صر OSPF

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

no distance [**ospf**]

ƛ

ƛ	
distance	˘ ƛ تن' 1-255
intra-area *distance*	ɯ ˘ ƛ تن' 1-255
inter-area *distance*	ɯ ˘ ƛ تن' 1-255
external *distance*	˘ ƛ تن' 1-255

й 110'

ɯ ' й 110'

ɯ ' й 110'

' й 110'

ƪU ३ OSPF Â

OSPF a ƛ صر a ƛ ˘ ƪU ३ Â

ЛuЮ ˘ OSPF й 160

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# distance ospf external 160
```

ƪU ३

ƪU ३	
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37.1.18 distribute-list out

ǂ ˘ ˥ **redistribute** ħυ ३

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

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

৭	
access-list-number | name	acl ‡
prefix prefix-list-name	prefix-list ‡
bgp | connected | isis [area-tag] | **ospf** process-id | **rip** | **static**	

ȣ ˘ . Â

ħυ ३ Â

distribute-list out б **redistribute route-map** ħυ ३ ˘ ÿ ȅ ˜ ǂ ǂ OSPF ˘ a ǂ ৭˘ б **redistribute** ħυ ३ ৸ Â ACL ‡ Ω prefix-list ‡ a ॐ ˘ . ACL ‡ , ‡ a ̈Ą prefix-list Â

Ю ǂ ৭

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# redistribute static subnets
Ruijie(config-router)# distribute-list 22 out static
Ruijie(config-router)# distribute-list prefix jjj out static
% Access-list filter exists, please de-config first
```

ħυ ३	
distribute-list in	LSA Â
redistribute	ǂ ȅ Â

৸

37.1.20 enable traps

OSPFv2 ŋń ˩ 16 TRAP ˘ ĵ ǐ 4 ص˘ ЮĤ ĝ ˩ Л ŭ ╟
TRAP ˩ Â Ĥ ĝ **no** ˩ Л TRAP ˩ Â

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

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

˩	˩	
	error	б error traps ˘ ˩ ˩ Л Ю error traps ' **lfauthfailure** ˩ ' **lfconfigerror** ˩ ˩ ' **lfrxbadpacket** ˩ ĵ ' **virtifauthfailure** ˩ ' **virtifconfigerror** ˩ ˩ ' **virtifrxbadpacket** ˩ ĵ Â
	lsa	б lsa traps ˘ ˩ ˩ Л Ю lsa traps ' **lsdbapproachoverflow** LSA ĵ Э ĵ ˘ ' **lsdboverflow** LSA ĵ Э ' **maxagelsa** LSA ĵ ɣ ' **originatelsa** LSA'
	retransmit	б retransmit traps ˘ ˩ ˩ Л Ю retransmit traps ' **lftxretransmit** ˩ Э ˩ ' **virtiftxretransmit** ˩ Э ˩ Â

OSPF (graceful restart GR) graceful-restart
graceful-restart grace-period grace period no

graceful-restart [**grace-period** *grace-period*]

no graceful-restart [**grace-period**]

grace-period	grace-period
grace-period	GR OSPF OSPF 1-1800

GR Restart
Grace-period 120s

OSPF a a OSPF OSPF OSPF GR OSPF
graceful-restart GR 120 **graceful-restart grace-period**

OSPF 1 GR GR

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# graceful-restart
Ruijie(config-router)# graceful-restart grace-period 60
```

graceful-restart helper	OSPF

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37.1.22 graceful-restart helper

OSPF ŭ ╟(GR helper)╖ ˘ ƪ ३ **graceful-restart helper** Â
ƪ ३ no ╟╖ Â

graceful-restart helper {**disable** | {**strict-lsa-checking** | **internal-lsa-checking**}}

no graceful-restart helper {**disable** | {**strict-lsa-checking** | **internal-lsa-checking**}}

৭	
disable	ѝ ╟ ╟ ε ŭ Â
strict-lsa-checking	GR Helper types 1-5,7 LSA ৶ ४ ĭ ৭ ৶ ४˘ ৭ ৶ ४˘ GR Helper Â
internal-lsa-checking	GR Helper types 1-3 LSA ৶ ४ ĭ ৭ ৶ ४˘ ৭ ৶ ४˘ GR Helper Â

৭

types 1- Ä 6Ñ oð!'À™1 w q 1 •7U ˜ý„Zøœcð À 8 c ÄÂ on ðÀI@ÑÏØKÈEà"z5$
Ä 5%Y }hñ ¡a~A Ä

graceful-restart	OSPF ˜ ŭ ╗

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37.1.23 ip ospf authentication

ƀ ३ ˄ ˘ **no** ˩ Ƨ ŷ Â

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

no ip ospf authentication

˄	
message-digest	ج ˄ Э MD5 ╗ Â
null	a Â

˄ Э , ˄ Э ج Ш ش ص Â

ƀ ३ ˄ Â

ƀ ३ ƛ a . ج **no**
˘ ĭ ˄ ج Ш Э ą ˘
ŷ **null** ‡ ⁸ ŷ a , ˄ Э Ω ˄ ج Ш ش
, ˝l ˄ Э Â

ƛƧƟ ˘ FastEthernet 0/0 ˄ OSPF ص ŷ 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	ŭ OSPF Ш ش Ƕ Â
ip ospf authentication-key	OSPF Â
ip ospf message-digest-key	OSPF MD5 Â

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Ĥu ३ ৭ ৰ

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37.1.24 ip ospf authentication-key

OSPF ˘ ৰ Ĥu ३ **ip ospf authentication-key** Â Ĥu ३ **no** Â

ip ospf authentication-key *key*

no ip ospf authentication-key

ৰ

ৰ	
Key	˘ ৷ Ω 8 Â

Â

Ĥu ३ ৰ Â

ip ospf authentication-key Ĥu ३ ˘ OSPF Âج a ˘ ч ৰ a OSPF ˘ ≠ a Â a ৷ ৰ ৷ Ω a ˘ ج ৷ Э ˘ Â

OSPF ש ॐ ĭ ŭ ˘ Ĥu ३ **area authentication** Â ج ৰ Э ≠ ৷ Ω´ ŭ , ৰ Ю Ĥu ३ **ip ospf authentication** , ש ॐ Ω ৰ ˝I ৷ ৰ ص Â

ΩЮ ˘ FastEthernet 0/0 ৰ OSPF ŷ ospfauth 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-key ospfauth
```

Ĥu ३

Ĥu ३	
area authentication	ŭ OSPF ש ॐ ĤՐ Â
ip ospf authentication	ŭ ৰ Э ĤՐ

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Ъυ ३ ˥ ᴻ

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37.1.25 ip ospf bfd

OSPF ᴻ ŭ ╟ BFD ˘ ᴻ Ъυ ३ **ip ospf bfd** [**disable**] Â Ъυ ३ no ᴻ Э **ip ospf bfd** Â

ip ospf bfd [**disable**]

no ip ospf bfd

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ᴻ	
disable	OSPF ᴻ BFD ⁸

˘ Л OSPF Ю BFD ѝ Â

Ъυ ३ ᴻ Â

ᴻ ˝I Ю **bfd all-interfaces** Ъυ ३ Â

˩ Л ˝I ᵒ

37.1.27 ip

ใบ ๓

no

OSPF ˅ ˅ Ĥu ३ **ip ospf dead-interval** Â
Ĥu ३ **no** Â

ip ospf dead-interval *seconds*

no ip ospf dead-interval

˅	
seconds	Ĥ˜ ˅ Л ˝ Æ˘ ˅ ˙ 1-65535 Â

й ip ospf hello-interval 4 Â

Ĥu ३ ˅ Â

OSPF ↑ ü ج Hello Â OSPF ج ˅ ↑ ˅
Hello ˅ ˆ ÿ Â й hello
4 ˅ hello ˅ ╟ Â
Ĥu ३ ˅ Л OSPF ˅ ˉ ↑ Â ч '
Â ' ˅ a hello '
Â γ ' ˅ Э Â

ЛЮ ˅ serial 1/0 ˅ OSPF й 30 Â

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

Ĥu ३

Ĥu ३	
ip ospf hello-interval	OSPF ˅ Hello Â

˅

Ĥu ३ ˥ ˅

˅	
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37.1.29 ip ospf disable all

˅ a Ä OSPF Â

Л 10 '

PPP à HDLC ৲ 10 '

ˆ ৲ 10 '

ˆ ৲ à X.25 ৲ 30 Â

ħu ३ ৲ Â

hello ↑ ü ج hello Â ˘ OSPF ˆ ৴ ɤ ≠

˘ ╗ Â ৶ Э hello

Â ˘ hello a

Â

ЛЫ ˘ serial 1/0 ৲ OSPF ৴ Hello й 15 Â

```
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip address 172.16.10.1 255.255.255.0
Ruijie(config-if)# encapsulation ppp
Ruijie(config-if)# ip ospf hello-interval 15
```

ħu ३

ħu ३	
ip ospf dead-interval	OSPF Â

৶

ħu ३ ৴ ৶

৶	
-	-

37.1.31 ip ospf message-digest-key

OSPF MD5 ˘ ৲ ħu ३ ip ospf message-digest-key Â ħu ३ OSPF MD5 Â

ip ospf message-digest-key *key-id* **md5** *key*

no ip ospf message-digest-key

MD5 Â

ЪU ३

ᴻ Â

ip ospf message-digest-key ЪU ३ ˘ OSPF Â ج a
˘ ч ᴊ a OSPF ˘ ≠ a
Â
a ᴊ ᴻ ᴊ Л a ˘ ج ᴊ Э ˘
Â ᴊ Â
OSPF Ш ﷺ ĭ ŭ ˘ ЪU ३ **area authentication** Â
ج ᴻ Э ≠ ᴊ Л´ ŭ , ᴻ Ю ЪU ३ **ip ospf authentication**
, Ш ﷺ Ω ᴻ ˝I ᴊ ᴻ صر Â
RGOS ˚ ﷺ MD5 ˘ ˝I ╗ ᴊ ᴊ ‡ Â
╗ OSPF MD5 ˘ й ὲ
˘ ج ĭ ⋮ a ᴊ ᴊ OSPF ˘ ĭ
Â ᴊ˘ ᴊ Л Â

ЛЪЮ ˘ FastEthernet 0/0 ᴻ ╗ OSPF ˘ ᴻ й˝ ˘
й hello5 Â

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

╗ ᴊ˘ Â

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

ЪU ३

ЪU ३	
area authentication	ŭ OSPF Ш ﷺ ⊠ Â
ip ospf authentication	ŭ ᴻ Э ⊠

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ЪU ३ ˥ ᴊ

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OSPF ใน ๓

OSPF ใน ๓

Â ˘ a ˘ ≠ ’
Â ३ˈ ˘ a Â
Л à ЛЪ ⊣ X.25 ˘ IP ففد سم ˘
broadcast Â

1ˈ ЛЪЮ ˘ ⊣ й ص˘ Л 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
```

2ˈ ЛЪЮ ˘ ⊣ й ˆ ص˘ Л
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
```

3ˈ ЛЪЮ ˘ ⊣ й ص˘ DR/RDR˘ Л
˚ ` Â ЛЪЮ جم ˆ a
Э ˆ ⁸ й 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
```

ЪU ३

ЪU ३	
dialer map ip	ЪЖ IP ففد سم б ⊣ ⊣ Â
frame-relay map	ЪЖ IP ففد سم б DLCI Â
neighborˆ OSPF˘	ЪЖ IP ففد سم˘ ⊣ Л NBMA ص Ω ˆ ص Â
X25 map	ЪЖ IP ففد سم б X.25 ففد سم Â

⊣

ЪU ३ ⊤ ⊣

⊣	
-	-

37.1.34 ip ospf priority

ʌ OSPF

Ԩ ʌ LSU ~ ˘ ʌ Ԧ ʒ **ip ospf retransmit-interval** Â Ԧ ʒ **no** Â

ip ospf retransmit-interval *seconds*

no ip ospf retransmit-interval

ʌ	
seconds	LSU ˘ Л й ´ Æ˘ ʌ ش 1-65535 Â ч ↑ Â

й 5 Â

Ԧ ʒ ʌ Â

ч LSU ˘ LSU ج ч ď ˘ ج **ip ospf retransmit-interval** Ԧ ʒ Ԩ ˘ ↑ ˘ ч LSU Â ˘ Л a ˘ ج Э˘ ч Л Â LSU area virtual-link Ԧ ʒ retransmit-interval Ԩ ʌ № w

no ip ospf transmit delay

๑	
seconds	ใช้ OSPF ๑ LSU ˘ ภ ย ´ Æ˘ ๑ ตั 1-65535 Â

ย 1 Â

ใบ ๓

	˘ a detail ˅ ˘ ˅ ˆ Full Full ˆ
ЪU ३	ˆ

ЛЪЮ ˘ ˅ У ˆ

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# log-adj-changes detail
```

ЪU ३	ЪU ३	
	show ip ospf	ospf ˆ

˅	
ЪU ३ ˥ ˅	

˅	
-	-

37.1.38 max-concurrent-dd

˅ DD ˆ

max-concurrent-dd *<1-65535>*

no max-concurrent-dd

˅	
<1-65535>	DD

й 5ˆ

ЪU ३	ˆ
	б ˅ ˘ è ˅ˆ ! ˘ ЪU ३˘ ˅ 8 OSPF ˅ ˅ DD ↑ ˆ
	ЛЪЮ ˘ DD ↑ й 4ˆ

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

OSPF ใน ๓

˅ Hello ˅ Hello й
˅ ˅ ˅ ˅ a й 0 ˅ Hello ˅
б DR/BDR Â DR/BDR Л˅ DR/BDR
Â
ı Ε F Л ╟ ˅ ,ج
ˆ ص ˅Л cost ˆ

SPF ˅ È IP فخسم й 172.16.24.2˜ ˅

spf *20*
etwork *172.16.24.0 0.0.0.255* **area** *0*
neighbor *172.16.24.2* **priority** *1*

	OSPF ˅ Â
	OSPF ص

_	0 1 Tf 0 Tc 1.4.80[(ip-ad)<3E3C03E1>]TJ62E01 1 re W8f 0 gf563 6
	-

SPF ש ˅ ˅ Ъ ٦ **network area** Â
Ъ Â

id

ea-id

OSPF ש ﷺ Â

ƒu ३ Â

ip-address Ω *wildcard* ч ٧ ﷺ ƒu ३ ⌐ Λu ٧ ٦
OSPF ש ﷺ Â ﷺ ٧ Э OSPF ٧ ǔ IP ﷺ ↑ ﷺ network area
ﷺ IP ﷺ ﷺ Â network area ﷺ IP ﷺ ﷺ ⌐ ↑ ٧ IP ﷺ
٧ a OSPF Â
٧ ﷺ ⌐ б OSPF network ƒu ३ ﷺ IP ﷺ ﷺ ٦ ˘
٦ ˘ ٧ ٧ б OSPF Â

ΛuЮ ˘ ﷺ ' ש ﷺ' 0˘ 1˘ 172.16.16.0 Â IP ﷺ ﷺ 192.168.12.0/24
ﷺ ٧ ﷺ ש ﷺ 1˘ IP ﷺ ﷺ 172.16.16.0/20 ﷺ ٧ ﷺ ש ﷺ
172.16.16.0˘ è ٧ ﷺ ש ﷺ 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
```

ƒu ३

ƒu ३	
router ospf	… OSPF Â

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ƒu ३ ٦ ٧

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-	-

37.1.41 overflow database

ƒu ३ ɲ OSPF LSA Â

overflow database *<1-4294967294>* **hard | soft**

no overflow database

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٧	
<1-4294967294>	LSA

hard | **soft**	hard' LSA ˘ OSPF soft' LSA ˘ ৷ ˆ

a ⁸ ɱ OSPF LSA Â

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OSPF ˘ hard ৷ ˘ a OSPF' ৷ ˆ ˘ soft ৷

ЛЫОħu ३ LSA 10 ˘ OSPF 10 Â

```
Ruijie# config terminal
Ruijie(config)# router ospf 10
Ruijie(config-router)# overflow database 10 hard
```

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37.1.42 overflow database external

ħu ३ external LSA б ÿ Â

overflow database external *max-dbsize wait-time*

no overflow database external

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৷	
max-dbsize	external lsa ˆ ৷ AS ৷ ˜ ˘ ৷ ˈتن 0-2147483647 Â
wait-time	ÿ overflow ھى ˘ ৷ ˈتن 0-65535 Â

a ⁸ external-LSA Â

⁸ external-LSA ˘ external-LSA ʌ˘ a ̈Ą Â

Ĥu ३ Â

external-LSA *max-dbsize* ˘ ˘ Ю˘ a ̈Ą ╗ external-LSA˘ ѕѕ external-LSA Â *wait-time* ʌ˘ ˘ ╗ external-LSA Â

	ج ╗ OSPF ў Ш ѕѕ Ω Ш ѕѕ Ы ʌ *max-dbsize* ˘ ї ‡ ʌ Ю '	
~	1˘ ˘ ↑ Full '	
	2˘ ˘ ↑ ,	
	3˘ ʌ AS-External-LSA '	

ЮĤu ३ external lsa й 10˘ ‡ ʌ й overflow ˘ ў overflow ↑ й 3

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

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37.1.43 overflow memory-lack

Ĥu ३ ج a OSPF OVERFLOW Â Ĥu ३ no ╗ Â

overflow memory-lack

no overflow memory-lack

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no	ج a OSPF OVERFLOW ╗ Â

a Ю OSPF OVERFLOW Â

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OSPF OVERFLOW ў ↑ ˘ й a Ä Â

ŭ ╗ ˘ ج OSPF OVERFLOW ↑ ˘ ┘ Â й ˘ OSPF ┘ NULL ┤ ˘ ÿ æ ˘ ج OVERFLOW Ю ج Â ┘ Л **clear ip ospf process** ƪ ३ Æ OSPF ˘ OSPF OVERFLOW Â

no a OSPF ج a OVERFLOW ˘ ┘ ˘ ج ↑ ˘ OSPF ˘ ↑ Â

1' OSPF ج a Ю a OVERFLOW '

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# no overflow memory-lack
```

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clear ip ospf process	OSPF Æ
show ip protocols ospf	OSPF

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type *number*	ঙ ╟ ৰ ৰ Â
default	ৰ ঙ ╟ ৰ Â

Ю ৰ ঙ ╟ ৰ OSPF Â

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ঙ ঙ ╟ ˜ ↑ ˘ ৲ Ɲ
ৰ ঙ ╟ ৰ Â

ƝƪЮ ˘ ৰ serial 1/0 ঙ ╟ ৰ Â

```
Ruijie(config)# router ospf 30
Ruijie(config-router)# passive-interface serial1/0
```

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show ip ospf interface	ৰ

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37.1.45 redistribute

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redistribute {**bgp** | **connected** | **isis** [*area-tag*] | **ospf** *process-id* | **rip** | **static**} [{**level-1** | **level-1-2** | **level-2**} **|** **match** {**internal** |

isis [*area-tag*]	ÿ isis ϟ ˘ *area-tag* ά isis
ospf *process-id*	ÿ ospf ϟ ˘ *process-id* ά ospf ˘ ϡ ϫ' 1-65535
rip	ÿ rip ϟ
static	ÿ ϟ
level-1 | **level-1-2** | **level-2**	ϡ ϟ ϡ IS-IS ˘ level ϟ ϡ˘ ϡ level-2 IS-IS ϟ ϡ Â
match	ϡ ϟ ϡ OSPF ˘ ϟ ϡ˘ OSPF ϟ ϡ'
metric *metric-value*	OSPF external 2 LSA metric˘ metric-value metric ˘ ϡ ϫ' 0-16777214
metric-type {*1*|*2*}	ϭ й E-1 E-2
route-map *route-map-name*	ϟ ‡
subnets	ϡ ϟ
tag *tag-value*	ϟ ϟ OSPF tag ˘ ϡ ϫ' 0-4294967295

Ю a ϟ Â

ϟ OSPF˘ ‡ ϟ ϭ '

ϟ ISIS˘ ‡ ϟ level-2 ϭ '

ὲ Ю˘ ϟ ϭ '

ϟ BGP metric й 1˘ ὲ ϭ LSA metric й 20'

metric-type й E-2'

a route-map Â

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ˀl ˥ ' ꜛ ˧ OSPF ISIS ˘ ˧ ꜛ ˧ match level ‡˘ ̈Ą route-map Â

1' ЛuЮƚu ʅ ꜛ **ospf** *2* ՈֶՐ **isis** *isis-001* ꜛ OSPF ﷼ '

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

2' Show run Ю'

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

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summary-address	OSPF ﷼ Â
default-metric	OSPF ꜛ

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/l	
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37.1.46 router ospf

… OSPF OSPF ˘ ƚu ʅ router ospf Â ƚu ʅ no ꟾЖ OSPF Â

router ospf

router ospf *process-id* [**vrf** *vrf-name*]

no router ospf *process-id*

ˀl

ˀl	
process-id	OSPF /l Â /l ˘ 1 Â
vrf-name	﷼ VRF ꝑ ˘ OSPF VRF

a جم OSPF Â

ЪЧ ЭЦ Â

RGOS10.1 جم ЧЦ هم Э ╗ Л Ч ˘ й OSPF Â a ЛЦ OSPF
˘ ЛЛЧ й Ч ~ Â

ЛЧЮ ˘ جم **vrf** *vpn_1* … OSPF 10 Â

```
Ruijie(config)# router ospf 10 vrf vpn_1
```

ЪЧ ЭЦ

ЪЧ ЭЦ	
show ip protocols	ЭЛ ~ Â
show ip ospf	ЭЛ ospf Â

ЛЦ

ЪЧ ЭЦ ЛЦ

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37.1.47 router-id

ID, ЪЧ ЭЦ no ЛЛЧ Router ID˘
Router ID Â

router-id *router-id*

no router-id

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Ч	
router-id	ID,ЛЧ IP فخ سم

OSPF هى ^ loopback˜ Ч IP فخ سم й ’
IP فخ سم هى ^ loopback˜ Ч˘ ЭЛ OSPF Л Ч IP
فخ سم й Â

ЪЧ ЭЦ Â

ЛЛЧ IP فخ سم й ˘ Л

ر Â ৲ ৲˘ ˜ ˘ ƛ a ў ৲ ˘ ĭ Â ج LSA ɱ ˝l router-id Â

ƛƪЮ ˘ router-id ѝ 0.0.0.36 Â

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

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ƪ ३	
show ip protocols	ɱ ⊢ ϟ ¨

LSA Ω ע (LSA age)ˇ LSA LSA
Ω ע ˘ CPU Â й ¯ CPU ˘ LSA
Ω ע Â
ע й 4ˆ ˘ ˩Л ħυ ३ Â ৲ a
Âج LSA Юˇ ˘ ⅄ ⅄ LSA
Â й CPU ˘ LSA a ˘ Лυ
LSA ˘ æ Â ˘ 10000 LSAˇ ˩Лυ æ
˘ ৲ 40˙ 100 ˘ ‡ ˩Лυ ˆ 10~20ˆ Â

ЛυЮ ˘ й 120 Â

```
Ruijie(config)#router ospf 20
Ruijie(config-router)#timers lsa-group-pacing 120
```

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1 à ॐ RGOS 10.4 ŋń˘ a timers throttle spf Ĥu ३ą Â ǐ timers spf 5 10

2 à RGOS 10.4 ˘ timers throttle spf Ĥu ३ą Â Ю timers spf Ĥu ३ą a ˘ SPF Л **timers throttle spf** Ĥu ३ą ǐ ˘ ৭ timers throttle spf Ĥu ३ą Â

Ĥu ३ą Â

spf-delay Ω *spf-holdtime* ˘ OSPF ৶ ৯ ≠ ˘ ≠ ˘ ´ CPU Â

~	timers spf б timers throttle spf Â

ЛЫЮ ˘ OSPF Ω ǰ ⁞ ǐ 3 Ω 9 Â

```
Ruijie(config)# router ospf 20
Ruijie(config-router)# timers spf 3 9
```

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Ĥu ३ą	
show ip ospf	ospf
timers throttle spf	SPF ˘ ╗ timers spf ╗ ' timers throttle spf ৶ ३ą timers spf

৶

Ĥu ३ą ৭ ৶

৶	
10.1	Ĥu ३ą

৶ ३ą ч

304 1 spf

spf-delay	Ĥ SPF ˘ Л ù´ Æ˘ ч ن' 1-600000 ÂOSPF ˆ ˩ ˘ ч SPF جه spf-delay л Â
spf-holdtime	Ĥ ч SPF ˘ Л ù ´ Æ˘ ч ن' 1-600000 Â
spf-max-waittime	Ĥ ч SPF ˘ Л ù ´ Æ˘ ч ن' 1-600000 Â

spf-delay' 1000 '

spf-holdtime' 5000 '

spf-max-waittime' 10000 Â

Ĥu ę Â

spf-delay ÿ ч ˩ ˘ˆ SPF ˘ Â ч SPF
ˆ γ ч SPF ù *spf-holdtime*˘ л˘ ч SPF
ù Э ч ˘ ˆ *spf-max-waittime* л˘
a ¨Ą ╗ Â ч SPF ˘ ж SPF
ÿ *spf-holdtime* Â
spf-delay Ω *spf-holdtime* ˩ Л Л╗ ' *spf-max-waittime* ˩ Л
Л SPF

show ip ospf	ospf
timers spf	SPF Âœ 10.4 ŋń RGOS ˘ SPF ħυ ३ Â ŋń timers throttle spf ৺ ३ timers spf

```
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
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
```

OSPF б BFD ╟, ج ৷ Э ╗ ”BFD is enabled”, Ю

```
Ruijie# show ip ospf
Routing Process "ospf 1" with ID 1.1.1.1
Process uptime is 4 minutes
Process bound to VRF default
Conforms to RFC2328, and RFC1583Compatibility flag isenabled
Supports only single TOS(TOS0) routes
Supports opaque LSA
```

```
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 is 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
```

Conforms to RFC2328	б RFC2328 Â
RFC1583Compatibility flag	ج RFC1583 ‡ RFC2328 ‡' ج ASBR Ω ‡ ˆ Â
Support Tos	৲ TOS0 Â
Supports opaque LSA	opaque-LSA Â
Graceful-restart	RFC3623 Graceful Restart GR Restart ╒ Â
Graceful-restart helper	RFC3623 Graceful Restart GR Help ╒ Â
Router Type	OSPF ص normal à ABR à ASBR Â
SPF Delay	ˆ ৲ ৲ SPF Â
SPF-holdtime	ч SPF Â
LsaGroupPacing	LSA ˘ Ω ˘ ৲ Â
Incomming current DD exchange neighbors	ج ˘ incomming exstart Â
Outgoing current DD exchange neighbors	ج ˘ outgoing ÿ ھ exstart Â
Number of external LSA	LSA Â
External LSA Checksum Sum	LSA Ω Ω Â
Number of opaque LSA	opaque-LSA Â
Opaque LSA Checksum Sum	opaque-LSA Ω Ω Â
Number of non-default external LSA	external-LSA Â
External LSA database limit	external-LSA ⁸ Â
Exit database overflow state interval	overflow Â
Database overflow state	ŝ ˜ ک ğ Ò Ò Ȯ

Number of interfaces in this area	ซึ่งมีอยู่ในพื้นที่นี้
Number of fully adjacent neighbors in this area	ซึ่งมีอยู่ในพื้นที่นี้ Full
Number of fully adjacent virtual neighbors through this area	ซึ่งมีอยู่ในพื้นที่นี้ Full ' เชื่อมต่อผ่านพื้นที่นี้
Area authentication	ซึ่งมีอยู่ในพื้นที่นี้
SPF algorithm last executed	เวลาล่าสุดที่ SPF ถูกรัน
SPF algorithm executed times	SPF
Number of LSA	ซึ่งมีอยู่ในพื้นที่นี้ LSA
Checksum Sum	ซึ่งมีอยู่ในพื้นที่นี้ LSA ผลรวม
NSSA Translator State	ใช้ NSSA LSA ให้ External LSA' NSSA ซึ่งเป็นสถานะของ ABR OSPF
BFD is enabled	ถูกเปิดใช้ OSPF ด้วย BFD

ใช้งาน	ใช้งาน	
	-	-

ค่าเริ่มต้น

ใช้งานโหมด	โหมด	
	-	-

37.2.2 show ip ospf border-routers

ถูกใช้เพื่อแสดงรายการ ABR/ASBR OSPF ที่ทราบ ใช้งาน **show ip ospf border-routers**

show ip ospf [*process-id*] **border-routers**

พารามิเตอร์	พารามิเตอร์	
	process-id	ospf โดยใช้

ใช้งาน

ЪU ३˘ ৲ ЛU ৷ ABR ASBR OSPF ÂOSPF
a ৲ **show ip route** ˘ OSPF OSPF ফ ৷ OSPF
˘ a Â

ЛЪЮ ৷ **show ip ospf border-routers** ЪU ३ '

```
Ruijie# show ip ospf border-routers
OSPF internal Routing Table
Codes: i - Intra-area route, I - Inter-area route
i 1.1.1.1 [2] via 10.0.0.1, FastEthernet 0/1, ABR, ASBR, Area 0.0.0.1
select
```

৴ ЪЮ Â

Codes	ص ३ ЪЖ Âi ৷ ˘ I ৷ ৷ Â
I	৷ ৷ Â
1.1.1.1	OSPF Â
[2]	ˆ cost˘ Â
via 10.0.0.1	ЪЮ Â
FastEthernet 0/1	৷ Â
ABR, ASBR	ص˘ ABR ∩ ASBR ч ˘ ৲ ЛU ৲ ABR ∩ ASBR Â
Area 0.0.0.1	˘ ৷ ৷ Â
select	ASBR ˘ select ৷ Â

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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**]

৭	
area-id	ˆ ৲ ˜ Ш ৯ ৷৷ Â
adv-router	ˆ ৲ ˜ ˈΩ˜ Â
link-state-id	ˆ ৲ ˜ ৲ OSPF Â
self-originate	ˆ ৲ ˜ Â
max-age	ˆ ৲ ˜ ˆ ৯ LSA
router	ˆ ৲ ˜ OSPF Â
network	ˆ ৲ ˜ OSPF Â
summary	ˆ ৲ ˜ OSPF Â
asbr-summary	ˆ ৲ ˜ ASBR Â
external	ˆ ৲ ˜ OSPF Â
nssa-external	ˆ ৲ ˜ OSPF Â
opaque-area	ˆ ৲ ˜ ˘ LSA
opaque-as	ˆ ৲ ˜ ˘ LSA
opaque-link	ˆ ৲ ˜ LSA
database-summary	ˆ ৲ ˜ OSPF ৷ LSA Â

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OSPF ˘ ˆ ˘ ˆ Â ৯ Ĥu ३˘ ╟
OSPF Â

1' ЛЮй **show ip ospf database** Ĥu ३ '

```
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
192.88.88.27    1.1.1.1        120  0x80000001 0x5366
Summary Link States (Area 0.0.0.0)
Link ID        ADV Router     Age  Seq#      CkSum  Route
10.0.0.0       1.1.1.1        2    0x80000003 0x350d 10.0.0.0/24
100.0.0.0      1.1.1.1        2    0x8000000c 0x1ecb 100.0.0.0/16
Router Link States (Area 0.0.0.1 [NSSA])
Link ID        ADV Router     Age  Seq#      CkSum  Link count
1.1.1.1        1.1.1.1        2    0x80000001 0x91a2 1
Summary Link States (Area 0.0.0.1 [NSSA])
Link ID        ADV Router     Age  Seq#      CkSum  Route
100.0.0.0      1.1.1.1      2    0x80000001 0x52a4 100.0.0.0/16
192.88.88.0    1.1.1.1      2    0x80000001 0xbb2d 192.88.88.0/24
NSSA-external Link States (Area 0.0.0.1 [NSSA])
Link ID    ADV Router    Age  Seq#      CkSum  Route        Tag
20.0.0.0    1.1.1.1     1    0x80000001 0x033c E2 20.0.0.0/24     0
100.0.0.0   1.1.1.1     1    0x80000001 0x9469 E2 100.0.0.0/28    0
AS External Link States
Link ID   ADV Router    Age  Seq#      CkSum  Route          Tag
20.0.0.0   1.1.1.1    380  0x8000000a 0x7627 E2 20.0.0.0/24    0
100.0.0.0   1.1.1.1   620  0x8000000a 0x0854 E2 100.0.0.0/28  0
```

show ip ospf database ЪU ३ ⁄ ЮÂ

OSPF Router with ID	OSPF б OSPF ⁄
Router Link States	ЛЪЮ ѝ Â
Net Link States	ЛЪЮ ѝ Â
Summary Net Link States	ЛЪЮ ѝ Â
NSSA-external Link States	ЛЪЮ ѝ ѯ
AS External Link States	ЛЪЮ ѝ ѯ Â

Link ID	Â
ADV Router	˜ Â
Age	ج Â
Seq#	ˇ LSA Â
Cksum	Ω Â
Link-Count	
Route	LSA ↑ ü
Tag	Â

2' ЛЮ ѝ **show ip ospf database asbr-summar**y Ĥ ę '

```
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 Ĥ ę ⁄ Ю Â

OSPF Router with ID	ЛЮ б OSPF ⁄
AS Summary Link States	ЛЮ AS Â
LS age	ج Â
Options	Â
LS Type	ص Â
Link State ID	Â
Advertising Router	˜ Â
LS Seq Number	⁄ Â
Checksum	Ω Â

Length	˘ Лυ ὶ´ æ Â
Network Mask	Â
TOS	TOS ˘ ɱń ৲ ὶ 0 Â
Metric	Â

3' ЛЫЮ ὶ **show ip ospf database external** ħυ ३ '

```
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	Â
Metric Type	صر Â
TOS	TOS ˘ ɱń ৲ ѝ 0 Â
Metric	Â
Forward Address	ˆ ˘ ৲ˆ IP فخ سم Â سم فخ ѝ 0.0.0.0 ‡ ৲ˆ Â
External Route Tag	˘ 32 Â OSPF a ˘ ج ٤ ˆ OSPF ˆ Â

4' ЛЪЮ ѝ **show ip ospf database network** ЪU ३ '

```
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 ЪU ३ ৶ ЮÂ

Checksum

Length	˘ ЛU й´ Æ Â
Number of Links	Â
Link connected to	˘ ЛU ৲ ص Â
(Link ID)	Â
(Link Data)	Â
Number of TOS metrics	TOS ˘ ৲ TOS0 Â
TOS 0 Metrics	TOS˚ Â

6' ЛЮ й **show ip ospf database summar**y ЪU ३ '

```
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 ЪU ३ ৲ Ю Â

OSPF Router with ID	ЛЮ б OSPF ৲ Â
Summary Net Link States	ЛЮ й Â
LS age	جه Â
Options	Â
LS Type	ص Â
Link State ID	Â
Advertising Router	ˆ Â
LS Seq Number	৲ Â
Checksum	Ω Â
Length	˘ ЛU й´ Æ Â
Network Mask	Â

TOS	TOS ˘ ŋń ˬ ù 0 Â
Metric	Â

7 ЛЮ ù **show ip ospf database nssa-external** Ĥ ę '

```
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 Ĥ ę ˬ ЮÂ

OSPF Router with ID	ЛЮ б OSPF ˬ Â
NSSA-external Link States	ЛЮ ù ŏŏ Â
LS age	ج Â
Options	Â
LS Type	ص Â
Link State ID	Â
Advertising Router	˜ Â
LS Seq Number	ˬ Â
Checksum	Ω Â
Length	˘ Л ù ´ Æ Â
Network Mask	Â
Metric Type	ص Â

TOS	TOS ˘ ŋń ˬ ǐ 0Â
Metric	Â
NSSA:Forward Address	ˆ ˘ ˬˆ IP ƒƣ ƨ Â ƣ ǐ 0.0.0.0 ‡ ˬˆ Â
External Route Tag	˘ 32 ÂOSPF a ˘ ج ɛ ˆ OSPF ˆ Â

8' ЛЮ ǐ **show ip ospf database external** Ĥu 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 Ĥu ʒ ˬ ЮÂ

OSPF Router with ID	ЛЮ б OSPF ˬ Â
Type-7 AS External Link States	ЛЮ ǐ ƣ Â
LS age	ج Â
Options	Â
LS Type	ص Â
Link State ID	Â
Advertising Router	ˆ Â

LS Seq Number	⁄ı Â
Checksum	∩ Â
Length	˘ ⅃υ ѝ´ æ Â
Network Mask	Â

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37.2.4 show ip ospf interface

б OSPF ন ˘ ĥu ३ **show ip ospf interface** Â

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

ন	ন	
	interface-type	ˆ ৲ ~ ন ন ص Â
	¸ *interface-number*	ˆ ৲ ~ ন ন ন Â

ৰ ৖ ৬ BFD ˘ ষ ╗ Ю :

```
Ruijie# show ip ospf interface fa 1/0
FastEthernet 1/0 is up, line protocol is up
Internet Address 192.88.88.27/24, Ifindex 4, Area 0.0.0.0, MTU 1500
Matching network config: 192.88.88.0/24
Process ID 1, Router ID 1.1.1.1, Network Type BROADCAST, Cost: 1
Transmit Delay is 1 sec, State DR, Priority 1, 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* ħu ३ ৰ Ю Â

FastEthernet 0/0 State	ৰ ˘ UP ˘ Down Â
Internet Address	ৰ IP ফ্ৰ Â
Area	ৰ OSPF ষ ষ Â
MTU	MTU
Matching network config	OSPF network area
Process ID	ৰ
Router ID	OSPF Â
Network Type	OSPF ৰ Â
Cost	OSPF ৰ Â
Transmit Delay is	OSPF ৰ Â
State	DR/BDR Â
Priority	ৰ ˝I
Designated Router(ID)	ৰ DR
DR's Interface address	ৰ DR ৰ ফ্ৰ

Backup designated router(ID)	৸ BDR
BDR's Interface address	৸ BDR ৸ ফ্ৰ
Time intervals configured	৸ Hello˘ Dead˘ Wait˘ Retransmit
Hello due in	Э HELLO ৷
Neighbor count	
Adjacent neighbor count	Full
Crypt Sequence Number	৸ md5 ৸
Hello received send	ˆ б ৷ HELLO Â
DD received send	ˆ б ৷ DD Â
LS-Req received send	ˆ б ৷ LS Â
LS-Upd received send	ˆ б ৷ LS Â
LS-Ack received send	ˆ б ৷ LS Â
Discard	OSPF Â

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37.2.5 show ip ospf neighbor

OSPF ˘ ĥu ३ **show ip ospf neighbor** Â

show ip ospf [*process-id*] **neighbor** [[**detail**] | [[*interface-type interface-number*] [*neighbor-id*]]]

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detail	ˆ ৲ ˜ Â
interface-type interface-number	ˆ ৲ ˜ ৸ Â
neighbor-id	ˆ ৲ ˜ Â

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ЛЮ й **show ip ospf neighbor** ħu ३ '

```
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
```

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 ħu ३ ⁄ ЮO'

BDR	BDR ٨ ممم فخ (Hello BDR)
Options	Hello E ˘ 0 ш ممم ѝ STUB' ˘ ш ممم a STUB ш ممم Â

count	⁄ OSPF

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ƪ ३ 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 ƪ ३ ⁄ Ю'

codes	ص Лƪ ⁄
100.0.0.0/24	ŋ Â
[1]	cost
via	Ю б ⁄

ƪ ३	

show ip ospf [*process-id*] **summary-address**

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process-id	OSPF ৸˘ ৭ OSPF

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ЛЫЮ й **show ip ospf summary-address**

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38.1.2 address-family ipv4 vrf

ħυ ३ **address-faimly IPv4 VRF** BGP ˘ vrf

Ⅱ Â ħυ ३ **no** ˘ б vrf Ⅱ Â

৭	
unicast	৷ ˘ IPv6 ´ ফ্ৰ ফ
multicast	৷ ˘ IPV6 ফ্ৰ ফ

´ ফ্ৰ ফ ৸

ƚu ३ BGP

BGP IPv6 ˘ ৷ ৸ ƚu ३ BGP IPv6 ফ্ৰ ফ ৷˘
IPv6 ˘ ≠ ৷ ৸ ছ BGP IPv6 ৷˘ ছ IPv6 ফ্ৰ ফ
Â

multicast ৷ ৸ BGP ˘ IPV6
˜ RPF Â

ঞ BGP ˘ ৷ ৸ ƚu ३ **exit-address-family** Â

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family ipv6
```

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exit-address-family	

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38.1.4 address-family vpnv4

ƚu ३ PE VPN ˘ ˚ **address-family VPN** ফ্ৰ ফ
Â **exit-address-family** ƚu ३ **address-family VPN** Â

address-family vpnv4 [**unicast**]

no address-family vpnv4 [**unicast**]

৭	
unicast	৷ ˘ IPv4 ´ ফ্ৰ ফ ৸

ƚ vpn ফ্ৰ ফ

Ĥu ३ BGP

Ĥu ३ ĵ vpn فخ سم Ю PE vpn Â
ھ BGP ˘ ˩ Л Ĥu ३ **exit-address-family** Â

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family vpnv4
```

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exit-address-family	

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38.1.5 aggregate-address ō IPv4 Ŏ

Ĥu ३ BGP IPv4 ˩ Â Ĥu ३ **no** ˥ Â

aggregate-address *ip-address mask* {**as-set**|**summary-only**}

no aggregate-address

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# aggregate-address 10.0.0.0 255.0.0.0 as-set
```

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ƪu ३	
router bgp	BGP ˜ Â

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38.1.6 aggregate-address ō IPv6 Ŏ

ƪu ३ BGP IPv6 ƛ Â ƪu ३ **no** ˥ Â

aggregate-address *ipv6-network/length* {**as-set**|**summary-only**}

no aggregate-address *ipv6-network/length* {**as-set**|**summary-only**}

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ipv6-network	ƛ ƒ ƒ ƛ ƛ Â
length	ƛ ƒ ƒ ƛ Â
as-set	ƛ ƒ ƒ ƛ AS Â
summary-only	ƛ Ω ƛ ƛ Â

ƛ Â

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BGP IPv6 ƒ ƒ Â

BGP ƛ Ω ƛ ƛ ˘ ƛ Ω ƛ ƛ ˘
aggregate-address summary-only ƪu ३ Â

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family ipv6
Ruijie(config-router-af)# aggregate-address 2008::/90  as-set
```

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ƪu ३	
router bgp	BGP ˜ Â

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38.1.7 bgp always-compare-med

ƪu ३ BGP Multi Exit Discriminator˜ MED˜ Â ƪu ३ **no** ˥ Â

bgp always-compare-med

no bgp always-compare-med

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Ю˘ ˩ AS MED Â

ƪu ३ BGP Â

Ю˘ ৷ ˩ AS MED ˘ a ˩ AS MED ˘ ƪu ३ Â ˆ ˩ ﺟﻫ ﻓﺨﺴ ˘ MED ˝I Â

a ˩ ˩ IGP Ω ˘ ї ‡ a ƪu ३ Â

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp always-compare-med
```

ƪu ३	
show ip bgp	BGP Â
bgp bestpath med confed	˘ AS MED Â
bgp bestpath med missing-as-worst	˘ MED ˝I ѝ æ Â
bgp deterministic-med	˘ ˩ AS ˝I Â

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38.1.8 bgp bestpath as-path ignore

˘ ƫ ३ a AS Â ƫ ३ **no**

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bgp bestpath as-path ignore

no bgp bestpath as-path ignore

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ƒO˘ ج ˘ a ⌋ ebgp peer ASPATH˘
È ˚ Â

ƒu ३

BGP Â

ƒO˘ ج ج EBGP peer ⌋ ˘
ASPATH a ˘ ƒu ३ ASPATH Â
ج ƒu ३ ˘ Ü ASPATH˘ a
ASPATH Â

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp bestpath compare-confed-aspath
```

ƒu ३

ƒu ३	
show ip bgp	BGP
bgp router-id	BGP Router ID

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ƒu ३ ˥ ⌋

⌋	
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38.1.10 bgp bestpath compare-routerid

Ъu ২ BGP Â

Ю˝ ج ˘ ˺ ч ÿ a ৲ EBGP peers

```
Ruijie(config-router)# bgp bestpath med confed
```

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ħu ३	
show ip bgp	BGP Â
bgp bestpath always-compare-med	˘ a ˩ AS MED Â
bgp bestpath med missing-as-worst	˘ MED ˝I ˥ æ Â Â
bgp deterministic-med	˘ ˩ AS ˝I Â

˩

	˥	

	ƪ ३	
ƪ ३	**show ip bgp**	BGP Â
	bgp bestpath always-compare-med	˘ a ˩ AS MED Â
	bgp bestpath med confed	˘ AS MED Â
	bgp deterministic-med	˘ ˩ AS ˝I Â

˩

ƪ ३ ˥ ˩	˥	
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38.1.13 bgp default route-targe filter

ƪ ३ route-targe ˘ VPNV4 route-targe route-targe ج Â no ƪ ३ ˥ Â

bgp default route-targe filter

no bgp default route-targe filter

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Â

ƪ ३	BGP Â
	BGP ˥ VPNV4 ˩˘ route-target ج ˥ ˥ a ˩ vrf Â no ƪ ३˘ BGP VPNV4 ˘ a سم VRF route-targe ˥ VPNV4 Â BGP PE ˥ ˘ BGP VPNV4 ˥ a route-targe ˘ ˥ ƪ ३ BGP ˥ ˘ . a route-targe Â
	Ruijie(config)# **router bgp** *65000*

```
Ruijie(config-router)# no bgp default route-targe filter
```

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neighbor route-reflector-client	৲ ৯ ঋ ৲ ৯

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38.1.14 bgp client-to-client reflection

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bgp client-to-client reflection

no bgp client-to-client reflection

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BGP Â

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```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# no bgp client-to-client reflection
```

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ƚυ ३	
bgp cluster-id	৲ ৯
neighbor route-reflector-client	৲ ৯ ঋ ৲ ৯

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38.1.16 bgp confederation identifier

ƪ ३ AS Â ƪ ३ **no** ɛ̀ Â

bgp confederation identifier *as-number*

no bgp confederation identifier

ipv4-unicast ফ ম Â

ƻ ३ BGP Â

ƻ ३ BGP **address family ঋ ipv4** ´ ফ ম Â

```
Ruijie(config-router)# bgp default ipv4-unicast
```

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ƻ ३	
address-family ipv4	IPv4 ফ ম

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৶	

show ip bgp	BGP Â
bgp bestpath always-compare-med	˘ a ˩ AS MED Â
bgp bestpath medconfed	˘ AS MED Â
bgp bestpath med missing-as-worst	˘ MED ˝I ѝ æ Â

˩

ƪu ३ ˥ ˩

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38.1.20 bgp deterministic-med

ƪu ३ ˩ AS ˝I MED ˘ ƦO ˘ ˝I Â **no** ƪu ३ ɛ Â

bgp deterministic med

no bgp deterministic med

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ƪu ३ BGP Â

ƦŎ ˘ ˆ ˘ ˩ AS ˝I ˘ ƪu ३ Â

```
Ruijie(config-router)# bgp deterministic med
```

ƪu ३

ƪu ३	
show ip bgp	BGP Â
bgp bestpath always-compare-med	˘ a ˩ AS MED Â

bgp bestpath med confed	˘ AS MED Â
bgp bestpath med missing-as-worst	˘ MED ˝I й æ Â

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38.1.21 bgp enforce-first-as

ƪ ३ ˺ AS_PATH a AS ƺ UPDATE Â
no ƪ ३ ȅ Â

bgp enforce-first-as

no bgp enforce-first-as

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	-	-

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ƪ ३ BGP

Ю˝ ج UPDATE ˘ AS ƺ Â

```
Ruijie(config-router)# bgp enforce-first-as
```

ƪ ३	ƪ ३	
	show ip bgp	BGP

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38.1.22 bgp fast-external-fallover

ƚu ३ EBGP peer ^ ˘ ƚu ३
BGP Â ƚu ३ **no** ╗ Â

bgp fast-external-fallover

no bgp fast-external-fallover

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╗ Â

ƚu ३ BGP Â

ƚu ३ ^ EBGP Â

```
Ruijie(config-router)# bgp faster-external-fallover
```

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router bgp	BGP ˜

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ƚu ३ ˥ ^	
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38.1.23 bgp graceful-restart

BGP ŭ ˘ ƚu ३ bgp graceful-restart Â ƚu ३ no
BGP ŭ Â

bgp graceful-restart

no bgp graceful-restart

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BGP ŭ ˘ a ŭ˘ ≠ a й ŭ ╟ Â

Ĥu ३ BGP

BGP ˘ Open ˘ ˜ ك Â ˅ ˘ a ˘
GR Â
bgp graceful-restart Ĥu ३ GR ˘ Open GR ˘
GR ˘ ˜ ك يج BGP GR جه ч كا GR ˘ Â
Ĥu ३ a . ╖ BGP ˘ يج BGP . ˜ ك GR
˘ ⁸ BGP ŭ سه б Peer GR ˘ ˜ ك Â
BGP ŭ a ˅˘ جه BGP ˜ ŭ
BGP ˅ Â ĭ ŭ a ˅ б ˚
˘ S5750 جه GR ˘ ˅ ˅ й GR Helper ╟ BGP ŭ
ŭ Â

```
Ruijie(config)# router bgp 500
Ruijie(config-router)# bgp graceful-restart
```

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Ĥu ३	
router bgp	BGP ˜
bgp graceful-restart restart-time	BGP ŭ ŭ

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˅	
10.4(2)	**Ĥu ३**

38.1.24 bgp graceful-restart restart-time

BGP ŭ ŭ ˘ Ĥu ३ bgp graceful-restart restart-time Â Ĥu ३ no
ŭ й Â

bgp graceful-restart restart-time *restart-time*

no bgp grac *restart-time*

restart-time	GR Restarter GR Helper جھ б GR Restarter ŋń ن й 1ĵ 3600

й 120

Ъu ३ BGP

ŭ GR Restarter ˜ GR Helperĕ GR Restarter GR Helper جھ б GR Restarter ŋń Â GR Helper Л Ÿ б GR Restarter BGP ĵ Established ˘ ‡ й BGP ˘ BGP Â

جھ BGP Open GR F ˜ ˘ a ч GR ŭ

	time	جه б GR Л˘ Ÿ stale Â ت й 1ٰ 3600

[redacted]

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Ĥu ३ BGP Â

≠ ৲ Ĥ **debug** Ĥu ३ BGP ৲ ४ Â BGP **debug** Ĥu ३ Â

```
Ruijie(config-router)# bgp log-neighbor-changes
```

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Ĥu ३	
router bgp	BGP ˜

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Ĥu ३ ৲ ৴

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38.1.27 bgp nexthop trigger delay

Ĥu ३ BGP nexthop ৲ ४ Â Ĥu ३ **no** ৲ Ĥ й Â

bgp nexthop trigger delay *delay-time*

no bgp nexthop trigger delay

৴

৴	
delay-time	nexthop ৲ ४ ' ت' 0..100˜ ´ Æ' Â

5 Â

Ĥu ३ BGP ˘ BGP IPv4/IPv6/VPNv4 فخ سم ˘ BGP IPv4 VRF فخ سم Â

Ĥu ३ nexthop ৲ ४ ˘ جه bgp nexthop trigger enable

```
Ruijie(config-router)# bgp nexthop trigger delay 30
```

ƪu ३

ƪu ३	
bgp nexthop trigger enable	nexthop ৻ ৷

৻

ƪu ३ ৲ ৻

৻	
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38.1.28 bgp nexthop trigger enable

ƪu ३ Ю ৻ ৷ Â ƪu ३ **no** Ю ৻ ৷ Â

bgp nexthop trigger enable

no bgp nexthop trigger enable

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৻	
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ƪu ३

BGP ˘ BGP IPv4/IPv6/VPNv4 ফ্র BGP ˘ IPv4 VRF ফ্র Â

ƪu ३ BGP ˜ Ю ৻ ৷ Â

```
Ruijie(config-router)# bgp nexthop trigger enable
```

ƪu ३

ƪu ३	
bgp nexthop trigger delay	Ю ৻ ৻ ৯ Â

৻

ƪu ३ ৲ ৻

৻	

	-	-

ip-address	IP ফ্রস Â

route-id Â جم a ৸ ھی ৸˘ ھی

ƒu ३

BGP Â

ƒu ३ BGP ˜ ID——IP ফ্রস

```
Ruijie(config-router)# bgp router-id 10.0.0.1
```

ƒu ३

ƒu ३	
show ip bgp dampening dampened-paths	
bgp dampening	৸ ৷৷

৸

ƒu ३ ৲ ৸

৸	
-	-

38.1.31 bgp scan-rib disable

ƒu ३ BGP ˜ Â ƒu ३ **no** ৸ Â

bgp scan-rib disable

no bgp scan-rib disable

৸

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৷৷ Â

ƒu ३

BGP ˘ BGP IPv4/IPv6/VPNv4 ফ্রস ˘ BGP IPv4 VRF ফ্রস Â

ƒu ३ BGP ˜ a Â

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

ƒu ३

ƒu ३	
bgp scan-time	BGP

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ƒu ३ ৲ ৰ

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38.1.32 bgp scan-time

ƒu ३ BGP ˜ Â

bgp scan-time *time*

no bgp scan-time [*time*]

৭

৭	
time	' ' ন' 5..60˜ ´ Æ'

60 Â

ƒu ३

BGP ˘ BGP IPv4/IPv6/VPNv4 ফ্যামিলি ˘ BGP IPv4 VRF ফ্যামিলি Â

ƒu ३ BGP ˜ ˘ জন্য bgp scan-rib enable Â

Ruijie(config-router)# **bgp scan-time** *30*

ƒu ३

ƒu ३	
bgp scan-rib enable	BGP

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ƒu ३ ৲ ৰ

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38.1.33 bgp update-delay

BGP Speaker ปรับค่าเวลาการส่งข้อมูล **bgp update-delay** ใช้งานคำสั่ง ใช้งานคำสั่ง no ปิด **bgp update-delay** ซึ่งค่าเริ่มต้นคือ

ค่าเริ่มต้นของ BGP มีค่าเท่ากับ

bgp update-delay *delay-time*

no bgp update-delay

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Ĥu ३ ʎ

ʎ	
-	-

38.1.34 clear bgp all

BGP ﻫﺫ ﻫﺫ Æ Â Æ ʎ ʎ ã Â

clear bgp all [*as-number*|]

clear bgp all peer-group *peer-group-name* [[**soft**] [**in** | **out**]]

ʎ	
ʎ	Æ ﻫﺫ ﻫﺫ Ю
as-number	Æ Ω AS ˘

peer-group-name	ʎ
in	a ╗ ʎ **soft˘** Æ ў ╟
out	a ╗ ʎ **soft˘** Æ BGP speaker ў ╟
soft	Æ˘ Ω ˥ Æ
soft in	Æ˘ Æ
soft out	Æ˘ ˥ Æ

Ń > × ɔ

Ĥu ३ ٦ ৶

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-	-

38.1.35 clear bgp ipv4 unicast

BGP IPv4´ فخ سم Æ Â Ĥu ३ б **clear ip bgp** ╖ à ٨ Â

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٨	
٨ **clear ip bgp** Ĥu ३	٨ **clear ip bgp** Ĥu ३

٨ **clear ip bgp** Ĥu ३

Ĥu ३ Â

٨ **clear ip bgp** Ĥu ३

Ĥu ३

Ĥu ३	
clear ip bgp	BGP IPv4´ فخ سم Æ

৶

Ĥu ३ ٦ ৶

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-	-

38.1.36 clear bgp ipv4 unicast dampening

Ĥu ३ ∩ 8 8 Â

clear bgp ipv4 unicast dampening [*address* [*mask*]]

٨

٨	
address	IP فخ سم Â
mask	Â

Ĥu ३

Ĥu ३ BGP ˘ 8 8 Â Ĥu ३ ˩ ⎍ ŭ ╟ BGP Â

```
Ruijie# clear bgp ipv4 unicast dampening 192.168.0.0 255.255.0.0
```

Ĥu ३

Ĥu ३	
show ip bgp dampening dampened-paths	
bgp dampening	╗ ˥

˩

Ĥu ३ ˥ ˩

˥	
-	-

38.1.37 clear bgp ipv4 unicast external

Ĥu ३ EBGP Æ

clear bgp ipv4 unicast external [[**soft**] [**in** | **out**]]

˥

˥	
in	a ╗ ˥ soft˘ Æ ŭ ╟ Â
out	a ╗ ˥ soft˘ Æ BGP speaker ŭ ╟ Â
soft	Æ˘ ∩ ˩ Æ Â
soft in	Æ˘ Æ Â
soft out	Æ˘ ˩ Æ Â

Â

Ĥu ३ Â

Ĥu ३ ⎍ BGP Æ Â

```
Ruijie# clear bgp ipv4 unicast external in
```

ƪ ३	
clear ip bgp	Æ BGP
show ip bgp neighbors	BGP

38.1.38 clear bgp ipv4 unicast flap-statistics

ƪ ३ Â

clear bgp ipv4 unicast flap-statistics [*address*[*mask*]]

address IP فخ سم	
mask	

ƪ ३ Â

ƪ ३ ৲ ˘ ≠ a Â

˘ ৲ ∫∪ **clear ip bgp**

dampening ƪ ३ Â

```
Ruijie# clear bgp ipv4 unicast flap-statistics
```

ƪ ३	
bgp dampening	ℿ ৲
show ip bgp	BGP

ใบ ๓ ๗ ๗	๗	
	-	-

38.1.39 clear bgp ipv4 unicast peer-group

Ĥu ३ Æ Ω ˘ Â

clear bgp ipv4 unicast peer-group *peer-group-name* [[**soft**] [**in** | **out**]]

৭	
peer-group-name	৯ Â
in	a ╗ ৭ soft˘ Æ ў ╟ Â
out	a ╗ ৭ soft˘ Æ BGP speaker ў ╟ Â
soft	Æ˘ Ω ৭ Æ Â
soft in	Æ˘ Æ Â
soft out	Æ˘ ĭ ৭ Æ Â

Â

Ĥu ३ Â

Ĥu ३ Æ Ω ˘ BGP Â

```
Ruijie# clear bgp ipv4 unicast peer-group my-group in
```

Ĥu ३	
clear ip bgp	Æ BGP
show ip bgp	BGP

৯

৯	
-	-

38.1.40 clear bgp ipv6 unicast

BGP IPv6´ فخ سم Æ Â

ƀu ३	
clear bgp ipv4 unicast	BGP IPv4 ´ فذ سم Æ

Ĥu ३

Ĥu ३	
show ip bgp dampening dampened-paths	
bgp dampening	╗ ╢

ɅI

Ĥu ३ ˥ ɅI

ΛI	
-	-

38.1.44 clear ip bgp external

Ĥu ३ IPv4 ´ فخ سم EBGP Æ

clear ip bgp external [[**soft**] [**in** | **out**]]

ΛI

ΛI	
in	a ╗ ╢ soft˘ Æ ў ╟ Â
out	a ╗ ╢ soft˘ Æ BGP speaker ў ╟ Â
soft in	Æ˘ Æ Â
soft out	Æ˘ ˇ ˩ Æ Â

Ĥu ३ Â

Ĥu ३ ΛU BGP Æ Â

```
Ruijie# clear ip bgp external in
```

Ĥu ३

Ĥu ३	
clear ip bgp	Æ BGP
show ip bgp neighbors	BGP

ɅI

Ĥu ३ ˥ ɅI

ΛI	

38.1.45 clear ip bgp flap-statistics

ใช้งานได้กับ IPv4

out	a ╗ ৲ **soft˘** Æ BGP speaker ǔ ╟ Â
soft	Æ˘ ∩ ৻ Æ Â
soft in	Æ˘ Æ Â
soft out	Æ˘ ǂ ৻ Æ Â

ƪ ३

ƪ ३ Æ∩ ˘ BGP Â

```
Ruijie# clear ip bgp peer-group my-group in
```

ƪ ३

ƪ ३	
clear ip bgp	Æ BGP
show ip bgp	BGP

৶

ƪ ३ ৲ ৶

৶	
-	-

38.1.47 clear ip bgp table-map

ƪ ३ IPv4´ فخ سم table-map Â

clear ip bgp [**vr**f *vrf-name*] **table-map**

৲

৲	
vrf-name	vrf ৶

ƪ ३

Ю ३ **table-map** Â

```
Ruijie# clear ip bgp table-map
```

Ю ३

Ю ३	
clear ip bgp	Æ BGP
show ip bgp	BGP

Ы

Ю ३ ˥ Ы

Ы	
-	-

38.1.48 clear ip bgp vrf

Ю ३ Æ ج vrf ˘ Â

clear ip bgp vrf *vrf-name* [* | *address*] [[**soft**] [**in** | **out**]]

Ч

Ч	
vrf-name	vrf Ы
*	Æ vrf Ю BGP Â
address	Æ vrf Ю б peer BGP Â
in	a ╗ Ч **soft˘** Æ ў ╟ Â
out	a ╗ Ч **soft˘** Æ BGP speaker ў ╟ Â
soft	Æ˘ ∩ ˩ Æ Â
soft in	Æ˘ Æ Â
soft out	Æ˘ ˥ ˩ Æ Â

Â

Ю ३ Â

Ю ३ Æ ج vrf ˘ BGP Â

```
Ruijie# clear ip bgp vrf my-vrf in
```

ħu ३	

ใบ ๓ ๗ ๔	๗	
	-	-

38.1.50 default-metric

ใบ ๓ BGP ๙ ๔ metric Â ใบ ๓ **no** ˘ ˘ Â

default-metric number

no default-metric

Ъυ ϛ й a ل صر BGP a ل Â **no** Ъυ ϛ Â

distance bgp *external-distance internal-distance local-distance*

no distance bgp [*external-distance internal-distance local-distance*]

٩		
٩	*external-distance*	ÿ EBGP peers ˜ ˆ Â ˜ 1..255
	internal-distance	ÿ IBGP peers ˜ ˆ Â ˜ 1..255
	local-distance	ÿ peers ˜ ˆ ˘ й جه ل Лυ ÿ IGP ˜ ˆ ˘ **network** **backdoor** Ъυ ϛ Â ˜ 1..255

ل ٩ Ю'

external-distance´ 20

internal-distance´ 200

local-distance´ 200

Ъυ ϛ BGP Â

a ل BGP Â جه ˘ Ю '

Â ' external-distance è IGP ˜ (OSPF èRIP) æ'

Â γ ' internal-distance Ω local-distance è IGP ˜ Â

exit-address-family

৭	
-	-

ħu ३

BGP address-family Â

ħu ३ ৲ Ɲu ÿ bgp ৸ **address-family** ↑ bgp Â

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

‡ ´ ê IP´ فخ Ì Â

```
Ruijie(config-router)# ip as-path access-list hsd deny ^123$
```

ھو ۶	
neighbor filter-list	Э as-path 8
neighbor distribute-list	Э ‡ ۷

۷

ھو ۶ ٦ ۷	۷	
	-	-

38.1.54 maximum-prefix

ھو ۶ 8 فخ سم ЮО ηή Â ھو ۶ no سم فخ ЮО ηή Â

maximum-prefix *maximum*

no maximum-prefix

۹	۹	
	Maximum	فخ سم ЮО ηή Â تن<1 - 4294967295>
	No	ѝ Â

a ۷ فخ سم ЮО ηή a ۷'
ipv4/ipv6 multicast فخ سم ЮЎ ѝ 10000.
è فخ سم ЮЎ ↑ ipv4/ipv6 unicastˇ vpnv4 unicast, ipv4 vrf ѝ *memory-limit.*
memory-limit ѝ (system-memory/256M)*100000 Â system-memory ѝ
Â ѝ 256Mˇ ‡ memory-limit ѝ 100000 Â

ھو ۶
BGP ˘ BGP IPv4 فخ سم ˘ BGP IPv6 فخ سم ˘ BGP IPv4 VRF ˘ BGP VPNv4 فخ سم

BGP فخ سم ЮО ηή ۷ redistribute ˘ ≠ ۷ ÿ

˜ ˘ a ف ˘ فخ سم ƗO BGP ŋń ˆ ˘
فخ سم ŋń a ̈Ą , فخ سم table overflow ˘ فخ سم ƗO
≠ overflow Â
show bgp <فخ سم > summary ˩ table ˥ Â
bgp˘ clear bgp <فخ سم > * Æ فخ سم Â

& فخ سم overflow ˘ a maximum-prefix Â	

1' ΛƱƗO ѝ ipv4 multicast ⁸ BGP ŋń Â

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family ipv4 unicast
Ruijie(config-router-af)# maximum-prefix 65535
```

ƬU ३	
clear bgp <*addressfamily*|**all**> *	BGP فخ سم Æ
show bgp < *addressfamily*|**all** > **summary**	BGP فخ سم

˩

-

ƬU ३ ˥ ˩	
10.4	ƬU ३

38.1.55 neighbor activate

ƬU ३ جم ŋń فخ سم ƗO Â ƬU ३ **no**

ipv4 ফ্ৰ ĤU ३ৃ ˘ ٤ ফ্ৰ ص˘ ĤU ३ৃ
Â

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 100
Ruijie(config-router)# address-family vpnv4
Ruijie(config-router-af)# neighbor 10.0.0.1 activate
```

ĤU ३ৃ

ĤU ३ৃ	
router bgp	BGP ˜
neighbor remote-as	BGP Â

৶

ĤU ३ৃ ৲ ৶

৸	
-	-

38.1.56 neighbor advertisement-interval

ĤU ३ৃ ৷ BGP Â ĤU ३ৃ **no** ৷ ৸ Â

neighbor {*peer-address* | *peer-group-name*} **advertisement-interval** *seconds*

no neighbor {*peer-address* | *peer-group-name*} **advertisement-interval**

৸	

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 100
Ruijie(config-router)# neighbor 10.0.0.1 advertisement-interval 10
```

ƚυ ३

ƚυ ३	
router bgp	BGP ˜
neighbor remote-as	BGP Â

ৰ

ƚυ ३ ৲ ৰ

ৰ	
-	-

38.1.57 neighbor allowas-in

PE ˘ ƚυ ३ PE ↑ ü ε ∩ PE AS ৰ Â ƚυ ३ **no** ৲ ∫υ Â

neighbor {*peer-address* | *peer-group-name*} **allowas-in number**

no neighbor {[*peer-address* | *peer-group-name*} **allowas-in**

৭

৭	
peer-address	فخ سم Â
peer-group-name	৲ Â ৲ a 32 Â
number	AS ৰ ˘ ϋ ϑ ৰ تن جه [1,10] Â

allowas-in ╗ Â

ƚυ ३ BGP ˘ BGP IPv4 فخ سم ˘ BGP IPv4VRF فخ سم Â

ϋ صر جه spoke_hub صر ˘ جه PE f[(num)8(ber)]TJ /C2_021 Tf 0 Tc 5.979d [<00A1<0723542C

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

	ĥu ३	
ĥu ३	**router bgp**	BGP ˜
	neighbor remote-as	BGP Â

ʎ

[redacted]

router bgp	BGP ˜
neighbor remote-as	BGP Â

ৰ

Ĥu ३ ৭ ৰ	ৰ	
	-	-

38.1.60 neighbor description

Ĥu ३ ঋ ( ) ৰ Â Ĥu ३ **no** ৰ ৬ ৰ Â

neighbor {*peer-address* | *peer-group-name*} **description** *text*

no neighbor {*peer-address* | *peer-group-name*} **description**

ৰ	ৰ	
	peer-address	فخ سم Â
	peer-group-name	ৰ Â ৰ a 32 Â
	text	( ) Â 'تن 80 Â

৭

Ĥu ३ BGP Â

Ĥu ३ ঋ ˆ ˜ ৭ Â ৰ ৬ ╠ ˆ ˜
∩ Â

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.1.1.1 remote-as 80
Ruijie(config-router)# neighbor 10.1.1.1 description xyz.com
```

Ĥu ३	Ĥu ३	
	router bgp	BGP ˜
	neighbor remote-as	BGP ( )Â

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ħυ ३ ٦ ৶	٨	
	-	-

38.1.61 neighbor distribute-list

ج ৶ BGP ৶ ˘ ACL Â ħυ ३ **no** ৶ ACL Â

neighbor {*peer-address* | *peer-group-name*} **distribute-list** *access-list-number* {**in** | **out**}

no neighbor {*peer-address* | *peer-group-name*} **distribute-list** *access-list-number* {**in** | **out**}

٩	٩	
	peer-address	˘فخ سم فخ سم ৶ IPv4 فخ سم ˘ ≠ ৶ IPv6 فخ سم Â
	peer-group-name	৶ Â ৶ a 32 Â
	access-list-number	ACL ٨
	in	ACL ↑ Â
	out	ACL ↑ ৶ ৸ Â

Π Â

ħυ ३

BGP ˘ BGP IPv4 فخ سم ˘ BGP IPv6 فخ سم ˘ BGP IPv4 VRF ˘ BGP VPNv4 فخ سم

‡ (in) ‡ (out)˘ ˘ ħυ ३ Ω neighbor prefix-list γ a ˘ . ৶ ħυ ३ Â

BGP ˘ ж ˘ ৶ Λυ ħυ ३ Â

й ˘ **neighbor distribute-list**˘ è ৷৷ Â

৷৷ فخ سم ˘ ৶ Λυ ج a ৶ فخ سم Э a ৶ ˘ ⁸ Â

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.1.1.1 remote-as 80
Ruijie(config-router)# neighbor 10.1.1.1
distribute-list bgp-filter in
```

ħυ ३

router bgp	BGP ˜ Â
neighbor remote-as	BGP Â
ip access-list	… IP ACL IP ACL Â

ʎ

ƚu ʒ ˥ ʎ

ʎ	
-	-

38.1.62 neighbor ebgp-multihop

ƚu ʒ ʎ EBGP BGP Â ƚu ʒ **no** ʎ Â

neighbor {*peer-address* | *peer-group-name*} **ebgp-multihop** [*ttl*]

no neighbor {*peer-address* | *peer-group-name*} **ebgp-multihop**

ʎ

ʎ	
peer-address	فخ سم˘ فخ سم ˩ IPv4 فخ سم˘ ≠ ˩ IPv6 فخ سم Â Â
peer-group-name	˩ Â ˩ a 32 Â
ttl	Â ʼتن 1..255

ʎ б EBGP BGP Â ebgp-multihop ˘ a ʎ ˘ ʒ ttl 255 Â

ƚu ʒ

BGP ˘ BGP IPv4 فخ سم ˘ BGP IPv6 فخ سم ˘ BGP IPv4 VRF Â

й ∩ ˘ BGP EBGP peers ʔجم Â BGP ˘ ʒ ˘ ƚu ʒ ˘ й ˘ ƚu ʒ˘ ɛ ʍ Â

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 65100
Ruijie(config-router)# neighbor 10.0.0.1 ebgp-multihop
```

ĥu ३	
router bgp	BGP ˜
neighbor remote-as	BGP Â

ৗ

ĥu ३ ৭ ৗ	ৗ	
	-	-

38.1.63 neighbor filter-list

ĥu ३ জ ৗ BGP ৭ ˘ Â ĥu ३ **no** ৗ Â

neighbor {*peer-address* | *peer-group-name*} **filter-list** *access-list-number* {**in** | **out**}

no neighbor {*peer-address* | *peer-group-name*} **filter-list** *access-list-number* {**in** | **out**}

৭	৭	
	peer-address	ফ˘ ফ ৭ IPv4 ফ˘ ≠ ৭ IPv6 ফ Â
	peer-group-name	ৗ Â ৗ a 32 Â
	access-list-numbe	as-path list ৸
	in	as-path list ˆ Â
	out	as-path list ˆ ৭ ৷ Â

৷ Â

ĥu ३

BGP ˘ BGP IPv4 ফ ˘ BGP IPv6 ফ ˘ BGP IPv4 VRF ˘ BGP VPNv4 ফ Â

BGP ˘ ঋ ˘ ĥu ३ ˘ ঈ ˘ **neighbor filter-list** ˘ ɛ ম Â ম ফ ˘ ৭ ৷৷ জ a ৭ ফ Э a ৭ ˘ ⁸ Â

```
Ruijie(config)# ip as-path access-list 1 deny _123_
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 65100
```

BGP

Ĥu ३

BGP ˘ BGP IPv4 فخ سم ˘ BGP IPv6 فخ سم ˘ BGP IPv4 VRF ˘ BGP VPNv4 فخ سم Â

Local AS ৲ ج EBGP Э ˘ ৲ ৲ ৲ ৲ ৲ EBGP й IBGP EBGP ˘ й Local AS Л৲ Â Local AS a б BGP AS ৲˘ a б Peer Remote AS ৲˘ ˘ ‡ a б ID ৲ Â BGP ˘ ж ˘ Ĥu ३ ˘ a ´ й ˘ Local AS Â

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 65100
Ruijie(config-router)# neighbor 10.0.0.1 local-as 23
```

Ĥu ३

Ĥu ३	
router bgp	BGP ˜
neighbor remote-as	BGP Â

৲

Ĩ ج 10.4(1) ৲ ৲ Â

Ĥu ३ ৲ ৲

৲	
10.4	

38.1.65 neighbor maximum-prefix

Ĥu ३ ⁸ ÿ BGP ŋń Â Ĥu ३ **no** ৲ ⁸ Â

neighbor {*peer-address* | *peer-group-name*} **maximum-prefix** *maximum* [*threshold*] [**warning-only**]

no neighbor {*peer-address* | *peer-group-name*} **maximum-prefix**

৲

৲	
peer-address	فخ سم˘ فخ سم ৲ IPv4 فخ سم˘ ≠ ৲ IPv6 فخ سم Â
peer-group-name	৲ Â ৲ a 32 Â
maximum	Э Â

threshold	˜ Ω ˆ
warning-only	ˆ Э a BGP ˘ Â

Π Â

Ъu ३

BGP ˘ BGP IPv4 فخ سم ˘ BGP IPv6 فخ سم ˘ BGP IPv4 VRF Â

Ю˘ ˆ Э ˘ BGP Â a ˘ ж ⅃ Л warning-only ⁸ Â BGP ˘ ж ˘ Ъu ३ ˘ й ˘ Ъu ३˘ ε ⁽⁾ Â

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 maximum-prefix 1000
```

Ъu ३

Ъu ३	
router bgp	BGP ˜
neighbor remote-as	BGP Â

Л

Ъu ३ ˥ Л

Л	
-	-

38.1.66 neighbor next-hop-self

ج BGP °PS ù” çhD!p$," € Tp¦hðÉ” äB ™@ Û 31ðîï-Þþ à6Ù 6

	॥ Â
ƕ ३	BGP ˘ BGP IPv4 فخ سم ˘ BGP IPv6 فخ سم ˘ BGP IPv4 VRF Â

ƕ ३ ў جه (Frame Relay à X.25) ˘ جه ˘ ۷

BGP speakers a BGTj/C2_0 ÎYTf1ó2116 1.56755d[<0416>T1D701678DB11<116E36<073A

৭	
peer-address	˘فخ سم فخ سم ৲ IPv4 فخ سم ˘ ≠ ৲ IPv6 فخ سم Â
peer-group-name	৲ Â ৲ a 32 Â
0	a ╗ Â
7	╗ Â
string	TCP MD5 Â ˹ن 80 Â

৭

╗ Â

ħu ३

BGP ˘ BGP IPv4 فخ سم ˘ BGP IPv6 فخ سم ˘ BGP IPv4 VRF Â

ħu ३ TCP MD5 ˘ BGP BGP ৲ ˘ ї ‡˘ Â ħu ३ ৴˘ BGP speaker ৲ BGP BGP Â

BGP ˘ ж ˘ ħu ३ ˘ й ˘ ħu ३˘ ε ш Â a ف جم Ю ˘ password ৷ ˘ a فخ سم Â

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 password Red-Giant
```

ħu ३

ħu ३	
router bgp	BGP ˜
neighbor remote-as	BGP Â

ƪ ʒ BGP й BGP ˘ Â ƪ ʒ **no** BGP ÿ Â

neighbor *peer-address* **peer-group** *peer-group-name*

no neighbor *peer-address* **peer-group** *peer-group-name*

	-	-

38.1.70 neighbor peer-group (creating)

ƪυ ३ … BGP Â ƪυ ३ **no** Ω ɛ ˘ Â

neighbor

ج ۷ BGP ۷ ˘ Ĥu ३ ɱ Â Ĥu ३ **no** ۷ prefix-list Â

neighbor {*peer-address* | *peer-group-name*} **prefix-list** *prefix-list-name* {**in** | **out**}

no neighbor {*peer-address* | *peer-group-name*} **prefix-list** {**in** | **out**}

۹

۹	
peer-address	˘فخ سم فخ سم ۷ IPv4 فخ سم ˘ ≠ ۷ IPv6 فخ سم Â
peer-group-name	۷ Â ۷ a 32 Â
prefix-list-name	prefix-list ۷ Â ɱ ۷ a 32 Â
in	prefix list ↑ Â
out	prefix list ↑ ۷ ۷ Â

Ĥu ३

Ĥu ३

BGP ˘ BGP IPv4 فخ سم ˘ BGP IPv6 فخ سم ˘ BGP IPv4 VRF ˘ BGP VPNv4 فخ سم Â

‡ (in) ‡ (out)˘ ˘ Ĥu ३ Ω **neighbor distribute-list** γ a ˘ . ۷ Ĥu ३ Â

BGP ˘ ж ˘ Ĥu ३ ˘ й ˘ neighbor prefix-list in˘ è ⁂ Â ⁂ فخ سم ˘ ۷ Ω ج a ۷ فخ سم ۷ Э a ۷ ˘ ⁸ Â

```
Ruijie(config)# ip prefix-list bgp-filter deny 10.0.0.1/16
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 prefix-list bgp-filter in
```

38.1.72 neighbor remote-as

ھو ڑ BGP ( ) Â ھو ڑ **no** ( ) Â

neighbor {*peer-address* | *peer-group-name*} **remote-as** *as-number*

no neighbor {*peer-address* | *peer-group-name*} **remote-as** *as-number*

۹		
۹	*peer-address*	≠ IPv4 ڤڂ سم ڵ ڤڂ سم ڤڂ سم IPv6 ڤڂ سم ڵ Â
	peer-group-name	ڵ Â ڵ a 32 Â
	as-number	BGP ( ) ۸ Â ئتن 1..65535

BGP Â

ھو ڑ

BGP ˘ BGP IPv4 ڤڂ سم ˘ BGP IPv6 ڤڂ سم ˘ BGP IPv4 VRF Â

BGP ˘ ۶۸ ˘ ھو ڑ Â

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 80
```

ھو ڑ

ھو ڑ	
router bgp	BGP ˜

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ھو ڑ ٦ ۷

۸	
-	-

38.1.73 neighbor remove-private-as

ھو ڑ ۷ EBGP AS AS ۸ Â ھو ڑ **no** ۷ Â

neighbor {*peer-address* | *peer-group-name*} **remove-private-as**

no neighbor {*peer-address* | *peer-group-name*} **remove-private-as**

٩	
peer-address	˘فخ سم ل فخ سم IPv4 ˘فخ سم ≠ ل IPv6 فخ سم Â
peer-group-name	ل Â ل a 32 Â

ʈ

ƚu ʒ

BGP ˘ BGP IPv4 فخ سم ˘ BGP IPv6 فخ سم ˘ BGP IPv4 VRF Â

ƚu ʒ ٩ EBGP Â AS ↑ ü AS ٨ ٩ EBGP AS ٨˘ a AS ٨ Â AS ٨ ئتن 64512˙ 65535 Â

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 remove-private-as
```

ƚu ʒ

ƚu ʒ	
router bgp	BGP ˜
neighbor remote-as	BGP Â

٩

ƚu ʒ ʔ ٩

٨	
-	-

38.1.74 neighbor route-map

ƚu ʒ ٩ ʔ Â ƚu ʒ **no** ʈ Â

neighbor {*peer-address* | *peer-group-name* } **route-map** *map-tag* {**in** | **out**}

no neighbor {*peer-address* | *peer-group-name* } **route-map** *map-tag* {

in	‡ Â
out	৷ ‡

Ю˘ IBGP speakers ˘ BGP speaker

a ÿ IBGP peer ˝ ↑ ৻ ὲ IBGP peers˘ Лυ Â

৻ Лυ ħυ ३ ৻ ⅄˘ a ̈Ạ IBGP speakers

˘ ৻ ⅄ ˝ ↑ IBGP

	╗ Â
ƒu ʒ	BGP ˘ BGP IPv4 فخ سم ˘ BGP IPv6 فخ سم ˘ BGP IPv4 VRF ˘ BGP VPNv4 فخ سم Â
	ƒu ʒ ┘Л يخ ثن Â
	`Ruijie(config-router)# neighbor ip-address send-community both`

ƒu ʒ

ƒu ʒ	
router bgp	BGP ˜
neighbor remote-as	BGP Â
ip community-list	… يخ

┘

ƒu ʒ ˥ ┘

┘	
-	-

38.1.77 neighbor send-label

ƒu ʒ ┘ ┘ Э MPLS ˘ جم BGP BGP فخ سم Ю ƒu ʒ˘ no ╗ Â

neighbor {*peer-address* | *peer-group-name*} **send-label**

no neighbor {*peer-address* | *peer-group-name*} **send-label**

┘

┘	
peer-address	≠ ˘فخ سم IPv4 فخ سم ┘ فخ سم ˘فخ سم ┘ IPv6 فخ سم Â
peer-group-name	┘ Â ┘ a 32 Â

	╗ Â
ƒu ʒ	BGP ˘ BGP IPv4 فخ سم ˘ BGP VPNv4 فخ سم Â
	ƒu ʒ ┘Л BGP ┘ MPLS label ˘ جم ч ƒu ʒ Â ƒu ʒ جم ů ┘ Â جم BGP Ю ƒu ʒ˘ ┘

ipv4 unicast ƒز سم Â AS ⅛˘ ৲ ƒu ३ AS Ɔ
MPLS ৲ Â

```
Ruijie(config)# router bgp 100
Ruijie(config-router)# neighbor 192.168.0.1 remote-as 101
Ruijie(config-router)# neighbor 192.168.0.1 send-label
```

ƒu ३

ƒu ३	
router bgp	BGP ˜
neighbor remote-as	BGP Â

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ƒu ३ ৲

৲	
-	-

38.1.78 neighbor shutdown

ƒu ३ ৲ BGP BGP Â ƒu ३ **no** ŭ ╟ BGP
( ) Â

neighbor {*peer-address* | *peer-group-name*} **shutdown**

no neighbor {*peer-address* | *peer-group-name*} **shutdown**

৲

৲	
peer-address	ƒز سم˘ ƒز سم ৲ IPv4 ƒز سم˘ ≠ ৲ IPv6 ƒز سم Â
peer-group-name	৶ Â ৶ a 32 Â

╖ Â

ƒu ३

BGP ˘ BGP IPv4 ƒز سم ˘ BGP IPv6 ƒز سم ˘ BGP
IPv4 VRF Â

ƒu ३ ৲ ( ) ˘ Â
ƒu ३ Ÿ ( ) Â
BGP ˘ ⅋ ˘ ƒu ३ ˘
й ˘ ƒu ३˘ ɛ ⅏ Â

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.0.0.1 shutdown
```

ƚυ ३	
router bgp	BGP ˜
neighbor remote-as	BGP Â
show ip bgp neighbors	BGP
clear ip bgp	Æ BGP

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ƚυ ३ ৭ ৰ	
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38.1.80 neighbor soo

ƚυ ३ ľ Ŀ , **no** ƚυ ३ ৰ ľ Ŀ Â

neighbor {*peer-address* | *peer-group-name*} **soo soo-value**

no neighbor {*peer-address* | *peer-group-name*} **soo**

৭	
peer-address	فخ سم Â
peer-group-name	৶ Â ৶ a 32 Â
soo-value	soo Â soo_value ৷ Ωυ ч a ৶ ৭ ' ˆ 1˜ soo_value as_num' nn an_num Ω ৯ ƒ˜ nn ⊠ Â ˆ 2˜ soo_value ip_addr:nn ip_addr فخ سم IP فخ سم˜ nn ⊠ Â

soo ╗ Â

ƚυ ३ BGP IPv4 فخ سم Â

ج CE ৷ ص ˘ ƚυ ३ ৷ Ωυ ÿ CE ৷ PE ৷ ĵ CE Â

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 100
```

```
Ruijie(config-router)# address-family ipv4 vrf vpn1
Ruijie(config-router-af)# neighbor 10.0.0.1 soo 100:100
```

ƬƱ ʒ

ƬƱ ʒ	
router bgp	BGP ˜
timers bgp	˝ keepalive Ω holdtime

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ƬƱ ʒ ˥ ʎ

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38.1.81 neighbor timers

˚ BGP BGP ˘ ƬƱ ʒ BGP keepalive Ω holdtime Â ƬƱ ʒ **no** Â

BGP ھو ۋ

й ھو ۋ È Â

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 80 240
```

ھو ۋ

ھو ۋ	
router bgp	BGP ˜
timers bgp	keepalive Ω holdtime

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ھو ۋ ۋ

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38.1.82 neighbor unsuppress-map

ھو ۋ Ω ˆ ˜l ɱ **aggregate-address** ھو ۋ 8 Â ھو ۋ **no** Â

neighbor {*peer-address* | *peer-group-name*} **unsuppress-map** *map-tag*

no neighbor {*peer-address* | *peer-group-name*} **unsuppress-map**

ۋ

ۋ	
peer-address	فخ سم Â
peer-group-name	ۋ Â ۋ a 32 Â
map-tag	route-map ۋ Â route map ۋ a 32 Â

ll Â

ھو ۋ

BGP Â

ھو ۋ Ω ˆ 8 Â

BGP ھو ۋ

й ھو ۋ È Â

```
Ruijie(config)# router bgp 65000
```

```
Ruijie(config-router)# neighbor 10.0.0.1 unsuppress-map
unspress-route
```

ħu ३

ㄅ ˘ a ㄟ TCP Â

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 update-source lookback 1
```

ƪu ३

ƪu ३	
router bgp	BGP ˜
neighbor remote-as	BGP Â

ㄅ

ƪu ३ ˥ ㄅ

ㄟ	
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38.1.84 neighbor version

ƪu ३ BGP BGP ˜ ㄟ Â ƪu ३ **no** ㄟ Â

neighbor {*peer-address*|*peer-group-name*} **version** *number*

no neighbor {*peer-address*|*peer-group-name*} **version** *number*

ㄟ

ㄟ	
peer-address	ㄝ ㄣ Â
peer-group-name	ㄌ Â ㄌ a 32 Â
number	ㄟ

ㄟ 4 Â

ƪu ३ BGP Â

ƪu ३ ㄇ ㄅ˘ BGP ˜ ㄩ ˜ ㄑ ˥ Â

```
Ruijie(config-router)# neighbor 10.1.1.1 version 3
```

ƪu ३

ƪu ३	
router bgp	BGP ˜

neighbor remote-as	BGP Â

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38.1.85 neighbor weight

ใบ ๓ BGP

Ĥu ३ ٦ ৶

৸	
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38.1.86 network(BGP)

Ĥu ३ BGP speaker ‘Ω˜ Â Ĥu ३ **no** Â

network *network-number* **mask** *mask* [**route-map** *map-tag*] [**backdoor**]

no network *network-number* **mask** *mask* [**route-map**] [**backdoor**]

৭

৭	
network-number	৸ Â
mask	Â
map-tag	route-map ৶ Â route map ৶ a 32 Â
backdoor	ঋ ৸ Â

Â

Ĥu ३ BGP Â

Ĥu ३ IGP BGP ˘ ‘Ω˜ ৶Ω ˘ ∩ ╟ Â ¯ **route-map** ৶Ω Â

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# network 10.0.0.1 mask 255.255.0.0
```

Ĥu ३

router bgp	BGP ˜
redistribute	↑ ৶
network synchronization	Network ৶

৸

38.1.87 network synchronization

Ĥu ३ BGP speaker ह Ω ऽ ऽ ऽ network Â Ĥu ३ **no** ऽ network Â

network synchronization

no network synchronization

ऽ	
-	-

ऽ Â

Ĥu ३ BGP Â

Ĥu ३ network ह a ऽ ऽ Â

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# network synchronization
```

Ĥu ३	
router bgp	BGP
redistribute	
network (**BGP**)	

ऽ

Ĥu ३ ऽ ऽ	
-	-

38.1.88 overflow memory-lack

Ĥu ३ ह a BGP OVERFLOW Â Ĥu ३ no Â

overflow memory-lack

no overflow memory-lack

ǂ ৻ Ъυ ३˘ ৲ Л υ è ~ Ω BGP ǂ ৻˘ Ъυ ३

no ৲ Л υ ╗ ৻ è ৻ Â

redistribute *protocol-type* [**route-map** *map-tag*] [**metric** *metric-value*]

no redistribute *protocol-type* [**route-map** *map-tag*] [**metric** *metric-value*]

৻	
protocol-type	ǂ ৻ ~ ص, ɱ ЛЫЮ ' connected à static à rip
route-map *map-tag*	**route-map** ɹ Â **route-map**

ใบ ๓ ๗ ๗	๗	
	-	-

38.1.90 redistribute ō OSPF ǒ

~	OSPF ‡ ' ˝I match OSPF ص ˘ ⅄ ˝Ą route-map ‡ Â metric ˘ ˝I ţ ⅃ Э metric route-map ˘ ج route-map ˘ route-map ⅄ ' route-map ˘ metric ˘ metric ' ч ˘ ţ ⅃ Э Â

```
Ruijie(config-router)# redistribute ospf 2 route-map static-rmap
Ruijie(config-router)# no redistribute ospf 4 match external
route-map ospf-rmap
Ruijie(config-router)# no redistribute ospf 78
```

ħυ ३

ħυ ३	
show ip protocols	~ Â

⅄

ħυ ३ ˥ ⅄

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-	-

38.1.91 redistribute ō ISIS Ŏ

ţ ⅃ ISIS ˜ ħυ ३˘ ⅃ Ʃ ISIS ˜ ţ ⅃ţ BGP ˜ ˘ ħυ ३ **no** ⅃ Ʃ ˥ ⅃ ⅄ ⅄ Â

redistribute isis [*isis-tag*] [**route-map** *map-tag*] [**metric** *metric-value*] [**level-1**| **level-1-2**| **level-2**]

no redistribute isis [*isis-tag*] [**route-map** *map-tag*] [**metric** *metric-value*] [**level-1**| **level-/TT1 Tc[921C0.4871.5 re871.5 re871.5 re Tf-2 -1.4095A09C6>]TƱTT1 1 Tf2 1.5610.5 0 0 10.204.30**

level-2	৲ ĭ ৲ isis level-2 Â ĭ ৲ isis Â

ĭ ৲ ISIS ˜ Â

ƪu ३

BGP ˘ BGP IPv4 فخ سم ˘ BGP IPv6 فخ سم Â

	p ˜ ˘ ৸ ˜ ৸ Â ˜ ˘ ˜ ĭ ĭ ৸ ˜ ৲ جه Â IP ˜ Â
&	**no** ƪu ३ ˘ ৸ ˘ ३ ৸ ˘ no ৸ Â جه ৸ ˘ redistribute Â صر ˘ صر Â no
~	ISIS ‡ ' ˝I level ISIS صر ˘ ৸ ˝Ą route-map ‡ Â metric ˘ ৸ route-map ˘ جه route-map ˘ route-map ৸ ' route-map ˘ metric ˘ metric ' ч ˘ ĭ ৲ Э Â

```
Ruijie(config-router)# redistribute isis route-map static-rmap
Ruijie(config-router)# no redistribute isis test route-map isis-rmap
Ruijie(config-router)# no redistribute isis
```

ƪu ३

ƪu ३	
show ip protocols	˜

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ƪu ३ ˥ ৸

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-	-

38.1.92 router bgp

BGP ˜ ˘ ৸˘ BGP

no router bgp *as-number*

ϟ	
as-number	ϟ Â ϟ 1..65535

BGP ˜ Â

Ϸ ϟ Â

Ϸ ϟ ϋ ╟ BGP ˜ Â

```
Ruijie(config)# router bgp 65000
```

Ϸ ϟ	
Ip routing	IP Â
bgp router-id	BGP ˜ Â
network	BGP speaker Ω˜ Â

ϡ

Ϸ ϟ ϡ	
-	-

38.1.93 synchronization

Ϸ ϟ ϋ ╟ BGP ∩ IGP ϡ ⁸ Â Ϸ ϟ **no** ϡ BGP ∩ IGP ϡ ⁸ Â

synchronization

no synchronization

ϟ	
-	-

Ю ϡ Â

Ϸ ϟ BGP Â

BGP Ո IGP ⅄ . й ⅄ Â
ج ЛЮ ч Ю˘ ⅄ Лu ⅄ ⅄ ⁸ Лu '
Â ' a ج AS (Ю˘ AS AS)'
Â γ ' AS router BGP ˜ ˘ BGP speaker
(BGP speaker ч ч) Â

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# synchronization
```

Ъu ३

Ъu ३	
router bgp	BGP ˜

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Ъu ३ ٦ ⅄

⅄	
-	-

38.1.94 table-map

Ъu ३ ⅄ Лu ⁸ BGP Ю ⅄↑ Â

table-map route-map-name

no table-map

⅄

⅄	
route-map-name	route-map ⅄ Â

Ю table-map Â

Ъu ३

BGP ˘ BGP IPv4 فذ سم ˘ BGP IPv4 VRF فذ سم Â

BGP table-map ⁸ Ю ⅄ Â Ю ⅄↑
Â table-map IPv4 فذ سم Â

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# table-map bgp_tm
```

Ԧ ३

Ԧ ३	
route-map	route-map

ʎ

Ԧ ३ ʅ ʎ

ʎ	
-	-

38.1.95 timers bgp

Ԧ ३ BGP ɮ Â ¯ Ԧ ३ **no** Â

timers bgp *keepalive holetime*

ʎ

ʎ	
keepalive	ɹ BGP ʅ KEEPALIVE message Â ته 0..65535 Â
holdtime	ѝ BGP Ÿ Â ته 0..65535 Â

keepalive: 60

holdtime: 180

Ԧ ३

BGP

ʎ keepalive a holdtime Ь Â

ѝ peer peer-group ʎ ж peer peer group

३ б Â

BGP ж Ԧ ३

ѝ Ԧ ३ ѐ ᏽ Â

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# timers bgp 80 240
```

Ԧ ३

Ԧ ३	
neighbor timers	ᏽ *keepalive* Ո *holdtime* Â

๗

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38.2

38.2.1 show bgp all

ƪu ३ BGP فذسم ˘ ƪu ३ б ὲ BGP show ƪu ३ Â

ৰ

show bgp all [**community** | **filter-list** | **community-list** | **dampening** {**flap-statistics** | **dampened-paths**} | **regexp** | **quote-regexp** | **neighbors** {**received-routes** | **routes** | **advertised-routes**}]

ৰ

show bgp all dampening parameters

show bgp all neighbors

show bgp all summary

show bgp all paths

ৰ	
ৰ **show bgp ipv4 unicast** ƪu ३ ৰ	ৰ **show bgp ipv4 unicast** ƪu ३ ৰ

ৰ **show bgp ipv4 unicast** ƪu ३ ৰ Â

ƪu ३

ৰ **show bgp ipv4 unicast** ƪu ३ ৰ Â

ƪu ३	
show bgp ipv4 unicast	BGP IPv4´ Â

৲

Ĥu ३ ٦ ٫	٨	
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38.2.2 show bgp ipv4 unicast

Ĥu ३ BGP IPv4´ Â

show bgp ipv4 unicast [{**network** | *network-mask*}]

show bgp ipv4 unicast community *community-number* [**exact-match**]

show bgp ipv4 unicast community-list *community-name* [**exact-match**]

show bgp ipv4 unicast dampening dampened-paths

show bgp ipv4 unicast dampening flap-statistics

show bgp ipv4 unicast filter-list *path-list-number*

show bgp ipv4 unicast inconsistent-as

show bgp ipv4 unicast prefix *ip-prefix-list-name*

show bgp ipv4 unicast quote-regexp *regexp*

show bgp ipv4 unicast regexp *regexp*

show bgp ipv4 unicast route-map *map-tag*

show bgp ipv4 unicast neighbors *neighbor-address* [**received-routes** | **routes** | **advertised-routes**]

show bgp ipv4 unicast cidr-only

show bgp ipv4 unicast label

٩	٩	
	network	ج Â
	network-mask	↑ Ü ج Â
	community *community-community-number*	↑ Ü community Â *community-number* ٬ ج ٨ Â ٬ AA:NN(٨ /2) ≠ ٫ Ω ΩЮ Ĥ ' internet no-export local-as no-advertise
	community-list *community-name*	٦ ج BGP Â *community-name* ٬ ج ٫ Â
	exact -match	٦ ج ج Â
	dampening dampened-paths	8 Â

dampening flap-statistics	Â
filter-list *path-list-number*	ʎ Âpath-list-numbe ѝ ʎ Â
inconsistent-as	AS Â
prefix *ip-prefix-list-name*	ʎ prefix-list Â
quote-regexp *regexp*	AS า ج ۷ ʎ ‡ BGP Â
regexp *regexp*	AS า ‡ BGP Â
route-map *map-tag*	ʎ route-map ˅ Â
neighbors *neighbor-address* **received-routes**	ÿ peer ˆ ˆ ˅˄ Ω ˜ Â

```
*>i202.201.1.0     192.168.195.183        0        100     i
*>i202.201.2.0     192.168.195.183        0        100     i
*>i202.201.3.0     192.168.195.183        0        100     i
*>i202.201.18.0    192.168.195.183        0        100     i
Total number of prefixes 8
Ruijie# show bgp ipv4 unicast community 11:2222
111:12345
BGP table version is 2, local router ID is 192.168.183.1
Status codes: s suppressed, d damped, h history, * valid, > best,
i - internal,
            S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete
  Network         Next Hop          Metric     LocPrf  Path
*>i202.201.0.0     192.168.195.183        0        100     i
*>i202.201.1.0     192.168.195.183        0        100     i
*>i202.201.2.0     192.168.195.183        0        100     i
*>i202.201.3.0     192.168.195.183        0        100     i
Total number of prefixes 4
Ruijie(config)# ip as-path access-list 5 permit .*
Ruijie# show bgp ipv4 unicast filter-list 5
BGP table version is 2, local router ID is 192.168.183.1
Status codes: s suppressed, d damped, h history, * valid, > best,
i - internal,
            S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete
  Network         Next Hop          Metric     LocPrf  Path
*>192.168.88.0     0.0.0.0             32768 ?
Total number of prefixes 1
Ruijie# show ip bgp cidr-only
BGP table version is 2, local router ID is 192.168.183.1
Status codes: s suppressed, d damped, h history, * valid, > best,
i - internal,
            S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete
  Network         Next Hop          Metric     LocPrf  Path
*>i64.12.0.0/16    192.168.195.183        0        100     i
*>i172.16.0.0/24   192.168.195.183        0        100     i
Total number of prefixes 2
Ruijie# show bgp ipv4 unicast label
```

```
Network          Next Hop        In Label/Out Label
1.1.1.1/32       192.167.1.1      17/18
1.1.1.2/32       192.167.1.1      nolabel/19
```

Network	ŋń Â
Nexthop	Ю فخسم Â
In Label	⅄ ὶ ὲ ̀ ̂ ج ̃ Â
Out Label	ÿ Ю ⅄ ̃ ̀ ̂ ج ̃ Â

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	show ip bgp	BGP IPv4 ´ Â

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38.2.3 show bgp ipv4 unicast dampening parameters

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show bgp ipv4 unicast dampening parameters

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ħu ३ BGP IPv4 ´ ৭ Â

```
Ruijie(config-router)#  bgp dampening 25 10000 10000 200
Ruijie# show bgp ipv4 unicast dampening parameters
dampening 25 10000 10000 200
```

```
Dampening Control Block(s):
Reachability Half-Life time    : 25 min
Reuse penalty                : 10000
Suppress penalty             : 10000
Max suppress time            : 200 min
Max penalty (ceil)           : 29800000
Min penalty (floor)          : 5000
```

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38.2.4 show bgp ipv4 unicast neighbors

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show bgp ipv4 unicast neighbors *neighbor-address*

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ħu ३ ৯ BGPIPv4´ Â

```
Ruijie# show bgp ipv4 unicast neighbors
BGP neighbor is 192.168.195.183, remote AS 23, local AS 23, internal
link
  BGP version 4, remote router ID 44.0.0.1
  BGP state = Established, up for 00:06:37
  Last read 00:06:37, hold time is 180, keepalive interval is 60
seconds
```

```
  Neighbor capabilities:
    Route refresh: advertised and received (old and new)
    Address family IPv4 Unicast: advertised and received
    Graceful restart: advertised and received
      Remote Restart timer is 120 seconds
  Received 14 messages, 0 notifications, 0 in queue
    open message:1 update message:4 keepalive message:9
    refresh message:0 dynamic cap:0 notifications:0
  Sent 12 messages, 0 notifications, 0 in queue
    open message:1 update message:3 keepalive message:8
    refresh message:0 dynamic cap:0 notifications:0
  Route refresh request: received 0, sent 0
  Minimum time between advertisement runs is 0 seconds
 For address family: IPv4 Unicast
  BGP table version 2, neighbor version 1
  Index 2, Offset 0, Mask 0x4
  Inbound soft reconfiguration allowed
  8 accepted prefixes
  0 announced prefixes
 Connections established 2; dropped 1
Local host: 192.168.195.239, Local port: 1074
Foreign host: 192.168.195.183, Foreign port: 179
Nexthop: 192.168.195.239
Nexthop global: ::
Nexthop local: ::
BGP connection: non shared network
Last Reset: 00:06:43, due to BGP Notification sent
Notification Error Message: (Cease/Unspecified Error Subcode)
Using BFD to detect fast fallover
```

协议

协议	
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说明

协议版本说明

说明	
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38.2.5 show bgp ipv4 unicast paths

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show bgp ipv4 unicast paths

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```
Ruijie# show bgp ipv4 unicast paths
Address       Refcnt Path
[0x1d7806a0:0]  (67)
[0x1d7389a0:13]  (20) 10
```

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38.2.6 show bgp ipv4 unicast summary

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show bgp ipv4 unicast summary

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ħu ३ BGPIPv4´ Â

```
Ruijie # show bgp ipv4 unicast summary
BGP router identifier 192.168.183.1, local AS number 23
BGP table version is 2
2 BGP AS-PATH entries
1 BGP community entries
Neighbor        V    AS MsgRcvd MsgSent   TblVer  InQ OutQ Up/Down
State/PfxRcd
192.168.195.79  4    24       0       0        0    0    0    never
Active
192.168.195.183 4    23      17      15        1    0    0 00:09:04
8
Total number of neighbors 2
```

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router bgp	BGP ˜

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38.2.7 show bgp ipv6 unicast

Ĥu ३ BGP IPv6 ´ Â

show bgp ipv6 unicast [*IPv6-Prefix*]

show bgp ipv6 unicast community *community-number* [**exact-match**]

show bgp ipv6 unicast community-list *community-name* [**exact-match**]

show bgp ipv6 unicast dampening dampened-paths

show bgp ipv6 unicast dampening flap-statistics

show bgp ipv6 unicast filter-list *path-list-number*

show bgp ipv6 unicast inconsistent-as

show bgp ipv6 unicast prefix *ipv6-prefix-list-name*

show bgp ipv6 unicast quote-regexp *regexp*

show bgp ipv6 unicast regexp *regexp*

show bgp ipv6 unicast route-map *map-tag*

show bgp ipv6 unicast neighbors *neighbor-address*

[**received-routes** | **routes** | **advertised-routes**]

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network	ह Â
network-mask	↑ ÜÜ ह Â
community *community-community-number*	↑ ÜÜ community Â ঋ ঋ Â ঋ AA:NN(৭

quote-regexp *regexp*	AS	ך	ج	۷	۸	‡			
	BGP	Â							
regexp *regexp*	AS	ך		‡		BGP	æ	Ú	لم

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ᐧ **show bgp ipv4 unicast neighbors** *neighbor-address* Ĥu ३ Â

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show bgp ipv4 unicast neighbors *neighbor-address*	Ĥu ३ ∩ BGPIPv4´ Â

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38.2.10 show bgp ipv6 unicast paths

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show bgp ipv6 unicast paths

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```
Ruijie# show bgp ipv6 unicast paths
Address       Refcnt Path
[0x1d7806a0:0]  (67)
[0x1d7389a0:13]  (20) 10
```

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show bgp ipv6 unicast paths	ƚu ३ IPv4´ Â

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38.2.11 show bgp ipv6 unicast summary

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show bgp ipv6 unicast summary

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ƚu ३ ˥ б б **show bgp ipv4 unicast summary** ˘ ᴺ **show bgp ipv4 unicast summary** ƚu ३ Â

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router bgp	

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38.2.12 show bgp vpnv4 unicast

ใช้งาน vrf rd vpn Â

show bgp vpnv4 unicast all [*network* | **neighbor** [| *address*] | **summary** | **label**]

show bgp vpvn4 unicast vrf *vrf_name* [*network* | **summary** | **label**]

show bgp vpvn4 unicast rd *rd_value* [*network* | **summary** | **label**]

ค่า

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show bgp ipv4 unicast ใบ ๓

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show bgp ipv4 unicast	BGP IPv4 ´ Â

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39 VRF

39.1 VRF

39.1.1 clear ip route vrf

VRF

clear ip route vrf *vrf-name* {* | *network* [*mask*]}

ip vrf *vrf-name*

no ip vrf *vrf-name*

参数

参数	
vrf-name	… VRF 名

默认

配置模式

配置说明

配置 … VRF

```
Ruijie(config)# ip vrf redvrf
```

配置实例

配置实例	
-	-

平台

命令历史

历史版本	
RGOS10.1	RGOS10.1 版本

39.1.3 ip vrf forwarding

命令用于将 VRF; 删除 VRF 的 no

ip vrf forwarding *vrf-name*

no ip vrf forwarding *vrf-name*

参数

参数	
vrf-name	参数为 VRF 名

默认

没有 a VRF

配置模式

参数

配置说明

参数 VRF

```
Ruijie(config-if)# ip vrf forwarding redvrf
```

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RGOS10.1	RGOS10.1

39.2

39.2.1 show ip route vrf

VRF

show ip route vrf *vrf-name* [*network*[*mask*]]

vrf-name	VRF
network	
mask	

VRF

VRF

```
Ruijie# show ip route vrf redvrf
```

clear ip route vrf	VRF

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	RGOS10.1	RGOS10.1 Л Э

39.2.2 show ip vrf

VRF

show ip vrf [**brief** | **detail** | **interfaces**] [*vrf-name*]

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	brief	ˆ ⌟ ˜ VRF ⌐ è ⌅
	detail	ˆ ⌟ ˜ VRF ⌐ è ⌅
	interfaces	ˆ ⌟ ˜ VRF ⌐ è ⌅
	vrf-name	ˆ ⌟ ˜ VRF

	⌅ ˘ VRF

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40 URPF

40.1

40.1.1 ip verify unicast source reachable-via ( )

ᅀ ЮЎ ŭ ╟ URPF Â ᅀ Ъu ३ **no** URPF ᅀ URPF ᅀ Â

ip verify unicast source reachable-via {**rx** | **any**} [**allow-default** | *acl_name*]

no ip verify unicast

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	rx	ш URPF Âш IP جم فخ سم ᅀ ᅀ ᅀ б ᅀ ᄀ Â
	any	URPF Â ᅀ IP فخ سم جم ᅀ ᅀ ᅀ . ᅀ Â
	allow-default	ˆ ᅀ ˜ URPF Â ˆ ᅀ ˜ ACL

acl_name

ใช้ URPF

ip verify urpf drop-rate compute interval *seconds*

no ip verify urpf drop-rate compute interval

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seconds	URPF ↑ Â ´ Æ й ˘ ت[30, 300]˘ 30s Â

й 30s Â

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URPF ↑ ৯ ˘ URPF ↑
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1' URPF ↑ й 1† Â

```
Ruijie(config)# ip verify urpf drop-rate compute interval 60
```

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ip verify urpf drop-rate notify	ŭ ╟ URPF ↑ Â
ip verify urpf drop-rate notify hold-down	URPF ↑ ˆ Â
ip verify urpf notification threshold	URPF ↑ Â

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S5700 V2.x p

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ŭ ╟ URPF ↑ ˘ Syslog Trap ў ╟˜ URPF ↑ ˘ Â

1' ৲ GigabitEthernet 0/21 Э ŭ ╟ URPF ↑

```
Ruijie(config)# interface gigabitEthernet0/21
Ruijie(config-if)# no switchport
Ruijie(config-if)# ip verify urpf drop-rate notify
```

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ħυ ३	
ip verify urpf drop-rate compute interval	URPF ↑ Â
ip verify urpf drop-rate notify hold-down	URPF ↑ ˜ Â
ip verify urpf notification threshold	URPF ↑ Â

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S5700 V2.x p

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40.1.4 ip verify urpf drop-rate notify hold-down

URPF ↑ ˜ Â ৲ ħυ ३ **no** URPF ↑ ˜ Â

ip verify urpf drop-rate notify hold-down *seconds*

no ip verify urpf drop-rate notify hold-down

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seconds	URPF ↑ ˜ Â ´ Æ й ˘ [30, 300] 300s Â

й 300s Â

ৰ Л৬ ↑ Â

1' ৰ GigabitEthernet 0/21 Э URPF ↑ й 10 Â

```
Ruijie(config)# interface gigabitEthernet0/21
Ruijie(config-if)# no switchport
Ruijie(config-if)# ip verify urpf drop-rate notify
Ruijie(config-if)# ip verify urpf notification threshold 10
```

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ip verify urpf drop-rate compute interval	URPF ↑ Â
ip verify urpf drop-rate notify	ŭ ╟ URPF ↑ Â
ip verify urpf drop-rate notify hold-down	URPF ↑ ˜ Â

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S5700 V2.x p

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40.1.6 snmp-server enable traps

URPF ↑ Trap ৰ Â ৰ Л৬ ħu ३ **no** ৰ ৰ Trap Â

snmp-server enable traps urpf

no snmp-server enable traps urpf

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urpf	ŭ URPF Trap Â

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URPF ↑ ↑ ˘ Ю˘ ╟ Syslog ˜ ˘ ħu ३ ৷˘ Trap ˜ Â

URPF ใบ ๓

ħu ३ б ħu ३ **snmp-server enable traps** ˘ NMS ৻ URPF
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1' SNMP ў 192.168.12.219

1' ^ GigabitEthernet 0/21 Э URPF ^ Â

```
Ruijie# show ip urpf interface gigabitEthernet0/21
IP verify source reachable-via RX
IP verify URPF drop-rate notify disabled
IP verify URPF notification threshold is 1000pps
Number of drop packets in this interface is 124
Number of drop-rate notification counts in this interface is 0
```

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ip verify unicast source reachable-via	ŭ ╟ URPF Â
ip verify urpf drop-rate compute interval	URPF ↑ Â
ip verify urpf drop-rate notify hold-down	URPF ↑ ~ Â
ip verify urpf notification threshold	URPF ↑ Â
clear ip urpf	URPF Â

ʌ S5750 V2.x p

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1' ^ GigabitEthernet 0/21 Э URPF ↑ Â

```
Ruijie# show ip urpf interface gigabitEthernet0/21
IP verify source reachable-via RX
IP verify URPF drop-rate notify disabled
IP verify URPF notification threshold is 1000pps
Number of drop packets in this interface is 124
Number of drop-rate notification counts in this interface is 0
Ruijie# clear ip urpf interface gigabitEthernet0/21
Ruijie# show ip urpf interface gigabitEthernet0/21
IP verify source reachable-via RX
IP verify URPF drop-rate notify disabled
IP verify URPF notification threshold is 1000pps
Number of drop packets in this interface is 0
Number of drop-rate notification counts in this interface is 0
```

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show ip urpf	URPF ^ Â

^ S5750 V2.x p

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41

41.1

41.1.1 distribute-list in

8 ˘ Лυ ˘ Ъυ ३ **distribute-list in** Â Ъυ ३ **no** Ъ₹ Â

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

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

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access-list-number	৸ ৸ ন' 1-99ˇ 1300-1999 ৸ ন' 100-199ˇ 2000-2699
access-list-name	৶
prefix *prefix-list-name*	৸
gateway *prefix-list-name*	৸
interface-type interface-number	(৷) ˘ ৷ ৷

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ЛυЮ ˘ RIP ÿ Fastethernet 0/0 ৭ ˘ 8 ˘ ৷ 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-router)# exit
Ruijie(config)# access-list 10 permit 172.16.0.0 0.0.255.255
```

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access-list	ㅒ ‡
prefix-list	ㅒ ɱ

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41.1.2 distribute-list out

ˆ ˘ ʃʋ ˘ ƫʋ ʇ **distribute-list out** Â ƫʋ ʇ **no** ㅒ Â

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*]

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access-list-number	/| /| 1-99 1300-1999 /| 100-199 2000-2699
access-list-name	ɺ
prefix *prefix-list-name*	ɱ
Interface	(ɺ) ˘ ˆ ɺ ˧|

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ˆ ⁸ ˩ ˥ ' ὲ ˥ ˘ ‡
ˆ ˘ ὲ a ˆ ⁸ Â
OSPF ˆ ⁸ ˘ a ˥˘ ʒ ˩ OSPF
ﷺ Â

ЛЪЮ ˘ RIP ˩ ˆ 192.168.12.0/24 تن 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 10ÐÑó-+ó! ôÿ0Aô ÿ0ÅçtÂÂÂûh
```

community-list-name	خ ⅄ خ ⅄ a 80
community-list-number	خ ⅄ خ ' ⅄ تن й 1-99 خ ' ⅄ تن й 100-199
permit	
deny	
community-number	خ Â й AA:NN(⅄' 2)˘ ˘ تن 0-4294967295˘ ЛЬЮ Ѭ ' internet˘ Internet خ ˘ خ Â local-as˘ a ⅃ ʃ AS ˘ ˘ a ⅃ ȝ Â no-advertise˘ a ⅃ BGP peers Â no-export˘ a ⅃ EBGP peers Â تن' 1..255 Â ' ⅄ خ 32 خ Â

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Ъ ३ Ѭ BGP خ 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	˥ خ

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41.1.4 ip default-network

˘ Ъ ʒ **ip default-network** Â Ъ ʒ no ˩ Л
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ip default-network *network*

no ip default-network *network*

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network	ʎ Â

й 0.0.0.0/0 Â

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й ˘ **default-network**
ЛЮ ˚ ' a ʎ ˘ ج ˩ˆ Â
Л“*” ʎ ˘ Â connected
Ո Ю ˘ ‡ Â

1' ЛЮ ˘ 192.168.100.0 й ˘ ˆ
˘ 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 й ˘ ʎ 200.200.200.0
ج ˘ й Â

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

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show ip route	IP Â

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41.1.5 ip prefix-list

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ge˘ ‡ ٦ ‹ minimum-prefix-length ĵ 32 Â le˘ ‡ ٦ ‹ ip-prefix ĵ maximum-prefix- length Â γ ˘ ‡ ٦ ‹ ÿ minimum-prefix-length ĵ maximum-prefix- length Â˛ ˘ ip-prefix à minimum-prefix-length Ω maximum-prefix-length ' ip-prefix < minimum-prefix-length < maximum-prefix-length <= 32 Â

ЛЫЮ й ĵ ٧ ˘ OSPF ˜ ĵ ٧ RIP ĵ ٧ IP ˘ ‡ ج IP ŋń ЫЖ(٧ IP ج 201.1.1.0/24 ‹ ĵ ٧ ٧) ˘ ‡ 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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41.1.6 ip prefix-list description

й ŋń ╗ ˘ **ip prefix-list description** Ĥυ ३ Â Ĥυ ३ **no** ŋń Â

ip prefix-list *prefix-lis-name* **description** *descripton-text*

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prefix-lis-name	ŋń ٧
descripton-text	ŋń

╗ ŋń

Ĥυ ३

ƬU ३ ٦ ٨	٨	
	-	-

41.1.8 ip ref ecmp load-balance

ip ref ecmp load-balance {[crc32_lower | crc32_upper] [dip] [port] [udf *number*]}

no ip ref ecmp load-balance {[crc32_lower | crc32 upper] [dip] [port] [udf *number*]}

٩	
crc32_lower	crc32 Æ ā ٩ ƬO

ƕ ३	ƕ ३	
	Maximum-paths	ˮ

✓		

	✓	
ƕ ३ ˥ ✓	10.4	S5760 ƕ ३

41.1.9 ip route

˘ ƕ ३ ip route Â ƕ ३ no Â

ip route [**vrf** *vrf_name*] *network net-mask* {*ip-address* | *interface* [*ip-address*]} [*distance*] [**tag**

৭	

running-config ⌟ Л ŋ́ Э Â

ЛЫЮ ˘ Э й 900 ˘ Л Â

```
Ruijie(config)# ip static route-limit 900
Ruijie(config)# no ip static route-limit
```

Ъ ३	
-	-

Л Ъ ३ ج γ Э a

Л		
-	-	

41.1.12 ipv6 prefix-list

… IPv6 ŋ́ ╗ ŋ́ ˘ **ipv6 prefix-list** Ъ ३ Â Ъ ३ **no** ŋ́ ŋ́ Â

Ipv6 prefix-list *prefix-lis-name* [**seq** *seq-number*] { **deny** | **permit** } *ipv6-prefix* [**ge** *minimum-prefix-length*][**le** *maximum-prefix- length*]

no ipv6 prefix-list *prefix-lis-name*[**seq** *seq-number*] { **deny** | **permit**} *ipv6-prefix* [**ge** *minimum-prefix- length*][**le** *maximum-prefix- length*]

Л

	maximum-prefix- length	ˆ ˩ ˜ ˵ (˵) ˵ ˈ **le** ʒ
	… ɱ Â	
ƚu ʒ	Â	

ѝ IPv6 ฑ ╗ ˘ **ipv6 prefix-list description** Ъ ३ Â Ъ ३
no ฑ Â

ipv6 prefix-list *prefix-lis-name* **description** *descripton-text*

ฯ		
ฯ	*prefix-lis-name*	IPv6 ฑ ง
	descrC5	IPv6 ฑ ╗ — ๒ ง ๑ ๓

Ю ३

ЛЮ й IPv6 ⅊ Ů ℼ '

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

Ю ३

Ю ३	
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Ю ३ ৲ ৰ

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-	-

41.1.15 ipv6 route

ipv6 ˘ Ю ३ ipv6 route Â Ю ३ no Â

ipv6 route *network* | *prefix-length* { *ipv6-address* | *interface* [*ipv6-address*] } [*distance*] [**weight** *number*]

ৰ

ৰ	
network	فخ سم
prefix-length	
Ipv6-address	Ю فخ سم
interface	^ ৲ ~ Ю ৰ
distance	^ ৲ ~
number	(৲) ˘ جم ˑ Â تن ' 1-32˘ ˑ Ω a ˑ ˘ ৲ ˑ Â

ipv6

Ъ ३

й 1˜ ˘ ⌋Л ╟ ↑
˘ ⌉ ╟ a↑ ˘ Â ⌋
Л ˘ ˘ ⌉ й ╟ Â OSPF ˜
й 110˜ ⌋Л й 125˜ OSPF ˘
⌋Л↑ ↑ Э

ЛЮ ˘ ╗ ↑ 2001::/64 ˘ Ю й 2002::2˜
й 115 Â

```
ipv6 route 2001::/64 2002::2 115
```

⌉˘ ⌋ ⌉ ˘ ⌋ ÿ ε ⌉
⌋ Â ⌋ ˘ ⌉ Â ЛЮ ˘ ↑ 1::/64
⌉ ÿ fastethernet 0/0 ⌉ ⌋ Â

```
ipv6 route 2001::/64 fastethernet 0/0 2002::2
```

Ъ ३

Ъ ३	
show ipv6 route	IPv6 Â

⌉ Ъ ३ جه γ Э a

Ъ ३ ˥ ⌉

⌉	
10.1	Ъ ३
10.4	weight ⌉

41.1.16 ipv6 static route-limit

Э ˘ Ъ ३ **ipv6 static route-limit** Â Ъ ३ no
⌋Л هى Â

ipv6 static route-limit *number*

no ipv6 static route-limit

⌉	
number	Э ˘ تن 1-10000

й 1000

Ъ ३

Э й ⁸ ˘ **ipv6 static route-limit**
Э Л Ю ˘ a Э Â
show running config ˩ Л Ъ ⁽⁄⁄ Э Â

ЛЪЮ ˘ ipv6 Э й 900 ˘ Л

```
Ruijie# ipv6 static route-limit 900
Ruijie# no ipv6 static route-limit
```

Ъ ३

Ъ ३	
ipv6 route	ipv6
show ipv6 route	IPv6 Â

Л Ъ ३ ج γ Э a

Ъ ३ ˥ Л

Л	
10.1	Ъ ३

41.1.17 ipv6 unicast-routing

Ů RGOS ˚ IPv6 ˥ ˘ ج Ю Ъ ३ Â Ъ ३ no ˩ Л Ъ IPv6 ˥ Â

ipv6 unicast-routing

no ipv6 unicast-routing

Ч

Ч	
-	-

Ů IPv6

Ъ ३

˩ й ˘ ˩ й VOIP ˘ ˩ Л Ъ a RGOS ˚ IPv6 ˩ ˥ Â ˩ Л Ъ RGOS IPv6 ˥ Â

ЛЪЮ ˘ RGOS ˚ IPv6 ˥ Â

```
Ruijie# no ipv6 unicast-routing
```

	৳ ৩	

```
Ruijie(config-route-map)# set  local-preference 20
```

Ю ३

Ю ३	
ip community-list	ج
match as-path	٦ AS_PATH
match metric	٦
match origin	٦ ٤
set as-path prepend	٤ AS_PATH Â
set comm-list delete	٦ ج
set community	ج
set metric	٤

٨

Ю ३ ٦ ٨

٨	
-	-

41.1.20 match interface

٦ Ю ٨ й ٨˘ في Ю ३ **match interface** Â Ю ३ **no**
Â

match interface *interface-type interface-number* [*…m70.24670.24670.24670.#ce--4(nb)-4(er)]TJ/TT0 1 Tf0.0*

جم ˆ ˘ ˆفي route maps˜ ˘ ч ھھ
ˆ ˚ 8 Â

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

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

	access-list-number	1-99 1300-1999 100-199 2000-2699
	access-list-name	G!5 Tp I ñgp •
	prefix-list *prefix-list-name*	

5 E E 5) q 2 ! ~ . E 9 r # E b Q B 2 R @ < # • U Z B G !5 B ň

```
Ruijie(config-route-map)# set metric 40
Ruijie(config-route-map)# set metric-type type-1
```

ЮЗ

ЮЗ	
access-list	ЮЗ ‡
match interface	ЗЮ ^
match ip next-hop	ЗЮ فخ سم
match ip route-source	ЗЮ فخ سم
match metric	ЗЮ
match route-type	ЗЮ صر
match tag	ЗЮ
set metric	‡
set metric-type	‡ صر
set tag	‡

^

ЮЗ ЗЛ

^	
-	-

41.1.22 match ip next-hop

‡ ЮФ, M ЗЛ

access-list-name	⅄
prefix-list *prefix-list-name*	┐ ⅊ ⅄

Â

Ĥυ ३ في Â

match ip next-hop Ĥυ ३ ⅄ ⅃Ω ⅄ ⅄ Â
⅃Ω ÿ ⅄ ⅄ ⅄ ⅄ Â ⅃Ω OSPF
⅄ ⅄ ⅄ ⅄ Â ⅃Ω OSPF ⅄
⅄ ⅄ RIP ⅄ ˘ ≠ ⅃Ω RIP ⅄ ⅄ ⅄ ⅄ OSPF ⅄ Â
⅄ ⅃Ω جم IP ˜ Â
جم ⅄ ˘ في route maps˜ ˘ ч ⅄
⅄ ˘ ⁸ Â
في ‡ ˘ ⅃Ω 1 **match** Ĥυ ३ ∩ 1 **set** Ĥυ ३ Â
match Ĥυ ३˘ ‡ ┐ ’ **set** Ĥυ ३˘ ‡ a Â

ЛЮ ˘ OSPF ˜ ⅄ RIP Â ⅃ RIP Ю فخ سم ⅄
10 20˝ OSPF è ⅄ 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
```

Ĥυ ३

Ĥυ ३	
access-list	Ĥ‡ ‡
match ip address	┐ فخ سم
match interface	┐ Ю ⅄
match ip route-source	┐ فخ سم
match metric	┐
match route-type	┐ صر
match tag	┐
set metric	⅄

	set metric-type	ʔ صر
	set tag	

Ȍ 5˜ OSPF è ˆ

```
Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets
Ruijie(config-router)# route-map redrip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# access-list 5 permit host 192.168.100.1
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match ip route-source 5
```

ƪ ȝ

ƪ ȝ	
access-list	ƸƵ ‡
match ip address	˥ ƫ
match interface	˥ ˄
match ip next-hop	˥ Ƴ ƫ
match metric	˥
match route-type	˥ ص
match tag	˥
set metric	ˆ
set metric-type	ˆ ص
set tag	ˆ

˄

ƪ ˥ ˄

˄	
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41.1.24 match ipv6 address

ƸƵ IPv6 PBR ‡˘ IPv6 ACL ˥ Â

ƸƵ ˆ ȵ Ș IPv6 ˘ في ȝ

match ipv6 address Â ƪ ȝ **no**

match ipv6 address { *access-list-name* | **prefix-list** *prefix-list-name* }

no match ipv6 address

ˆ ‡

```
Ruijie(config)#route-map user-for-pbr permit 10
Ruijie(config-route-map)#match ipv6 address aaa
```

ƚƸ ǯ

ƚƸ ǯ	
ipv6 access-list	ƚƸ IPv6 ‡
match interface	ˆ ƚƸ ˆ
match ipv6 next-hop	ˆ IPv6 ƚƸ فخ سم
match ipv6 route-source	ˆ IPv6 فخ سم
match metric	ˆ
match route-type	ˆ صر
match tag	ˆ
set metric	ˆ
set metric-type	ˆ صر
set tag	ˆ
set ipv6 default next-hop	ˆ ƚƸ فخ سم Â
set ipv6 next-hop	ˆ ƚƸ فخ سم Â
show ipv6 policy	ƚƸ Â

ƚƸ

ƚƸ ˆ ƚƸ

ƚƸ	
-	-

41.1.25 match ipv6 next-hop

ˆ ƚƸ IPv6 فخ سم ƚƸ ‡ ˇ في ƚƸ ǯ **match ipv6 address** Â ƚƸ ǯ **no** Â

match ipv6 next-hop { *access-list-name* | **prefix-list** *prefix-list-name* }

no match ipv6 next-hop

ƚƸ

ƚƸ	
access-list-name	ˆ
prefix-list *prefix-list-name*	ˆ IPv6 ƚƸ ˆ

set tag	ˆ

ˆ

Ĥυ ३ ˆ ˆ

ˆ	
-	-

41.1.26 match ipv6 route-source

ˆ Ю IPv6 فخ سم ˆ ‡ ˘ في Ĥυ ३ **match ipv6 address** Â Ĥυ ३ **no** Â

match ipv6 route-source { *access-list-name* | **prefix-list** *prefix-list-name* }

no match ipv6 route-source

ˆ	
access-list-name	ˆ
prefix-list *prefix-list-name*	ˆ IPv6 ˆ ˆ

Â

Ĥυ ३ في Â

ˆ ˆ ˆ ˆ Â ˆ OSPF
RIP ˆ ˆ RIP ˆ ˆ
˜ ˆ OSPF Â ˆ IP ˜ Â
جه ˆ ˘ في route maps˜ ˘ ч
ˆ ˘ 8 Â
في ‡ ˘ ˆ 1 **match** Ĥυ ३ Ω 1 **set** Ĥυ ३ Â
match Ĥυ ३˘ ‡ ˆ ' **set** Ĥυ ३˘ ‡ a Â

في ˆ ˘ ˆ جه ˆ Ω Э Â a
في ˘ ٤ ˆ ˘ ˆ Ĥυ ३ a ˆ Â ˆ جه ˆ
Э˘ a ˆ ˜ في˘ ٤ Ĥυ ३ ≠ a ˆ Â
ЛЮ ˘ OSPF ˜ ˆ RIP ˘ ˆ ˆ ˆ 10
RIP ˘ جه OSPF ˘ صر й type-1˘ й 40 Â

```
Ruijie(config)# ipv6 router ospf
Ruijie(config-router)# redistribute rip subnets route-map redrip
Ruijie(config-router)# exit
```

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

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

-	-

41.1.27 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

Ԧ ३ في Â

Â 8 ↑ ˩ ╗ ⸙ ↑ ˘ α في α في ˘ ↑ Ю ˩ Â

في Â في ... 3 ˘في ˘ ⸙ 1 ˥ ‡ ∩ Â ˩ ↑ ˘ a ˊ في ↑ ˊ ˩ ˊ ⸙ ˊ ˩ ˘ ↑ في ˊ ˩ ⸙ Â

∩ ˘ ˀ ⋮ a ˩ ˘ ˩ ⎍ ⸙ ↑ Â

ЛЮ ˘ ⸙ serial 1/0 ů ˘ ↑ 500 ˘ ÿ fastethernet 1/0 ˊ ˩ ˩ 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
```

~ ᏧᏁ ३

```
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
```

ƚƲ ʅ	
match as-path	˥ AS_PATH
match metric	˥

˩ Ꮭ ÿ ᛘ ᛉ ᚋ ╖ Â ˩ Ꮭ OSPF ꭤ ᛘ ᚋ ˜ ᛉ RIP ꭤ ˘ ≠ ˩ Ꮭ RIP ꭤ ᛘ ᚋ ˜ ᛉ OSPF

match tag *tag* [*…tag*]

no match tag *tag* [*…tag*]

٩	
tag	

Â

Ĥυ ३ في Â

match tag Ĥυ ३ ٨ ٦ Λυ tag Â
٦ Λυ ÿ ĭ ĭ ٨ Â ٦ Λυ OSPF ٥٥
ĭ ٨ ˆ ĭ RIP ٥٥ ˘ ≠ ٦ Λυ RIP ٥٥ ĭ ٨ ˆ ĭ
OSPF ٥٥ Â ĭ ٦ Λυ جه IP ˜ Â
جه ĭ ˘ في route maps˜ ˘ ч ٥٥
ĭ ˘ ⁸ Â
في ‡ ˘ ٦ Λυ 1 **match** Ĥυ ३ Ω 1 **set** Ĥυ ३ Â
match Ĥυ ३˘ ‡ ٦ ' **set** Ĥυ ३˘ ‡ a Â

ΛυЮ ˘ RIP ˜ ĭ OSPF Â RIP ٦ ĭ OSPF ٥٥
й 50 Ω 80 Â

```
Ruijie(config)# router rip
Ruijie(config-router)# redistribute ospf 100 route-map redrip
Ruijie(config-router)# network 192.168.12.0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match tag 50 80
```

Ĥυ ३

Ĥυ ३	
access-list	Ĥ‡
match ip address	٦ فخ سم
match interface	٦ Ю ٨
match ip route-source	٦ فخ سم
match metric	٦
match ip next-hop	٦ Ю فخ سم
match route-type	٦ صر
set metric	ĭ

set metric-type	ʔ صر
set tag	ʔ

ƪυ ३	
-	-

ƪυ ३ ج γ Ɔ a Â

ƪυ ३ ٦ ⅄	
-	-

41.1.33 route-map

ƪ ˘ في ˘ ƪυ ३ **route-map** Â ƪυ ३ **no** في ƪ Â

route-map *route-map-name* [**permit** | **deny**] [*sequence-number*]

no route-map *route-map-name* [**permit** | **deny**] [*sequence-number*]

٩	
route-map-name	في ƪ ⅄ Â ˆ ƪυ ३ ⅄ في Â في ⅄ ƪ في ˘ في ٨
permit	ˆ ⅄ ˜ ƪ permit ˘ ٩ ⅄ match ƪ ٦ ‡ Â‡ set ƪυ ३ ˆ ⁸ ' ˘ set ƪυ ३ ↑ ⅄ ⁸ Â في Â ƪ permit ˘ a ⅄ match ƪ ٦ ‡ Â ‡ γ في Â ˆ set ƪυ ३
deny	ˆ ⅄ ˜ ƪ deny ˘ ٩ ⅄ match ƪ ٦ ‡ Â ‡ a ˘ في a ˆ ˘ ɜ في Â ƪ deny ˘ a ⅄ match ƪ ٦ ‡ Â ‡ ƪO في Â ˆ set ƪυ ३ Â
sequence-number	في ٨ Â æ ٨ ˝I ˆ ˘ يج ٨ Â

في Â

Ĥu ३ Â

ŋń RGIOS ˚ في ǔ جم ч ѕѕ ' ˝ ˜ ĭ 8 ' ˘ ˜ Â
˝ ˜ ĭ 8

ˌ Л ü ĭ ĭ ˥ ˥ Â ˌ Л OSPF
ѕѕ ĭ ˥ ˆ ĭ RIP ѕѕ ˘ ≠ ˌ Л RIP ѕѕ ĭ ˥
ˆ ĭ OSPF ѕѕ Â ĭ ˌ Л جم IP ˜ Â
جم ĭ ˘ في route maps˜ ˘ ч ѕѕ
ĭ ˚ 8 Â

في ‡ ˘ ˌ Л 1 **match** Ĥu ३ Ω 1 **set** Ĥu ३ Â
match Ĥu ३˘ ‡ ˥ ' **set** Ĥu ३˘ ‡ a Â
في ˘ في ˥ ЛЬЮ '
Â … في ˘ *sequence-number*ˇ й 10ˇ
Â ˥ جم في ˘ *sequence-number*ˇ a … في ˘
في '
Â جم في ˘ ˥˘ ĭ ‡ Â

ЛЬЮ ˘ OSPF ˜ ĭ RIP ˘ ˥ ĭ й 4 RIP
˘ جم OSPF ѕѕ ˘ صر й type-1˘ й 40˘
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)# route-map redrip permit 10
Ruijie(config-route-map)# match metric 4
Ruijie(config-route-map)# set metric 40
Ruijie(config-route-map)# set metric-type type-1
Ruijie(config-route-map)# set tag 40
```

Ĥu ३

Ĥu ३	
Redistribute	ĭ

˥

Ĥu ३ ˥

˥	
-	-

41.1.34 set aggregator as

ˉ match ‡ ƛ AS ˘ في ƿ ƷƷ **set aggregator as** Â ƿ ƷƷ **no** Â ƿ ƷƷ Â

set aggregator as *as-num ip_addr*

no set aggregator as [*as-num ip_addr*]

ƛ		
ƛ	*as-number*	ƛ AS ƛ
	ip_addr	ƛ فخ سم

Â

ƿ ƷƷ في Â

ƿ ƷƷ جم BGP ˘ ƛ Â
ƿ ƷƷ ƛ ƛ ˆ as,ip-addr˜ ˘ a ƛ ƛ

```
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
```

ƿ ƷƷ	
match as-path	

41.1.35 set as-path prepend

ˆ match ‡ ˇ AS_PATH ˘ في ƪ ƺ **set as-path prepend** Â ƪ ƺ **no** Â ƪ ƺ Â

set as-path prepend *as-number*

no set as-path prepend [*as-number*]

ˆ	
as-number	ˇ AS_PATH AS ˆ

Â

41.1.36 set comm-list delete

ˀ match ‡ COMMUNITY_LIST community ˘

Ъ ३	
ip community-list	ج
match as-path	٦ AS_PATH
match community	٦ ج
match metric	٦
match origin	٦ ٤
set as-path prepend	٢ AS_PATH
set comm-list delete	٦ ج
set local-preference	٢ ٣ ا

Ъ ३

Ъ ३ ٦ ٤	٨	
	-	-

41.1.37 set community

٦ match ‡ COMMUNITY ˘ في Ъ ३ **set community** Â Ъ ३ **no**

set community {*community-number*[*community-number …*] **additive** | **none**}

no set community { *community-number*[*community-number …*] **additive** | **none**}

٩		
٩	*community-number*	ج Â ŕ AA:NN(٨ :2)˘ ˘ تن 0-4294967295˘ ЛЪЮ Ъ ˘ internet˘ Internet ج ˘ ج Â local-as˘ a ٤ ٢ AS ˘ ˘ a ٤ ٤ Â no-advertise˘ a ٤ BGP peers Â no-export˘ a ٤ EBGP peers
	none ج ŕ	

Â

ƚƱ ǯ في Â

ƚƱ ˥ ˩ يخ Â

```
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
```

ƚƱ ǯ

ƚƱ ǯ	
match as-path	˥ AS_PATH
match community	˥ يخ
match metric	˥
match origin	˥ ˩
set as-path prepend	˩ AS_PATH
set origin	˩
set metric-type	˩ صر

˩

ƚƱ ǯ ˥ ˩

˩	
-	-

41.1.38 set dampening

˥ match ‡ ˹ ˘ في ƚƱ ǯ **set dampening** Â ƚƱ ǯ **no** Â

set dampening *half-life reuse suppress max-suppress-time*

৭	
half-life	৲ a ৲ ` Â تن 1..45(ƒ) ˘ й 15ƒ
reuse	æ ˘ 8 Â تن 1..20000ˆ й 750 Â
suppress	˘ 8 Â تن 1..20000ˆ 2000 Â
max-suppress-time	8 Â تن 1..255(ƒ) ˘ й 4* half-life

৭

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ƚυ ३

في Â

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```
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
```

ƚυ ३	

41.1.39 set extcommunity

˥ match ‡ يخ ˘ ڤي ƖƱ ʒ **set extcommunity** Â ƖƱ ʒ **no** Â ƖƱ ʒ Â

set extcommunity {**rt** *extend-community-value* | **soo** *extend-community-value*}

41.1.40 set ip default next-hop

ϩ match ‡ ↑ Ю IP ϣ ϥ ϥ ϥ **set ip next-hop** Â Ϟυ ϩ **no** Â

set ip default next-hop *ip-address* [*weight*] [*…ip-address* [*weight*]]

no set ip default next-hop *ip-address* [*weight*] [*…ip-address* [*weight*]]

ϥ	
ip-address	Ю IP ϣ
weight	Ю

Â

Ϟυ ϩ ϥ Â

set Ϟυ ϩ ϥ ' WCMP ϩ ˘ WCMP ϩ Â ϣ ϩ Ю˘ weight WCMP ϩ Â

set ip default next-hop Ϟυ ϩ ϧ ϩ ϩ IP ϣ˘ a 32 Â

ϣ ip address ϧ ϥ weight ˘ ‡ ϩ ϩ a 4 nexthop ϣ Â

ϣ next-hop ϧ weight ˘ set Ϟυ ϩ

~ ϥ ϩ WCMP ϩ Â ϣ WCMP ϩ

Ю˘ ϥ weight nexthop ϣ˘ weight

ϩ 1 Â

set ip next-hop Ϩ **set ip default next-hop** Ϟυ ϩ ϣ ϩ ϣ ' **set ip next-hop** Ϟυ ϩ ϣ ϩ ϩ ˝I Ϙ

```
Ruijie(config)#access-list 1 permit ip 1.1.1.1 0.0.0.0
Ruijie(config)#access-list 2 permit ip 2.2.2.2 0.0.0.0
Ruijie(config)#interface async 1
Ruijie(config-if)#ip policy route-map equal-access
Ruijie(config)#route-map equal-access permit 10
Ruijie(config- route-map)#match ip address 1
Ruijie(config-route-map)#set ip default next-hop 6.6.6.6
Ruijie(config)#route-map equal-access permit 20
Ruijie(config-route-map)#match ip address 2
Ruijie(config-route-map)#set ip default next-hop 7.7.7.7
Ruijie(config)#route-map equal-access permit 30
Ruijie(config- route-map)#set default interface null 0
```

ƚƚ ǯ

ƚƚ ǯ	
route-map	ƚƚ ƚƚ في
match ip address	ǯ فخ سم
set default interface	ˆ ˆ
set default interface	ˆ ˆ
set interface	ˆ ˆ
set ip next-hop	ˆ ƚƚ IP فخ سم˘
set ip precedence	ˆ IP ˆ

ˆ

ƚƚ ǯ ǯ ˆ

ˆ	
-	-

41.1.41 set ip dscp

ǯ match ‡ DSCP ˘ في ƚƚ ǯ **set ip dscp** Â ƚƚ ǯ **no** Â

set ip dscp *dscp_value*

no set ip dscp

৭	
dscp_value	IP IP DSCP

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ƚu ३ في Â

ƚu ३	

ip-address	Ю IP فخ سم
weight	Ю

Â

Ю ३ في Â

set Ю ३ ч ' WCMP كا ˘ WCMP كا
Â جم ⁄⁄ Ю˘ weight WCMP
كا Â

set ip next-hop Ю ३ ⁄ ⁄ Л Ю IP فخ سم˘ a 32 Â
جم ip address ⁄ ╗ weight ˘ ‡ ⁄ Л Ю a 4 nexthop فخ سم Â

جم next-hop ⁄ weight ˘ **set Ю ३**
╟╢ й WCMP كا Â جم WCMP كا
Ю˘ ف weight nexthop فخ سم˘ è weight
й 1 Â

هم ╗ ↑ ⁄ 8 Â
˘ في α ↑ ˘ في α
↑ Ю ⁄ Â
˘ في˘ 3 ... في Â في
˘ Ю 1 ┐ ‡ ∩ Â ⁄
⁄˘ ⁄ ↑ ˘ a ⁄ في ↑
⁄ ˘ ⁄ في ↑ Ю
Â
في ⁄ Л Ю set Â

ЛЮ ˘ جم serial 1/0 Э ŭ Â ⁄ جم فخ سم 10.0.0.0/8
تن ↑ ˘ ⁄ 192.168.100.1' й 172.16.0.0/16 تن
↑ ˘ ⁄ 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-balanc
```

```
Ruijie(config)#route-map load-balance permit 30
Ruijie(config-route-map)#set interface Null
```

set ip precedence {*<0-7*

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	-	-

41.1.45 set ip tos

٦ match ‡ IP TOS, في ƕ ३ **set ip tos** Â ƕ ३ **no** ˘ tos Â

set ip tos {*<0-15>* | *max-reliability* | *max-throughput* | *min-delay* | *min-monetary-cost* | *normal* }

no set ip tos {*<0-15*Þ |

match ip next-hop	ה ЮО פקס
match ip route-source	ה פקס
match metric	ה
match route-type	ה סר
match tag	ה
set metric-type	סר אי

Â Â

	Э˘ 64 ˘ ╗ a Â
~	Ъ ъ б **set ipv6 next-hop verify-availability** ˩ ˘ **set ipv6 next-hop verify-availability** Ъ ъ Ю ˝І Â

ЛЪЮ ˘ ÿ ˄ fastEthernet 0/0 فذ سم й
2001:0db8:2001:1760::/64 Ю й 2002:0db8:2003:1::95 Â

```
Ruijie(config)# ipv6 access-list acl_for_pbr
Ruijie(config -ipv6-acl)#permit ipv6 any 2001:0db8:2001:1760::/64
Ruijie(config)#route-map rm_if_0_0
Ruijie(config-route-map)#match ipv6 address acl_for_pbr
Ruijie(config-route-map)# set ipv6 default next-hop
2002:0db8:2003:1::95
Ruijie(config)#interface FastEthernet 0/0
Ruijie(config-if)#ipv6 policy route-map rm_if_0_0
```

Ъ ъ	Ъ ъ	
	match ipv6 address	Ъ˝ ˥ ‡
	ipv6 policy route-map	جم ˄ Э
	set ipv6 next-hop	Ю

˩	-

Ъ ъ ˥ ˩	˄	
	RGOS 10.4	RGOS 10.4 Ъ ъ Â

41.1.47 set ipv6 next-hop

˥ match ‡ IPv6 Ю IPv6 فذ سم˘ في Ъ ъ **set ipv6 next-hop** Â Ъ ъ no Â Ъ ъ Â

set ipv6 next-hop *global-ipv6-address* [*weight*] [*global-ipv6-address* [*weight*]...]

no set ipv6 next-hop global-ipv6-address [*weight*] [*global-ipv6-address* [*weight*]...]

˄	˄	
	global-ipv6-address	˩ Ю IPv6 فذ سم Â Ю ˩ ˩ Â

weight	كا Ю ˘ 1˙ 8.

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Ъu ३ ف Â

set Ъu ३ ч ' WCMP كا ˘ WCMP كا Â
جه ⁄ń Ю˘ weight WCMP كا Â
set ipv6 next-hop Ъu ३ ⁄ ⁄ Лu IP فخ سه˘ a 32 Â
Ю ˘ ‡ ⁄ Лu 4 Ю فخ سه Â

جه Ю فخ سه ⁄ weight ˘ set Ъu ३
‖Ĥ й WCMP كا Â جه WCMP كا
Ю˘ ف weight nexthop فخ سه˘ è weight
й 1 Â

جه б ⁄ ˘ Ю ”I '
Â set ipv6 next-hop
Â ˆ . ~
Â set ipv6 default next-hop
Â

ЛuЮ ˘ ÿ ⁄ fastEthernet 0/0 فخ سه й
2001:0db8:2001:1760::/64 Ю й 2002:0db8:2003:1::95 Â

```
Ruijie(config)# ipv6 access-list acl_for_pbr
Ruijie(config -ipv6-acl)#permit ipv6 any 2001:0db8:2001:1760::/64
Ruijie(config)#route-map rm_if_0_0
Ruijie(config-route-map)#match ip address acl_for_pbr
Ruijie(config-route-map)# set ipv6 next-hop 2002:0db8:2003:1::95
Ruijie(config)#interface FastEthernet 0/0
Ruijie(config-if)#ipv6 policy route-map rm_if_0_0
```

Ъu ३

Ъu ३	
match ipv6 address	Ĥ ٦ ‡
ipv6 policy route-map	جه ⁄ Э
set ipv6 default next-hop	Ю IPv6 فخ سه

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Ъu ३ ٦ ⁄

⁄	

0	routine
1	priority
2	network
3	internet
4	immediate
5	flash-override
6	flash
7	critical

1' IPV6 ˝l й 3 Â

ˌ ACL6

Ruijie(config)#ipv6 access-list aaa

Ruijie(config-ipv6-acl)#permit ipv6 2003:1000::10/80 2001:100::/64

ˌ route-map

Ruijie(config)#route-map pbr-aaa permit 10

Ruijie(config-route-map)#set ipv6 next-hop 2001:1234::2

ˌ ˝l ˥

Ruijie(config-route-map)# set ipv6 precedence 3

Or

Ruijie(config-route-map)# set ipv6 precedence immediate

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ƚu ʒ	
match ipv6 address	IPv6 PBR ˥ ACL Â
route-map	في Â
set default interface	Ю ٨ Â
set interface	Ю ٨ Â
set ipv6 default next-hop	٦ Ю فخ سم Â
set ipv6 next-hop	٦ Ю فخ سم Â
show ipv6 policy	٨ Â
show route-map	٨ في Â

٨ -

ƚu ʒ ˥ ٨

٨	

10.4	Ъ ३

41.1.50 set level

ר match ‡ Ш ॐ ॅص في Ъ ३ **set level** Â
Ъ ३ **no** Â

set level {**level 1**| **level 2** | **level 1-2** | **stub-area** | **backbone**}

no set level

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Ъ ३ في Â

ЛЫЮ ˘ OSPF ˜ ˆ RIP ˆ backbone Ш ॐ 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 level backbone
```

Ъ ३

Ъ ३	
match interface	ר Ю ৭
match ip address	ר فخ سم
match ip next-hop	ר Ю فخ سم
match ip route-source	ר فخ سم
match metric	ר
match route-type	ר صر
match tag	ר
set metric-type	ˆ صر
set tag	ˆ

Ĥu ३ ˥ ˩	
-	-

41.1.51 set local-preference

˥ match ‡ LOCAL_PREFERENCE ˘ في Ĥu ३ **set local-preference** Â Ĥu ३ **no** Â

set local-preference *number*

no set local-preference

number	ˢ ˝ı Â ˈ˜ 0-4294967295

Â

Ĥu ३
في Â

˩ local-preference ˘ a local-preference Â Ĥu ३ ˥ ˆ ˢ ˝ı Â

```
Ruijie(config)# route-map SET_PREF permit 10
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set local-preference 6800
Ruijie(config-route-map)# exit
Ruijie(config)# route-map SET_PREF permit 20
Ruijie(config-route-map)# match as-path 2
Ruijie(config-route-map)# set local-preference 50
```

Ĥu ३

Ĥu ३	
match as-path	˥ AS_PATH
match metric	˥
match origin	˥ ˩
set as-path prepend	ˆ AS_PATH
set metric	ˆ

	set metric-type	أ صر

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ƚƱ ǯ ˥ ƒ	ƒ	
	-	-

41.1.52 set metric

˥ match ‡ ˘ في ƚƱ ǯ **set metric** Â ƚƱ ǯ **no** Â

set metric [+ *metric-value* | **-** *metric-value* | *metric-value*]

no set metric

```
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# set metric 40
```

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ƕ ʒ	
match interface	˥ Ю ᛀ
match ip address	˥ فخسم
match ip next-hop	˥ Ю فخسم
match ip route-source	˥ فخسم
match metric	˥
match route-type	˥ صر
match tag	˥
set metric-type	ᛏ صر
set tag	ᛏ

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41.1.53 set metric-type

˥ match ‡ صر˘ في ƕ ʒ **set metric-type** Â ƕ ʒ **no** Â

set metric-type *type*

no set metric-type

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type	ᛏ صر

OSPF ᛏ й type-2 Â =TrT₿@íX[QdÂB̈Z₿Z₿mf[ŶÂH2PQ̧rG!

no set next-hop *ip-address*

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ip-address	Ю IP فخسم

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في Â

ˀ Ꮭ ÿ ᛏ ᛏ ˀ ╖ Â ˀ Ꮭ OSPF عفف ᛏ ˀ ˜ ᛏ RIP عفف ˘ ≠ ˀ Ꮭ RIP عفف ᛏ ˀ ˜ ᛏ OSPF عفف Â ᛏ ˀ Ꮭ جم IP ˜ Â جم ᛏ ˘ فيˆ route maps˜ ˘ ч عفف ᛏ ˙ ⁸ Â

في ‡ ˘ ˀ Ꮭ 1 **match łʋ ʅ** Ռ 1 **set łʋ ʅ** Â **match łʋ ʅ**˘ ‡ ˥ ’ **set łʋ ʅ**˘ ‡ a Â

ᏞЮ ˘ ˥ ⁸ ˝ Ю й 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
```

łʋ ʅ	
match interface	˥ Ю ʮ
match ip address	˥ فخسم
match ip next-hop	˥ Ю فخسم
match ip route-source	˥ فخسم
match metric	˥
match route-type	˥ صر

41.1.55 set origin

ग़ match ‡ ˘ في ƚυ ३ **set origin** Â
ƚυ ३ **no** Â

set origin {**egp** | **igp** | **incomplete**}

no set origineSf&âv98Q ~c“‚f8‘Dßà.!AfhQ ~ð.!G6a’Ð$ß&P "4bT0a™@

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	-	-

41.1.56 set originator-id

ǯ match ‡ ǰ ˘ في ƚƣ ǯ **set originator-id** Â
ƚƣ ǯ **no** Â

set originator-id *ip-addr*

no originator-id [*ip-addr*]

ǰ	ǰ	
	ip-addr	ǰ فذ سم

	Â
ƚƣ ǯ	في Â
	ƚƣ ǯ ǯ ǰ ǰ Â

```
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
```

ƚƣ ǯ	ƚƣ ǯ	
	match as-path	ǯ AS_PATH
	match metric	ǯ
	match origin	ǯ ǰ
	set as-path prepend	ǰ AS_PATH
	set metric	ǰ
	set local-preference	ǰ سم ا˝

ǰ

Ю ३ ٦ ৲	৸	
	-	-

41.1.57 set tag

٦ match ‡ ˘ في Ю ३ **set tag** Â Ю ३ **no** Â

set tag *tag*

no set tag

৸	৸	
	tag	ˆ

	৸ a ৲ Â

Ю ३	في Â

	Ю ३ ৴ ˆ Â Ю ३˘ ৸ Â

ЛЬЮ ˘ OSPF ˜ ˆ RIP ˘ ˆ 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
```

Ю ३	Ю ३	
	match interface	٦ Ю ৸
	match ip address	٦ فخ سم
	match ip next-hop	٦ Ю فخ سم
	match ip route-source	٦ فخ سم
	match metric	٦
	match route-type	٦ صر
	match tag	٦
	set metric	ˆ

~ ᏧᏁ ३

match community	ᒉ ᑉ
match metric	ᒉ
match origin	ᒉ ᒐ
set community	ᐤ COMMUNITY
set metric	ᐤ
set metric-type	ᐤ ᑉ

```
permit 0:10
deny 0:20
```

ใบ ๓

ใบ ๓	
match community	ๅ ๆ
set comm-list delete	ๆ BGP ๆ

๗

ใบ ๓ ๅ ๗

๗	
-	-

41.2.2 show ip prefix-list

๗ ๗ ๆ **show ip prefix-list** ใบ ๓ Â

show ip prefix-list [

/I	

```
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 Ъυ ३ ЮΟ'

	˜ Â ˩ ˪ ѝ'
O	C' '
	S' '
	R' RIP '
	B' BGP '
	O' OSPF '
	ï' IS-IS Â

E2

Routing Descriptor Blocks	Ю IP à à à ~ à ف ^ à صà BGP ج

3' ЛЫЮ ù **show ip route count** ƪ ʒ '

```
Ruijie# show ip route count
--------- route info ----------
the num of active route: 5
```

4' ЛЫЮ ù **show ip route weight** ƪ ʒ '

```
Ruijie# show ip route weight
------------[distance/metric/weight]-----------
S   23.0.0.0/8 [1/0/2] via 192.1.1.20
S   172.0.0.0/16 [1/0/4] via 192.0.0.1
```

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```
permit 13::/20
permit 14::/20
```

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-	-

```
      [*] - NOT in hardware forwarding table
L     ::1/128  via Loopback, local host
C     10::/64  via Loopback 1, directly connected
L     10::1/128  via Loopback 1, local host
S     20::/64  [20/0] via 10::4, Loopback 1
L     FE80::/10  via ::1, Null0
C     FE80::/64  via Loopback 1, directly connected
L   FE80::2D0:F8FF:FE22:33AB/128  via Loopback 1, local host
```

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	10.1	Ϟυ ϡ

41.2.6 show route-map

ϡ ˘ في Ϟυ ϡ **show route-map** Â

show route-map *route-map-name*

⎍	⎍	
	route-map-name	ˆ ⎓ ˜ ⎓ في

	في Â
Ϟυ ϡ	à à ⎍ à ˜ à في Â
	في ⎓ ˘ في ˘ ‡ ⎓ في Â

```
Ruijie# show route-map
```

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42

42.1

42.1.1 ip local policy route-map

ˆ ⌠ ⌡ ˇ Ĥυ ३ **ip local policy route-map** Â Ĥυ ३ **no** Â

ip local policy route-map *route-map*

no ip local policy route-map

⌠	
route-map	⌠ Â

Â

Ĥυ ३ Â

Ĥυ ३ ⌠ ˆ ⌠ ⌡ ⌡ IP ˇ ⌠ ˆ IP a ⌠
Ĥυ ३ ⁸ Â
ˇ ˇ 3 ... Â Â
ˇ ⌂ 1 ┐ ‡ ∩ Â ⌠
⌡ˇ ⌠ ⌡ ↑ ˇ a ⌡ ↑
⌠ ˇ ⌡ ↑ ⌂
Â
set interface a ⌡ , ⌡ **set interface** ⌠ˇ ⌠
Â

ЛЫЮ ˇ Л 192.168.217.10 й ⌠ ÿ **serial** *2/0*
⌠ ⌡ Â
1' ⌂ ┐ IP ACL

```
Ruijie(config)#access-list 1 permit 192.168.217.10
```

2' ⌂

```
Ruijie(config)#route-map lab1 permit 10
Ruijie(config-route-map)#match ip address 1
Ruijie(config-route-map)#set interface serial 2/0
```

```
Ruijie(config-route-map)#exit
  ' '        سم   ᛙ
Ruijie(config)#ip local policy route-map lab1
```

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ƕυ ঀ	
access-list	ᄧ ‡
route-map	ᄧ في
set vrf	ᄧ IP VRF
set ip next-hop	ᄧ Ю
set ip default next-hop	ᄧ Ю
set interface	ᄧ ᛙ
set default interface	ᄧ ᛙ
set ip tos	IP TOS
set ip dscp	IP DSCP
set ip precedence	IP ˝I
match ip address	‡
match length	˥

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42.1.2 ip policy

set ip [**default**] **nexthop** Ю ʆ ˘ جـ Ю **ip policy** Â ƕυ ঀ **no** ˧ Â

ip policy {**load-balance | redundance**}

no ip policy

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load-balance | redundance	ʆ

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جه في **set ip next-hop** ˘ ⌟ ⌠ Ю ˘ ˘
ϟ ⌟ ⌠ Ю ' ˘
Ю ˘ WCMP ⌟ ⌠ 8 Ю ˘ ECMP ⌟ ⌠ 32 Ю
Â Ю Ю ˝ ˆ ARP ϟ ARP MAC جه
MAC فخ سه ≠ جه Â

⌠Ю ˘ في nexthop, جه Ю ⌡˘
‡ جه **FastEthernet** 0/0 Э في ϟ nexthop Â
1' ϩ IP ⌂ACL config)#L access-listCL

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42.1.3 ip policy route-map

ھ ʌ ˘ Ԧ ʒ **ip policy route-map**˘ Ԧ ʒ **no**
ʌ Ɜ Â

ip policy route-map *route-map*

no ip policy route-map

ʌ	**ʌ**	
	route-map	ف ل Â

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```
Ruijie(config-route-map)#match ip address 2
Ruijie(config-route-map)#set ip next-hop 196.168.5.6
Ruijie(config-route-map)#exit
  3ʼ  جه  ٨ Ɜ        في
Ruijie(config)#interface FastEthernet 0/0
Ruijie(config-if)#ip policy route-map lab1
Ruijie(config-if)#exit
```

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ƪ ƻ	
access-list	ƪƺ ‡ Â
route-map	ƪƺ في Â
set vrf	ƪƺ IP VRF
set ip next-hop	ƪƺ Ю
set ip default next-hop	ƪƺ Ю
set interface	ƪƺ ٨
set default interface	ƪƺ ٨
set ip tos	IP TOS
set ip dscp	IP DSCP
set ip precedence	IP ˝I
match ip address	‡
match length	٦

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42.1.4 ipv6 local policy route-map

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ƻ ٨ ˢ ˥ Â

ipv6 local policy route-map *route-map-name*

no ipv6 local policy route-map

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route-map-name	سم في ﺍ ˘ **route-map** ƚʊ ʢ Â
no	سم ˧ a ˩ ⁸ Â

سم ╖ Â

ƚʊ ʢ Â

Â ƚʊ ʢ ˩ سم ˧ ˥˩ ˩ IPv6 ˆ ping ˜ ˘ ˧ سم IPv6 a ˩ ƚʊ ʢ ⁸ Â

Â ˘ في˘ 3 … في Â في ˘ 㶃 1 ˥ ‡ Ռ Â ˦ ˩˘ ˦ ᛙ ꜛ ˘ a ˩ في ꜛ ˧ ˘ ˩ في ꜛ 㶃 Â

set ipv6 precedence	IPv6 ˝l Â
show ipv6 policy	ɱń Â
show route-map	ɱń ڤي Â

ɹ Â

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	10.4	ƚυ ३

42.1.5 ipv6 policy

set next-hop ڭ ˘ ڢ ƗO ipv6 policy .

ipv6 policy {**load-balance** | **redundance**}

no ipv6 policy

ſ		
	load-balance	ǹ ڭ
	redundance	ǹ

ڢ Â

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set default interface	Ю ٨ Â
set interface	Ю ٨ Â
set ipv6 default next-hop	٦ Ю فخ سم Â
set ipv6 next-hop	٦ Ю فخ سم Â
show ipv6 policy	٭ Â

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42.1.6 ipv6 policy route-map

جم ٨ ٭ ˘ ٨ Ĥu ३ ipv6 policy route-map Â Ĥu ३ no Â

ipv6 policy route-map *route-map-name*

no ipv6 policy route-map

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route-map-name	سم في ٨ ˘ **route-map** Ĥu ३ Â

٨ Ю ٦١ Â

Ĥu ३

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Â جم ٨ Э ˘ ٨ ٨ ٭ ↑ ˘
٨ ٦ ٨ ↑ a Â
Â ˘ ˜في 3 ... في Â
في ˘ ⌧ 1 ٦ ‡ ∩ Â
٨ ˜٨ ٨ ٭ ↑ ˘ a ٨ في
↑ ٦ ˘ ٨ في ↑
⌧

~	Э ٨ ٨ ˜في جم ٦ ٨ Э ˜في ٨ في ˝I ٭ في Â

1' ٨ Â ٨ GigabitEthernet 1/38 Э ٭ ˘
ÿ 2003:1000::10/80 ٧ 2001:100::/64 ˘ ٦ AAA IPV6 ACL

ৰ 2003:1001::2 Â

¸ IPV6 ACL

Ruijie(config)#**ipv6 access-list** aaa

Ruijie(config-ipv6-acl)#**permit ipv6** 2003:1000::10/80 2001:100::/64

¸ route-map

Ruijie(config)#

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```
Ruijie#show ip policy
Banlance Mode: redundance
Interface           Route map
local               test
FastEthernet 0/0    test
```

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ip policy route-map	⅄ Э Â

```
Banlance Mode: redundance
Interface                    Route map
VLAN 1                       RM_for_Vlan_1
VLAN 2                       RM_for_Vlan_2
```

Banlance Mode	ᴝᴝ Â
Interface	ᴝ ᴝ Â
Route map	ᴝ ᴝ ᴝ ᴝ في Â

ᴚᴗ ᴝ	
show route-map	ᴝᴝ في Â

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43 IGMP

43.1

43.1.1 ip igmp access-group

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ip igmp access-group *access-list*

no ip igmp access-group

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

˘

Ъu ъ ٨

ˇ ج ٨ ⌋ Л⌋ ╗ ˘ ⌋ Л⌋ **ip igmp access-group** ⁸ Â

ج ˇ IGMPv3 ˘ ⁸ Ъu ъ ACL Â ˆ MLD report ˆ S1,S2,S3…Sn,G˜ ˘ Ъu ъ (0,G) ACL ˆ Â Л⌋ Ъu ъ˘ ACL (0, G)˘ ⌋ Л⌋ ˆ S1,S2,S3…Sn,G˜ Â	~

1' ج Ю ˘ ˇ ج ٨ Eth0 ⌋ ╗ 225.2.2.2.

```
Ruijie# configure terminal
Ruijie(config)# access-list 1 permit 225.2.2.2 0.0.0.0
Ruijie(config)# interface ethernet 0
Ruijie(config-if)# ip igmp access-group 1
```

2' ج Ю ˘ ج ٨ Eth0 ⁸ ACL˘ ٨ ⌋ فخ سم й 1.1.1.1, فخ سم й 233.3.3.3 igmp ˜ Â

```
Ruijie# configure terminal
Ruijie(config)# ip access-list extended ext_acl
Ruijie(config-ext-nacl)# permit ip host 0.0.0.0 host 233.3.3.3
```

```
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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43.1.2 ip igmp join-group

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ip igmp join-group *group-address*

no ip igmp join-group *group-address*

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group-address	ৰ Э ` . R Λ

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43.1.4 ip igmp last-member-query-count

last-member-query-count ↑ leave ⅄˘ ٤ Â
ƒu ३ **last-member-query-count** Â no ƒu ३ Â

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

no ip igmp last-member-query-count

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	number	⅄ ˘ , ن ٨ <2-7> Â

last member query count ٨ 2 Â

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٨ ↑ IGMPv2 ˘ **ip igmp last-member-query-count**
٦ Э ` ˘ جھ ↑ ˘ ˆ ˘ جھ ٨
˘ Â

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

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

no ip igmp last-member-query-interval

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interval	ন ঈ <1-255> ´ Æ ঈ 0.1s

1s

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৭ ˆ IGMPv2 ˘ **ip igmp last-member-query-count**
╗ Э ` ˘ جھ ˆ ˜ ˆ ˘ جھ ৭
˜ Â

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

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ip igmp immediate-leave	-

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43.1.6 ip igmp limit ( )

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

no ip igmp limit

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number	IGMP ˘ ন ঠ Â

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

й 1024 Â

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Ъu ३ IGMP ˜ ⁸˘ ˜ ج ⁸ ˆ a IGMP ˘ a Â

Ъu ३ ˩ Л˘ ˺ ˘ ˺ Л˘ ˩ Л˘ ˘ ˜ ˺ Â

ЛЪЮ ⁸ й 300˚

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

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43.1.7 ip igmp limit ( )

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й 65536

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IGMP ˘ a ˩ Â
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ЛЫЮ ˢ й 300ˆ

```
Ruijie˜ config˜ # ip igmp limit 300
```

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43.1.8 ip igmp mroute-proxy

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ip igmp mroute-proxy *interfname*

no ip igmp mroute-proxy

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interfname	Э ˥ ˩

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Э ˥ й proxy-service ˥ ˥˘ ˥ ˩ Л ˩ ȅ ˜ ˩
gmp ˜ Â

˥ mroute-proxy ˥

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

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43.1.9 ip igmp proxy-service

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ip igmp proxy-service

no ip igmp proxy-service

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ϟ a й proxy-service Â

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ϟ ϟ switchport ˘ Ю ϟ **ip igmp mroute-proxy interface** Ϸ ϟ ╟ Â

ϟ й proxy-service ج

```
Ruijie(config-if)# ip igmp proxy-service
```

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43.1.10 ip igmp query-interval

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ip igmp query-interval *seconds*

no ip igmp query-interval

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seconds	˜ Â´ Æ s˘ 1˙ 18000

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1' ह ƒ Ethernet 0 ˘ ˜ ˙ 120s Â

```
Ruijie(config-if)# ip igmp query-interval 120
```

2' ह ƒ Ethernet 0 ˘ ˜ ˙ Â

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

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43.1.11 ip igmp query-max-response-time

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

no ip igmp query-max-response-time

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seconds	! ˘ ´ Æ ˘ 1˙ 25

10s

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Ĥ ३ ৲ IGMPv2 Â Ĥ ३ ⁸ ह ग़ ! Â

1' ह ৭ Ethernet 0 ˘ ! ѝ 20s Â

```
Ruijie(config-if)# ip igmp query-max-response-time 20
```

2' ह ৭ Ethernet 0 ˘ ! ѝ Â

```
Ruijie(config-if)# no ip igmp query-max-response-time
```

255s

Ъu ३ ৲

Ъu ३ IGMPv2 Â Ю ч **ip igmp query-interval** ˘ ج Ruijie Ю й 255s Â ج ˘ ˆ ˘ й Â

1' ج ৲ Ethernet 0 ˘ è Ы 200s Â

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

2' ج ৲ Ethernet 0 ˘ è Ы й Â

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

ЛЪЮ √ й З'

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

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43.1.14 ip igmp ssm-map enable

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ip igmp ssm-map enable

no ip igmp ssm-map enable

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Ĥu ३ ˘ ╟ ˘ ˆ ⁸ ╥ Â Ĥu ३
Ĥu ३ **ip igmp ssm-map static** Л Â

ह ह ŭ **igmp ssm-map** ╥ Â

```
Ruijie(config)# ip igmp ssm-map enable
```

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43.1.15 ip igmp ssm-map static

Ku ३ جم Ю ssm-map ˘ Ku ३ й'

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

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

৭	৭	
	access-list	Acl ৶ تن й <1-99> |<1300-1999> |WORD
	a.b.c.d	´ فخ سم

فخ سم

Ku ३

Ku ३ б **ip igmp ssm-map enable** ৸ ˘ Ku ३ ৸˘ ˚ v3 ЛuЮ Э Â

ACL й 11 Э فخ سم 192.168.2.2˘ Ku ३ й'

```
Ruijie(config)# ip igmp ssm-map static 11 192.168.2.2.
```

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43.1.16 ip igmp static-group

Ku ३ ৭ ╗ ˘ جم Ku ३ ৸ ╗ no ৶ Â

ip igmp static-group *group-address*

no ip igmp static-group *group-address*

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group-address	৭ Э ╗ فخ سم Â

╗ Â

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ƒu ३ ৭ ╗ ৎ ˘ ৭ ╗ ৎ Â

جم ƒO ˘ ৭ Eth0 ╗ 236.6.6.6

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	igmp ^˘ ^˘ igmp ŭ ╟ Â
	ЛЪЮ ^ й 2˘

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

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43.2

43.2.1 clear ip igmp group

ħu ३ IGMP : ╟ ˘ Â

clear ip igmp group[*group-address*

≠ ╗ ˘ ≠ ج Â ÿ IGMP ˘ ┘
Л a ٧ **clear ip igmp group** ħυ ३ Â

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

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show ip igmp groups	-
show ip igmp interface	-

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43.2.2 clear ip igmp interface

ħυ ३ ٧ IGMP Â

clear ip igmp interface *ifname*

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ifname	٧ ┘
	٧

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ħυ ३ ٧ Э IGMP Â ┘Л a ifname ٧ Â

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43.2.3 show ip igmp groups

Ъu ३ б Ո ÿ IGMP ˜ ˆ Â

show ip igmp groups [*group-address* | *interface-type interface-number*] [*detail*]

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	group-address	32 Æ IP فخسم D فخسم˜ 8 Æ ˘ ЛЬ 8 ˘ Â
	interface-type	٩ صر Â
	interface-number	٩ ٨ Â
	detail	Â
		Â

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Ъu ३ a ٩ فخسم à ٩ صՈ ٩ Э Â فخسم Â

1' Ю '

```
Ruijie# show ip igmp groups
IGMP Connected Group Membership
Group Address Interface Uptime Expires  Last Reporter
224.0.1.1       eth2  00:00:09  00:04:17  10.10.0.82
224.0.1.24      eth2  00:00:06  00:04:14  10.10.0.84
224.0.1.40      eth2  00:00:09  00:04:15  10.10.0.91
224.0.1.60      eth2  00:00:05  00:04:15  10.10.0.7
239.255.255.250 eth2  00:00:12  00:04:15  10.10.0.228
239.255.255.254 eth2  00:00:08  00:04:13  10.10.0.84
```

2' Ю '

```
Ruijie# show ip igmp groups 224.1.1.1 detail
Interface: eth1
Group: 224.1.1.1
```

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

```
IGMP Active, Non-Querier, Version 3 (default)
IGMP querying router is 0.0.0.0
IGMP query interval is 125 seconds
IGMP querier timeout is 255 seconds
IGMP max query response time is 10 seconds
Last member query response interval is 1000 milliseconds
Group Membership interval is 260 seconds
IGMP Snooping is globally enabled
IGMP Snooping is enabled on this interface
IGMP Snooping fast-leave is not enabled
IGMP Snooping querier is not enabled
IGMP Snooping report suppression is enabled
```

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43.2.5 show ip igmp ssm-mapping

ƒu ३ IGMP ssm-map ˘ ƒu ३ Ю'

show ip igmp ssm-mapping (*A.B.C.D*)

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A.B.C.D	ফ্ৰ ৰূপ

IGMP ssm-map Â

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1' ssm-map

```
Ruijie# sh ip igmp ssm-mapping
```

```
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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44 PIM-DM

44.1 PIM-DM

44.1.1 ip pim dense-mode

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ip pim dense-mode

no ip pim dense-mode

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PIM-DM Â

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‡. ŏ ╟ PIM-DM ≠ a ৲ Â
ह ŏ ╟ PIM-DM ৶ ˘ IGMP ह ৴ ৲ Э ⁝ ╟ ŏ ╟˘ a
╟ Â
ƪu ३ ˘ ľ Failed to enable PIM-DM on < ৲ ৶
>, resource temporarily unavailable, please try again Ľ˘ Ą
ƪu ३ Â
ƪu ३ ˘ ľ PIM-DM Configure failed! VIF limit
exceeded in NSM!!! Ľ˘ ŋń ৲ ↑
৶ ৲ Э Â Ÿ ह ৲ Ю ŏ PIM-DM ˘
a PIM-DM PIM-SM DVMRP ৲ Â
a ह ৶ ৴ Э a ৶ ৲ a ৶ v4 ˜ Â

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim dense-mode
```

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44.1.4 ip pim query-interval

hello interval ˘ **ip pim query-interval** ħυ ३ Â

ħυ ३ no ৲ ᑎυ hello interval Â

ip pim query-interval *interval-seconds*

no ip pim query-interval

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	interval-seconds	৲ ن ѝ <1-65535>˘ ´ Æ ѝ

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hello interval˘ hello holdtime ѝ hello interval 3.5 Â

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim query-interval 123
```

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44.1.5 ip pim propagation-delay

hello propagation-delay ˘ **ip pim propagation-delay** ħυ ३ Â

ħυ ३ no ৲ ᑎυ hello propagation-delay Â

ip pim propagation-delay *interval-milliseconds*

no ip pim propagation-delay

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interval-milliseconds	৲ ন<1-32767>ˇ ´ Æ ѝ

500

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৲ propagation-delay. ৲ Â

Ю ৲ propagation-delay ѝ 600 Â

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim propagation-delay 600
```

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44.1.6 ip pim state-refresh disable

ج ৲ Э Ω ৲ PIM-DM 9 ˘ **ip pim state-refresh disable**
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	ip pim state-refresh disable ħυ ३
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origination-interval *65*

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44.2 PIM-DM

44.2.1 show ip pim dense-mode interface

PIM-DM ৰ ˘ **show ip pim dense-mode interface** ƚu ३ Â

show ip pim dense-mode interface [*interface-type interface-number*] [*detail*]

ৰ	
interface-type interface-number	ৰ ص ∩ ৰ ৰ

VIF Index	VIF ˆ ID˜
Ver/Mode	PIM /
Nbr Count	PIM-DM ৲

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show ip pim dense-mode neighbor	PIM-DM ৲

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44.2.2 show ip pim dense-mode mroute

PIM-DM ˘ show ip pim dense-mode mroute ħu ३ Â

show ip pim dense-mode mroute [*A.B.C.D A.B.C.D*] [*summary*]

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A.B.C.D A.B.C.D	ফ্র ∩ ফ্র
summary	

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ЛЫОħu ३ PIM-DM '

```
Ruijie# show ip pim dense-mode mroute
PIM-DM Multicast Routing Table
(1.1.1.111, 229.1.1.1)
MRT lifetime expires in 205 seconds
RPF Neighbor: 50.50.50.1, Nexthop:50.50.50.1,VLAN 4
Upstream IF: VLAN 4
Upstream State: Pruned, PLT:200
Assert State: NoInfo
```

```
Downstream IF List:
FastEthernet 0/45:
Downstream State: NoInfo
Assert State: Loser, AT:170
```

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44.2.3 show ip pim dense-mode neighbor

PIM-DM ˘ **show ip pim dense-mode neighbor** ħυ ३ Â

show ip pim dense-mode neighbor [*interface-type interface-number*]

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interface-type interface-number	ৰ صر ∩ ৰ ৰ

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ЛЫЮ й **show ip pim dense-mode neighbor** ħυ ३ '

```
Ruijie# show ip pim dense-mode neighbor
Neighbor-Address Interface     Uptime/Expires    Ver
10.10.10.1   FastEthernet 0/45 00:19:29/00:01:21  v2
50.50.50.1   VLAN 4            00:22:09/00:01:39  v2
```

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Neighbor-Address	فذ سم
Interface	б ৰ

Uptime/Expires	Л ч ν
Ver	PIM

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44.2.4 show ip pim dense-mode nexthop

PIM-DM Ю ˘ **show ip pim dense-mode nexthop** Ĥ ę Â

show ip pim dense-mode nexthop

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ЛЫĤ ę PIM-DM Ю '

```
Ruijie# show ip pim dense-mode nexthop
Destination  Nexthop   Nexthop   Nexthop   Metric Pref
               Num      Addr      Interface
1.1.1.111      1       50.50.50.1  VLAN 4     0     1
```

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Destination	فذ سم
Nexthop Num	Ю
Nexthop Addr	Ю فذ سم
Nexthop Interface	б Ю ń

Metric	
Pref	”I

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44.2.5 show ip pim dense-mode track

PIM-DM ˜ AÈ â ˘ #AQ4I’3Q’Áã

```
Assert:                    0          0
State-Refresh:             0          0
PIM-SM-Register:           0          0
PIM-SM-Register-Stop:      0          0
PIM-SM-BSM:                0           0
PIM-SM-C-RP-ADV:           0           0
Unknown Type:              0
Errors:
Malformed packets:         0
Bad checksums:             0
Unknown PIM version:      0
Send errors:                  0
```

配置	
show ip pim dense-mode track	PIM

说明	
无	

45 PIM-SM

45.1 PIM-SM

45.1.1 clear ip mroute

clear ip mroute {* | *group_address* [*source_address*] }

৭	
* Â	pimsm Â

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*	pimsm Â
group_address	pimsm Â
group_address source_address	pimsm Â

a

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‖ pimsm

```
Ruijie# clear ip mroute statistics *
Ruijie# clear ip mroute statistics 224.2.2.2
Ruijie# clear ip mroute statistics 224.2.2.2 2.2.2.2
```

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45.1.3 clear ip pim sparse-mode bsr rp-set

clear ip pim sparse-mode bsr rp-set *

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*	rp-set Â

a rp-set Â

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‖ ‖ RP Â

```
Ruijie# clear ip pim sparse-mode bsr rp-set *
```

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45.1.4 clear ip pim sparse-mode track

clear ip pim sparse-mode track

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```
Ruijie# clear ip pim sparse-mode track
```

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show ip pim sparse-mode track	-

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45.1.5 ip multicast-routing

ip multicast-routing

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‡˘ **ip pim sparse-mode** ƪ ३˘ pimsm ŭ ╟ Â

```
Ruijie (config)# ip multicast-routing
```

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ip pim accept-crp-with-null-group

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جھ BSR Э a prefix-count й 0 C-RP-ADV Â

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جھ BSR Э ħu ३˘ BSR й BSR ˘ prefix-count й 0 C-RP-ADV ˘ з й C-RP Â

```
Ruijie# configure terminal
Ruijie(config)# ip pim accept-crp-with-null-group
```

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45.1.9 ip pim accept-register list

ip pim accept-register list *access-list*

৭	
access-list	access-listť تن<100Ğ 199> ğ تن <2000Ğ 2699>˘ ħu ৶ acl

˘ a ħu ३˘ جھ RP Э a ⁸ ¨Ą فخ سم فخ سم

ħu ३

جھ RP Э˘ ⁸ فخ سم فخ سم ¨Ą

```
Ruijie (config)# ip pim accept-register list 100
```

```
Ruijie (config)# access-list 100 permit ip 192.168.195.0 0.0.0.255
225.1.1.1 0.0.0.255
```

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access-list	-

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45.1.10 ip pim bsr-candidate

ip pim bsr-candidate *interface-type interface-number* [*hash-mask-length*] [*priority-value*]

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interface-type interface-number	ʮ
hash-mask-length	˧ ˘ ʮ تن ท <0-32>˘ ท RP ⁸ HASH ˘ 10
priority-value	˧ ˘ ʮ تن ท <0-255>˘ BSR ˝l ʮ ˘ 64

˘ a ƚʋ ʇ˘ . a BSR

ƚʋ ʇ

جى PIM-SM مى ˘ جى ﺭ ʯ BSR Â BSR ˧ RP Â BSR ﺭ Ώ BSR Â جى BSR ɱ˘ C-BSR ท BSR˘ جى PIM-SM مى ʃʋ سمفخ 224.0.0.13 ˧ ˘ ꜛ ü BSR سمفخ ᑎ ˝l Â

ƚʋ ʇ ˧ ʃʋ ĭ BSR سمفخ ˧ PIM ˘ ʮ ˝l BSR ˧ ĭ ˘ ˧ ĭ ˘ سمفخ ท BSR سمفخ˘ ˧ ' ĭ ‡ Â ɱ BSR ท BSR˘ ĭ ÿ ˧ BSR ĭ ˘ ˜ ˧ BSR ˝l ˆ ˝l ˘ IP سمفخ˜ Â

```
Ruijie# configure terminal
Ruijie(config)# ip pim bsr-candidate g 0/3
Ruijie(config)# ip pim bsr-candidate g 0/3 30 192
```

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45.1.11 ip pim bsr-border

ip pim bsr-border

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й ⁸ BSM ˘ ˩ Ʃ ج ʍ Э BSR ˘ ʍ ↑ BSM ʎ
. ˘ BSM ≠ a ÿ ʍ ˩ Â

ج g 0/3 Э BSR

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim bsr-border
```

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45.1.12 ip pim dr-priority

ip pim dr-priority *priority-value*

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priority-value	˝I ˘ ˘ ˝I Â ته ѝ' <0-4294967294>˘ ѝ' 1 Â

˘ DR ˝I ѝ 1

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DR ˘ ƪO '
Â ৶ ঞ hello ˝I ৭ ˘ ঞ جه DR ˘ ˝I
˝I ˘ ˝I ˘ ѝ DR' ৶ ˝I ˘ ঞ˘
IP فخ سم ˘ DR Â
Â ৶ ঞ جه hello ˝I ৭ ˘ ঞ
ঞ DR ˘ IP فخ سم ˘ DR Â

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim dr-priority 10000
```

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˘ rp-set rp ˝l

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جھ rp ˘ rp ˝l ˘ ħu ३

```
Ruijie# configure terminal
Ruijie(config)# ip pim ignore-rp-set-priority
```

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45.1.14 ip pim jp-timer

ip pim jp-timer interval-seconds

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Interval-seconds	ৰ ন<1-65535>˘ ´ Æ Ù

˘ ৰ join/prune 60s

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ৰ join/prune

```
Ruijie# configure terminal
Ruijie(config)# ip pim jp-timer 50
```

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˘ ‡ PIM-SM a б ˆ peering˜ ˘ б
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```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim neighbor-filter 14
Ruijie(config-if)# exit
Ruijie(config)#access-list 14 deny
```

join ˘ ˽ Ю ˘ . Â

Ю ৲ ╗ ⁸ ╒

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim neighbor-tracking
```

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ip pim propagation-delay	-

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45.1.18 ip pim override-interval

ip pim override-interval *interval-milliseconds*

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interval-milliseconds	৲ ন<1-65535>˘ ´ Æ ঌ

˘ Hello Override-Interval 2500

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৲ Override-Interval Â

~	⅔ ĭ ā ˘ ˽ J/P-override-interval Â ˜ Э J/P-override-interval Join-Prune holdtime˘ ĭ ‡ ৲ Â ˘ Â

Ю ৲ Override-Interval ঌ 3000

```
Ruijie# configure terminal
Ruijie(config)# interface g0/3
Ruijie(config-if)# ip pim override-interval 3000
```

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ip pim propagation-delay-	-

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45.1.19 ip pim propagation-delay

ip pim propagation-delay *interval-milliseconds*

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interval-milliseconds	ƛ تن<1-32767>˘ ´ Æ ѝ

˘ Hello Propagation_Delay 500

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ƛ propagation-delay. Â

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J/P-override-interval Â ˜ Ɔ J/P-override-interval
Join-Prune holdtime˘ ĭ ‡ ˩ Â ˘
Â

Ю ƛ propagation-delay ѝ 600

```
Ruijie# configure terminal
Ruijie(config)# interface g0/3
Ruijie(config-if)# ip pim propagation-delay 600
```

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ip pim override-interval	-
ip pim neighbor-tracking	-

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˘ hello ৻ 30s

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Hello ৻ ˘ Hello ≠ ЛЦЮ ‡ ' Hello
й Hello ৻ 3.5 ' Hello ৻ * 3.5 >
65535˜ з Hello ৻ ⁸ й 18725 Â

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim query-interval 123
```

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45.1.22 ip pim register-decapsulate-forward

ip pim register-decapsulate-forward

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RP a Ą ৻ ɛ̀ Â

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ج RP Э ħυ ३ ˺ pimsm Ą
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```
Ruijie# configure terminal
Ruijie(config)# ip pim register-decapsulate-forward
```

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45.1.23 ip pim register-checksum-wholepkt

ip pim register-checksum-wholepkt [**group-list** *access-list*]

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access-list	access-list <1˘ 99> ą <1300˘ 1999>˘ ħu ɹ acl Â group-list access-list Â

˘ ”Ą Ո pim Ո ”Ą ˘ pim Â

ħu ३

ĭ ङ ”Ą Ո ङ pim ˜ ŭ ङ ˘ ´ ”Ą pim Â ङ ˘ ħu ३ Â

```
Ruijie# configure terminal
Ruijie(config)#ip pim register-checksum-wholepkt
Ruijie(config)#ip pim register-checksum-wholepkt group-list 99
Ruijie(config)# access-list 99 permit 225.1.1.1 0.0.0.255
```

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access-list	-

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45.1.24 ip pim register-rate-limit

ip pim register-rate-limit *rate*

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rate	ৰ register ˘ ৰ ন <1-65535>

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ˆ S˜ G˜ ”Ą ৰ ˘ a ”Ą
ৰ Âŭ ╟ ƚυ ३ æ DR Ω RP ˘ a ⁸ ”Ą
ৰ Â

```
Ruijie# configure terminal
Ruijie(config)# ip pim register-rate-limit 3000
```

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45.1.25 ip pim register-rp-reachability

ip pim register-rp-reachability

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```
Ruijie# configure terminal
Ruijie(config)# ip pim register-rp-reachability
```

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45.1.26 ip pim register-source

ip pim register-source {*local_address* | *interface-type interface-number*}

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local_address	̈Ą ip ƒ˘ ˢ
interface-type interface-number	˩ ip ˢ ̈Ą ip ƒ˘ ˢ

˘ ̈Ą IP б DR ˩ ƒ˘ ˢ Â

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̈Ą IP ƒ˘ ˢ Â

ƒ˘ ˢ ˩ Â RP ˩ Register-Stop ˘

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~	a PIM ŭ ╟ Â

```
Ruijie# configure terminal
```

ip pim rp-address *rp-address* [*access_list*]

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rp-address	RP ip فخ سم
access_list	৲ ˘ access-listť acl تن ѝ <1-99> ȁ <1300-1999>’ ≠ ƪυ ৲ acl Â ˘ Â

˘ rp فخ سم

ƪυ ३

RP˘ ≠ RP Ω BSR ⁸ ৲ Â ƪυ ३ Ю ˈ

Â BSR ⁸ Ω RP ৲ ˘ ˝I ╟ Â

Â RP فخ سم ৲ Λυ ɲ υ

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45.1.29 ip pim rp-candidate

ip pim rp-candidate *interface-type interface-number* [**priority** *priority-value*] [***i*nterval** *interval-seconds*][**group-list** *access_list*]

৭	
interface-type interface-number	৭
priority-value	৲ ˘ ৷ ৷ ন ঈ <0-255>˘ priority priority-value ˘ ”I 192
Interval-seconds	৲ ˘ ৷ ৷ ন ঈ <1-16383>˘ interval interval-seconds ˘ interval-seconds 60s
access_list	৲ ˘ acl ন ঈ 1-99’ ≠ ħυ ৲ acl’ group-list access_list ˘ Â

˘ Э RP

ħυ ३

ছ PIM-SM ˜ ˘ … RPT Л৬ RP ঈ ˘ ˘ ঈ Л
ÂRP RP Â ছ BSR ৷˘ C-RP ৲ BSR ´
C-RP ˘ ”Ą BSR ৲ PIM ঙ Â
৭ ঈ ন rp˘ ঋ ħυ ३ ৲ Л৬ Э acl Â
ন ৭ ঙ permit ace˘ a deny ace ৷ Â

```
Ruijie# configure terminal
Ruijie(config)# ip pim rp-candidate g 0/3
Ruijie(config)# ip pim rp-candidate g 0/3 priority 200 group-list
3 interval 70
Ruijie(config)# access-list 3 permit 225.1.1.1 0.0.0.255
```

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access-list	-

45.1.30 ip pim rp-register-kat

ip pim rp-register-kat *seconds*

৭	
seconds	KAT ৯ Â ৷ ন<1-65535>˘ ´ Æ ঈ Â

˘ RP Э KAT 210s Â

ƪυ ३

rp kat

```
Ruijie# configure terminal
Ruijie(config)# ip pim rp-register-kat 250
```

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45.1.31 ip pim sparse-mode

ip pim sparse-mode

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৷ Э ŭ pim sm ˘ ƪυ ३ Â

&	ج ŭ ╟ PIM-SM ŋń˘ ج ƗO ŭ ╟ ┤ ╥ ˘ ĭ ‡. ŭ ╟ PIM-SM˘ ≠ a ┤ Â ج ŭ ╟ PIM-SM ┘ ˘ IGMP ج ┘ ┤ Э ⁞ ╟ ŭ ╟˘ a ╟ Â ƪu ३ ˘ ľ Failed to enable PIM-SM on < ┤ ┘ >, resource temporarily unavailable, please try again Ł˘ Ą ƪu ३ Â ƪu ३ ˘ ľ PIM-SM Configure failed! VIF limit exceeded in NSM!!! Ł˘ ŋń ┤ ┤ Э ˘ a PIM-DM DVMRP ┤ Â a ج ┘ ┘ Э a ┘ ┤ a ┘ v4 ˜

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim sparse-mode
```

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45.1.32 ip pim spt-threshold

ip pim spt-threshold [**group-list** *access-list*]

┤

┤	
access-list	┘ ˘ access-list˙ acl ن ń 1-99 à 1300-1999˙ ≠ ƪu ┘ acl Â group-list access-list ˘ SPT ľ Â

rp spt ৲ ৷ ˘ ħu ३'
৲ ته SPT ˘ ‡ Э group-list
a group-list ˘ SPT Â

```
Ruijie# configure terminal
Ruijie(config)# ip pim spt-threshold
Ruijie(config)# ip pim spt-threshold group-list 12
Ruijie(config)# access-list 12 permit 225.1.1.1 0.0.0.255
```

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access-list	-

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45.1.33 ip pim ssm

ip pim ssm { **default** | **range** *access_list*}

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default	ته ۍ' 232/8
access_list	ته acl ته ۍ 1-99' ≠ ħu ৷ acl

SSM

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ŭ ╟ pim ssm ŭ ╟ pim ssm˘ ħu ३ Â

1' Ю ħu ३ ته 232/8 Â

```
Ruijie# configure terminal
Ruijie(config)# ip pim SSM default
```

2' Ю ħu ३ فخسم ۍ 10 Â

```
Ruijie(config)# ip pim SSM range 10
Ruijie(config)# access-list 10 permit 232.0.0.1 0.0.0.255
```

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access-list	-

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45.1.34 ip pim triggered-hello-delay

ip pim triggered-hello-delay *interval-seconds*

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interval-seconds	ƛ تن<1-5>ˇ ´ Æ ƙ

ˇ Triggered-Hello-Delay 5s Â

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ƛ Triggered-Hello-Delay Â ƛ • ŭ ╟ ƛ ˆ
ˇ Triggered-Hello-Delay ˇ جھ ˇ ƛ
ƛ hello Â

Ю ƛ Triggered-Hello-Delay ƙ 3s Â

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim triggered-hello-delay 3
```

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45.2 PIM-SM

45.2.1 show debugging

show debugging

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/ /

```
Ruijie #show debugging
show debugging
Ruijie #show debugging
ip packet debug:
ip packet debug debugging is on, acl: 0
```

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45.2.2 show ip pim sparse-mode bsr-router

show ip pim sparse-mode bsr-router

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a BSR

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	BSR		

```
Ruijie# show ip pim sparse-mode bsr-router
```

ƪO **show ip pim sparse-mode bsr-router**

```
Ruijie# show ip pim sparse-mode bsr-router
```

ƫ ३ / / ৲

PIM SM ৲ ˘ ЛЫЮ Ь ƫ ३ Â

```
Ruijie#show ip pim sparse-mode interface g 0/4 detail
Ruijie#show ip pim sparse-mode interface
Ruijie#show ip pim sparse-mode interface g 0/3
```

Ю **show ip pim sparse-mode interface detail**

```
Ruijie #show ip pim sparse-mode interface detail
GigabitEthernet 0/3 (vif 3):
  Address 30.30.100.200, DR 30.30.100.200
  Hello period 30 seconds, Next Hello in 11 seconds
  Triggered Hello period 5 seconds
  Neighbors:
   2.2.2.2
```

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45.2.4 show ip pim sparse-mode local-members

show ip pim sparse-mode local-members [*interface-type interface-number*]

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interface-type interface-number	৶ ˘ ৲ ˘ ƫ ३ ৲

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PIM SM ৲ Э ৷ IGMP Â

```
Ruijie# show ip pim local-members
Ruijie# show ip pim local-members g 0/3
Ю          sh ip pim sparse-mode local-members
Ruijie (config-if)#sh ip pim sparse-mode local-members
PIM Local membership information
GigabitEthernet 0/3:
(*, 225.1.1.1) : Include
Loopback 1:
GigabitEthernet 0/5:
```

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45.2.5 show ip pim sparse-mode mroute

show ip pim sparse-mode mroute {*group_address* | *source_address* | }

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group_address	A.B.C.D ফ ৷ Â
source_address	A.B.C.D ফ ৷ Â
	a ɛ ফ ৷ ফ˘ (˘)

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ফ˘ a ɛ ফ ফ Â a ৲ ч ফ ч
ফ Â

```
Ruijie# show ip pim sparse-mode mroute
Ruijie# show ip pim sparse-mode mroute 40.40.40.11
Ruijie# show ip pim sparse-mode mroute 235.0.0.1
Ruijie# show ip pim sparse-mode mroute 235.0.0.1 40.40.40.11
```

IO **sh ip pim sparse-mode mroute**

```
Ruijie (config-if)#sh ip pim sparse-mode mroute
```

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配置	
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45.2.7 show ip pim sparse-mode nexthop

show ip pim sparse-mode nexthop

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Ю ˘ ↑ Ю ʔ ʔ˘ ƒƣ˘ metric Â

```
Ruijie# show ip pim sparse-mode nexthop
```

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45.2.8 show ip pim sparse-mode rp mapping

show ip pim sparse-mode rp mapping

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Э rp˘ Лھ ۱ ۶

```
Ruijie #show ip pim sparse-mode rp mapping
Ю
Ruijie (config)#sh ip pim sparse-mode rp mapping
PIM Group-to-RP Mappings
Group(s): 224.0.0.0/4
RP: 30.30.200.1
Info source: 30.30.200.1, via bootstrap, priority 192
Uptime: 00:00:51, expires: 00:01:39
RP: 30.30.100.1
Info source: 30.30.200.1, via bootstrap, priority 192
Uptime: 00:19:14, expires: 00:01:38
Group(s): 224.0.0.0/4, Static
RP: 100.100.100.100
Uptime: 00:45:35
```

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45.2.9 show ip pim sparse-mode rp-hash

show ip pim sparse-mode rp-hash *group-address*

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group-address	فخ سم

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فذ سم RP Â

```
Ruijie# show ip pim sparse-mode rp-hash 225.1.1.1
Ю
Ruijie# show ip pim sparse-mode rp-hash 225.1.1.1
RP: 30.30.100.1
Info source: 30.30.100.1, via bootstrap
```

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45.2.10 show ip pim sparse-mode track

show ip pim sparse-mode track

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ÿ ˆ ˇ ˅ Ω PIM Â ˘ ╟ ˇ
˘ clear ip pim sparse-mode track ˇ
PIM ৷ Â

Ю **show ip pim sparse-mode track**

```
Ruijie # show ip pim sparse-mode track
              PIM packet counters track
Elapsed time since counters cleared: 00:04:03
                        received    sent
Valid PIMSM packets:     0           8
```

```
Hello:                    0          8
Join-Prune:               0          0
Register:                 0          0
Register-Stop:            0          0
Assert:                   0          0
BSM:                      0          0
C-RP-ADV:                 0          0
PIMDM-Graft:              0
PIMDM-Graft-Ack :         0
PIMDM-State-Refresh:      0
Unknown PIM Type:         0
Errors:
Malformed packets:                 0
Bad checksums:                     0
Send errors:                       0
Packets received with unknown PIM version:    0
```

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协议说明

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46 IPv4

46.1 IPv4

46.1.1 clear ip mroute

Ĥu ʒ IP ˩ Â

clear ip mroute {* | *group-address* [*source -address*]}

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*	˩ Â
group-address	ƒƫ ƨ Â
source -address	ƒƫ ƨ Â

Ĥu ʒ Â

ЛЫЮ й ج ƒƫ ƨ й 230.0.0.1 '

```
Ruijie# clear ip mroute 230.0.0.1
```

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clear ip mroute statistics {***** | *group-address* [*source -address*]}

৭	
*	৭ Â
group-address	فخ سم Â
source -address	فخ سم Â

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IP Â

ЛЫЮ й جم فخ سم й 230.0.0.1 '

```
Ruijie# clear ip mroute statistics 230.0.0.1
```

ЪU ३	
show ip mroute	-

rpf-address	٨
interface-type interface-number	٨ صر Ω ٨ ٨
distance	˘ α ĭ RPF Â й Ơ ٨ تن й <0-255>

a *Distance*˘ *Distance* й 0

Ъ ę Â

Ъ ę ”I ´ ˜ ˆ ˘ ў RFF
Â ”I ÿ´ ˜ ˜ ˆ Â
٨ Ю ip˘ ж ٨ й صر Â
rpf ‡ ' ÿ ˘ ٨ جه bgp Ω
˘ ‡ ”I’ ÿ´ ´ ’ γ
˘ й rpf ’ ٨ distance˘ distance
й rpf ’ distance ٨˘ й rpf

ЛЫЮ ٨ 172.30.10.13ę

```
Ruijie(config)# ip mroute 172.16.0.0 255.255.0.0  172.30.10.13
```

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46.1.4 ip multicast boundary

IP تن IP Â Ъ ę **no** Â

ip multicast boundary *access-list*

no ip multicast boundary *access-list*

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access-list	IP access-list й ACL

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ƕʋ ʢ	ﾑ
	IP ټ IP Â ƕʋ ʢ ACL ˧Ꮑ ACL˘ ≠ ˧Ꮑ ACL˘ ACL ˧ ˥ ﺴﻔﺨ˘ a ˥ ﺴﻔﺨ Â ~ ƕʋ ʢ ˧Ꮑ Ꮑ IP ټ IGMP ầ PIMSM ˜ ˘ a ÿ ﾑ Ꮑ Â

svi1 ӥ IP Â

```
Ruijie(config)# ip access-list mul-boun
Ruijie(config-std-nacl)# permit ip 233.3.3.0 0.0.0.255
Ruijie(config-std-nacl)# exit
Ruijie(config)# interface vlan 1
Ruijie(config-if)# ip multicast boundary mul-boun
```

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limit й 1024

threshold й 2147483647

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Ъu ३ ⁸ ╗ ⁾ IPv6 Â

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Ю Â

ЛuЮ ⁸ й 500 Â

```
Ruijie(config)# ip multicast route-limit 500
```

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46.1.6 ip multicast-routing

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ip multicast-routing

no ip multicast-routing

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Ъu ३ ŭ ╟ IPv4 ⅃ Â ŭ ╟ IPv4 ⅃ ˘ ~ ≠ a ŭ ╟ Â

~	ŭ ╟ IPv4 ╥ ˘ Ъυ ३ Â ╥ Ω IGMP snooping ╥ Â ˘ ŭ ╟ IGMP snooping ╥ ˘ ж Ъυ ३ a

&	a ж ⌟ ⌟ Э a ⌟ ⌟ a ⌟ v4 ~

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```
Ruijie(config)# ip multicast-rounting
```

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	~ й Ў ˩ ! Â

	ЛЪЮ (192.168.43.4˜ 225.1.1.5) ˩ ў GigabitEthernet 2/6 Ո FastEthernet 3/2 ˩ Â
	`ruijie(config)# ip multicast static 192.168.43.4 225.1.1.5 G2/6`
	`ruijie(config)# ip multicast static 192.168.43.4 225.1.1.5 F3/2`

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46.1.8 ip multicast ttl-threshold

Ъ ъ ˩ TTL^ Time-To-Live˜ Â Ъ ъ **no** Ъ ъ Â

ip multicast ttl-threshold *ttl-value*

no ip multicast ttl-threshold

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ttl-value	˩ TTL , ˩ ش 0~255 Â

	ttl-value й 0 Â

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˩ Л й ˩ TTL Â TTL ˩ ˘ ‡ ˩ Л ˩ ˘ ‡ Â TTL ˘ ˩ ج Ь ˩ Э Â

ЛЪЮ ˩ Э TTL й 5

`Ruijie(config-if)# ` **`ip multicast ttl-threshold`** *`5`*

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46.1.9 ip multicast rpf longest-match

RPF ‡ї ⁝ ÿ ąMBGP ąґ ы ы RPF
ąMBGP Ґ Â

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Ъu ъ˘ ÿ Ь ї ’ ”І ы˘ ‡
ąMBGP ąґ Â

Ъu ъ **no** Ъu ъ Â Ю˘ ÿ Ь ”І
’ ”І ы˘ ‡ ąMBGP ąґ
Â

ip multicast rpf longest-match

no ip multicast rpf longest-match

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RPF ‡ї ⁝ ÿ ąMBGP ąґ ы ы RPF
ąMBGP Ґ Â ÿ Ь ”І ’
”І ы˘ ‡ ąMBGP ąґ ɑ ɳ ṇ

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	-	10.4 2 ใบ ๓

46.2 IP

46.2.1 show ip mroute

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show ip mroute [*group-address*] [*source-address*] [**dense**][**sparse**] [**summary**] [**count**]

๗	
group-address	สมาชิก Â
source-address	สมาชิก Â
dense	PIMDM
rse	PIMSM
summary	Â

```
FastEthernet 1/3
```

2' ЛЫЮ

```
Ruijie# show ip mroute 10.10.1.52 224.0.1.3
IP Multicast Routing Table
Flags: I - Immediate Stat, T - Timed Stat, F - Forwarder installed
Timers: Uptime/Stat Expiry
Interface State: Interface (TTL)
(10.10.1.52, 224.0.1.3), uptime 00:03:24, stat expires 00:01:28
Owner PIM-SM, Flags: TF
Incoming interface: FastEthernet 2/1
Outgoing interface list:
FastEthernet 1/3
```

3' ЛЫЮ

```
Ruijie# show ip mroute count
IP Multicast Statistics
Total 1 routes using 132 bytes memory
Route limit/Route threshold: 2147483647/2147483647
Total NOCACHE/WRONGVIF/WHOLEPKT recv from fwd: 1/0/0
Total NOCACHE/WRONGVIF/WHOLEPKT sent to clients: 1/0/0
Immediate/Timed stat updates sent to clients: 0/0
Reg ACK recv/Reg NACK recv/Reg pkt sent: 0/0/0
Next stats poll: 00:01:10
Forwarding Counts: Pkt count/Byte count, Other Counts: Wrong If pkts
Fwd msg counts: WRONGVIF/WHOLEPKT recv
Client msg counts: WRONGVIF/WHOLEPKT/Imm Stat/Timed Stat sent
Reg pkt counts: Reg ACK recv/Reg NACK recv/Reg pkt sent
(10.10.1.52, 224.0.1.3), Forwarding: 2/19456, Other: 0
Fwd msg: 0/0, Client msg: 0/0/0/0, Reg: 0/0/0
```

4' ЛЫЮ

```
Ruijie# show ip mroute summary
IP Multicast Routing Table
Flags: I - Immediate Stat, T - Timed Stat, F - Forwarder installed
Timers: Uptime/Stat Expiry
Interface State: Interface (TTL)
(10.10.1.52, 224.0.1.3), 00:01:32/00:03:20, PIM-SM, Flags: T
```

Flags	I- . T- F- ʔ ৷
Timers:Uptime/Stat Expiry	… ˘ ɤ
Interface State	৷
Owner	˘ ৷ ~
Incoming interface	৷˘ ৷ б a ˘
Outgoing interface list	৷ ˘ ج ৷ Э ৷ ৷
Forwarding Counts' Pkt count/Byte count,	৷ ' ৷ /
Other Counts: Wrong If pkts	ʔ ৷

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ip multicast-routing	Ŭ ╟ ৷
ip pim dense-mode	ج ৷ Э Ŭ ╟ PIM-DM
ip pim sparse-mode	ج ৷ Э Ŭ ╟ PIM-SM

```
RPF recursion count: 0
Doing distance-preferred lookups across tables
Distance: 0
Metric: 0 RPF information for 192.168.1.54
RPF interface: VLAN 1
RPF neighbor: 0.0.0.0
RPF route: 192.168.1.0/24
RPF type: unicast (connected)
RPF recursion count: 0
Doing distance-preferred lookups across tables
Distance: 0
Metric: 0
```

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46.2.4 show ip mvif

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show ip mvif { *interface-type interface-number* }

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interface-type interface-number	ƛ

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```
Ruijie# show ip mvif vlan 1
```

```
Interface          Vif   Owner     TTL  Local            Remote
Uptime
Idx   Module       Address        Address
VLAN 1          1     PIM-DM    2    192.168.1.1      0.0.0.0
00:13:16
```

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46.3 IP

46.3.1 debug nsm mcast all

Â ใช้งาน **no**

debug nsm mcast all

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46.3.2 debug nsm mcast fib-msg

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debug nsm mcast fib-msg

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```
Ruijie# debug nsm mcast fib-msg
```

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46.3.3 debug nsm mcast register

Ä ʃ ʃ Ä **no**

debug nsm mcast register

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```
Ruijie# debug nsm mcast register
```

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46.3.4 debug nsm mcast stats

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debug nsm mcast stats

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```
Ruijie# debug nsm mcast stats
```

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46.3.5 debug nsm mcast vif

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debug nsm mcast vif

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```
Ruijie# debug nsm mcast vif
```

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47 IPv6

47.1

47.1.1 ping ipv6

ƚυ ३ IPV6 Â

ping ipv6 [*ipv6-address*]

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ipv6-addres	*s* فخ سم

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جم ƚυ ३ a فخ سم ‡ ˘ ⅃ ⅄υ ε ⅄ ৭ Â

```
Ruijie# ping ipv6 fec0::1
```

جم ping هى ⅄ ⅄ ŭ ƚ ƚ Ю'

!	⅃ ⅄
.	⅃ جم ⅄
U	⅄ ŷ
R	৭
F	
A	فخ سم
D	৭ Down ৭ IPV6 ╗ (⅄ فخ سم ŭ)
?	

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47.1.2 ipv6 address

ئى ئا IPV6 فىز سىم ,

IPV6 ʌ … ʒ й UP ж й ʌ ╟ ѕѕ

ƒ Â

ʌ IPv6 ѕ ƒ ≠ ˩ Л ʊ ɱ ⁸ Â ɛ̀ ⁸ IPv6 ѕ ƒ =

ipv6 address autoconfig [**default**]

no ipv6 address autoconfig

৭	
default	৷ ৭ Â Э ˘ ж ╟ম ফ ˘ Â ৷ ৷ Ь ৭ **default** Â

ƒu ३ ৭

╟ম ফ ˆ RA ˆ ˆΩ ˜ ˘ ৷ ∫υ RA ৸ ╟ EUI-64 ৭ ফ ম Â

ˆ RA ü ľ è Ľ ˘ ж ৭ DHCPv6 ৷ ľ è Ľ Â ľ è Ľ DNS ╘ ৷ IPv6 ম ফ à NTP ╘ ৷ IPv6 ম ফ Â

no ipv6 address autoconfig ƒu ३ ৭ Э IPv6 ম ফ Â

```
Ruijie(config-if)# ipv6 address autoconfig default
Ruijie(config-if)# no ipv6 address autoconfig
```

ƒu ३	
ipv6 address *ipv6-prefix/prefix-length* [**eui-64**]	৭ IPv6 ম ফ

৷ ৷ Â

ƒu ३ ৭ ৷	
RGOS10.4	ƒu ३ ÿ RGOS10.4 Â

47.1.4 ipv6 enable

ƒu ३ ৭ IPv6 ╖ ˘ ƒu ३ no ৷ ∫υ IPv6 ╖ Â

ipv6 enable

no ipv6 enable

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ʌ IPv6 ╥ Â

ƚu ३ ʌ

2 ⌋ Л∪ ʌ Э IPv6 ╥ ˘ ج ʌ Ю **ipv6 enable** ƚu ३ , γ ج ʌ Ю IPv6 فخ سم Â

~ ج ʌ Э IPv6 فخ سم ⌧ ʌ IPv6 ╥ ╟ ˘ . **no ipv6 enable** ≠ a IPV6 ╥ Â

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

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show ipv6 interface	ʌ

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47.1.5 ipv6 general-prefix

IPv6 ɱ ˘ ج Ю **ipv6 general-prefix** ƚu ३ Â ƚu ३ Ю'

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

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

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ʌ	
prefix-name	ɱ ⌋ Â
ipv6-prefix	ɱ ɱ Â RFC4291 ʌ Â
prefix-length	ɱ Â

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⅃ Ʃυ Â ɱ ⅃ ע ˘ ɱ ɱ ⅃ ע Â
⁄⁄ ⅃ ע ˘ ⅃ Ю ɱ ˙ ⅃ Â
ɱ ⅃ Ʃυ ↑ ü ɱ Â
ɱ ج ⅃ IPv6 فذسم Ɜ Â

Ю ɱ ⅃ my-prefix Â

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

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ƚυ ३	
ipv6 address prefix-name sub-bits/prefix-length	ɱ ⅃ فذسم
show ipv6 general-prefix	ɱ

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RGOS10.4	ƚυ ३ ÿ RGOS10.4 Â

47.1.6 ipv6 hop-limit

ج Ю ƚυ ३ ⅃ ´ Â

ipv6 hop-limit value

no ipv6 hop-limit

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```
config)# 1 Tf-03001340920.
```

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ค่าเริ่มต้น	ค่า
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ipv6 nd ns-interval *milliseconds*

no ipv6 nd ns-interval

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milliseconds	˘ Л υ й ´ Æ˘ ىتن 1000-4294967295

ج Ы Ω˜ (RA) й 0( )˘ ج ৻ й й 1000ms(1) Â

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ج Ы Ω˜ (RA) ৻ ৻˘ ৲ ≠ Â a Â

```
Ruijie(conifg-if)# ipv6 nd ns-interval 2000
```

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Ħυ ३	
show ipv6 interface	৲

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prefix-length	IPV6 ɱń ˘ ɱń ╗ Э'/' Â
valid-lifetime	ў ↑ Ɣ ̀Ω̂ ɱń ʌ ѝ Â
preferred-lifetime	ў ↑ Ɣ ̀Ω̂ ɱń ʌ ѝ Â
at *valid-date preferred-date*	̀Ω̂ ɱń Ω ˘ Λυ ȁ ȁ ȁ ȁ↑ Â
infinite	Â
default	৲ Â
no-advertise	ɱń a Ɣ ̀Ω̂ Â

```
Ruijie(conifg-if)# ipv6 nd prefix 2001::/64 infinite 2592000
  2ʹ        ৲ SVI 1 Ɔ  ɱ        ৲  (a ৷  ফ্ৰ  ╟   )
Ruijie(conifg)# interface vlan 1
Ruijie(conifg-if)# ipv6 nd default no-autoconfig
ج      Ю      ╗   ɱ ˘ a        ৲ ˘   ঋ              ৲ .   ɱ
≠  a ৷  ফ্ৰ  ╟      Â
```

Ъ ъ

Ъ ъ	
show ipv6 interface	^ ra-info Â
ipv6 nd ra-interval	Ы Ω ^ ^ Â
ipv6 nd ra-hoplimit	Ы Ω ^ ^ Â
ipv6 nd ra-mtu	Ы Ω ^ ^ MTU Â

^

Ъ ъ ^ ^

^	
-	-

47.1.12 ipv6 nd ra-interval

Ъ ъ ^ Э ^ Ы Ω ^ ^ (RA) ˘ Ъ ъ no Â

ipv6 nd ra-interval {*seconds* | *min-max min_value max_value*}

no ipv6 nd ra-interval

^

^	
seconds	Ы Ω ^ ^ (RA) Ω ^ ^ ^ Â Л Ъ й ´ Æ Â
min-max	˜ ^ ^ Ω Â
min_value	˜ ^ ^ Â
max_value	˜ ^ ^ Â

200 ˘ ^ ^ 200 Э Ю ╟ 20 Â

Ъ ъ ^ Â

' ˘ ж a Ы Â
^ ˘ й Э è ^ ^ Ы Ω ^ ^ ´ ˘ Л Ъ
^ ^ Э ╟ ' ^ Â
min-max˘ ж ^ ^ Ω
Â

```
Ruijie(config)# interface vlan 1
Ruijie(config-if)# ipv6 nd ra-interval 110
Ruijie(config-if)# ipv6 nd ra-interval min-max 110 120
```

ƚu ३

ƚu ३	
show ipv6 interface	৲ ra-info Â
ipv6 nd ra-lifetime	Â
ipv6 nd ra-hoplimit	ঝ ‘Ω˜ Â
ipv6 nd ra-mtu	ঝ ‘Ω˜ MTU Â

৲

ƚu ३ ৲

৲	
-	-

47.1.13 ipv6 nd ra-hoplimit

ƚu ३ ৲ ৩ ৲ ঝ ‘Ω˜ (RA) ˘ ƚu ३ no Â

ipv6 nd ra-hoplimit *value*

no ipv6 nd ra-hoplimit

৲

৲	
value	(RA) ə

ƚu ३

ƚu ३	
show ipv6 interface	৲ ra-info Â
ipv6 nd ra-lifetime	Â
ipv6 nd ra-interval	ঝ ঠ ৲ Â
ipv6 nd ra-mtu	ঝ ঠ MTU Â

৲

ƚu ३ ৲

৲	
-	-

47.1.14 ipv6 nd ra-mtu

ƚu ३ ৲ ৩ ৲ ঝ ঠ (RA) MTU ˘ ƚu ३ no Â

ipv6 nd ra-mtu *value*

no ipv6 nd ra-mtu

৲

৲	
value	ঝ ঠ (RA) MTU Â

৲ IPv6 MTU Â

ƚu ३ ৲ Â

ঋ ʊ ঝ ঠ a MTU Â

```
Ruijie(config)# interface vlan 1
Ruijie(config -if)# ipv6 nd ra-mtu 1400
```

ƚu ३

ƚu ३	
show ipv6 interface	৲ **ra-info** Â
ipv6 nd ra-lifetime	Â
ipv6 nd ra-interval	ঝ ঠ ৲ Â

ipv6 nd ra-hoplimit	⅄ ‘Ω̃ Â

⅄

ħυ ३ ٦ ⅄		
	⅄	
	-	-

47.1.15 ipv6 nd reachable-time

ħυ ३ ٨ Э NDP ╟ ˆ ج ⅃ ⅄˘ ѝ ⅃ˆ
˘ ħυ ३ no Â

ipv6 nd reachable-time *milliseconds*

no ipv6 nd reachable-time

٨		
	٨	
	milliseconds	ѝ ⅃ˆ ˘ ⅄υ ѝ ´ Æ˘ ‘ت 0-3600000

ج ⅄ ‘Ω̃ (RA) ѝ 0( )˘ ج ⅃ ѝ
ѝ ⅃ˆ ѝ 30000ms(30)

ħυ ३ ٨

a ⅃ ˘ ٩ ⅃⅄υ
ˆ ˘ ã Â ج a
Â
ج ⅄ ‘Ω̃ (RA) ⅃ ⅄˘ ⅃ ≠ Â
ѝ 0 ˘ . Â

```
Ruijie(conifg-if)# ipv6 nd reachable-time 1000000
```

ħυ ३		
	ħυ ३	
	show ipv6 interface	٨

⅄

IPv6 ƕ ३

৭	
ipv6-address	IPV6 ফ্রস্ত RFC4291 ৮৯ ফ্রস্ত Â
interface-id	জ ৯ ↑ Routed Port,L3 AP ৭ ∩ SVI ৭ ~ Â
hardware-address	ফ্রস্ত . ∏ XXXX.XXXX.XXXX 48 Æ MAC ফ্রস্ত 'X' ˉ Ω ⁸ Â

Â

ƪ ३ Â

ƪ ३ ARP ƪ ३ ৲ জ IPV6 ৭ Ɔ

NDP ↑ জ ˘ ৯ ╟ ╟

й Â ˘ Reachble Â ˘

IPV6 ফ্রস্ত б ৭ Ɔ ফ্রস্ত a ৭ ^ a জ ৭ IPV6

ফ্রস্ত ˘ б ৭ ফ্রস্ত ǎ ~ ˘ ↑ a mac ফ্রস্ত

৷ Â ˘ inactive ˘ ৷ ∏ show ipv6 neighbor static ƪ ३

Â

clear ipv6 neighbors ƪ ३ ╟ ↑ (NDP) Â

show ipv6 neighbors ƪ ३ Â

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

Ъ ъ˘ ч 8 س س ف ن ЙЙ س ف Â ľ **no ipv6 ns-linklocal-srd**ľ˘ ч a 8 س س ف ن ЙЙ س ف˘ IPv6 س ف RFC3484 س س ف ´ س ف Â

ipv6 ns-linklocal-src

no ipv6 ns-linklocal-src

ч	
-	-

ч ˘ Л س س ف ن ЙЙ س ف Â

Ъ ъ Â

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

Ъ ъ	
-	-

ЛЛ

Ъ ъ ˥ ЛЛ	
-	-

47.1.19 ipv6 redirects

ج ЛЭ ĵ IPV6 Л ÿ Л ч ЛЛ Л Ъ ъ 8 ĭ ج ЛЭ ч ICMPv6 Л ˘ Ъ ъ no Э a ч ICMPv6 Л Â

ipv6 redirects

no ipv6 redirects

ч	
-	-

ج IPV6 ЛЭ ч ICMPv6 Л Â

ƚu ३ ^

ICMPv6 ↑ 8 ˘ ┘Л└ 10
ICMPv6 (10pps) Â

```
Ruijie(conifgf)# interface vlan 1
Ruijie(config-if)# ipv6 redirects
```

ƚu ३

ƚu ३	
show ipv6 interface	^

ᴶ

ƚu ३ ˥ ᴶ

ᴶ	
-	-

ƕυ ʅ

~ S5750 ̥ ˩ ɱ ث [0,64] [128,128]˘ ʃu ɱ ث [0,64] [128,128] Â

~ سم فخ Ю سم فخ سمسم فخ ѫ ^| ˘ 3 سم فخ سمسم فخ Ю ≠ سمسم فخ Â جِ سم فخ Ռ Ю سم فخ a سم فخ˘ Ю Ռ ^| ˘ ѫ Ю ˥ ^| Ռ ^| Â

22C64 535>6.01CT37BT /174.9 BT /TT0 1 Tf 10.02 0 0 105 142.32 694.7003 425.66Tj /CS0 cs

	ج й 0 ص ' ل ط ˘ Лu ج Ю ل IPv6 ˘ Ÿ فخ سم 0 ص IPv6 Â

```
Ruijie(conifg)# no ipv6 source-route
```

ƒu ३	ƒu ३	
	-	-

ل	

ƒu ३ ٦ ل	٨	
	-	-

47.1.22 tunnel destination

ƒu ३ й ٨ è فخ سم , ƒu ३ no ƒu ३ فخ سم Â

tunnel destination {*ipv4-address* | *ipv6-address*}

no tunnel destination

	٩	
٩	*ipv4-address*	فخ سم , ١ IPv4 فخ سم Â
	ipv6-address	فخ سم Â tunnel mode ipv6˜ ж فخ سم IPv6 فخ سم Â tunnel mode gre ipv6˜ ж فخ سم ≠ IPV6 فخ سم

```
Ruijie(config-if)# tunnel mode ipv6ip
Ruijie(config-if)# tunnel source vlan 1
Ruijie(config-if)# tunnel destination 192.168.5.1
```

Ĥu ३

Ĥu ३	
tunnel source	فذ سم
tunnel mode	
tunnel ttl	TTL

ৰ

Ĥu ३ ৭ ৰ

ৰ	
-	-

47.1.23 tunnel mode ipv6

Ĥu ३ IPV6 ˘ ৰ Л IPv4 IPv6 Â Ĥu ३ no ص Â Ĥu ३ Ю'

tunnel mode ipv6

no tunnel mode

ৰ

ৰ	
-	-

ipv6ip Â

Ĥu ३ ৰ

Ĥu ३ ৰ Л 4over6 6over6 Â

Ю '

```
Ruijie(config)# interface tunnel 1
Ruijie(config-if)# tunnel mode ipv6
Ruijie(config-if)# tunnel source vlan 1
```

Ĥu ३

Ĥu ३	

tunnel source	فخ سم
tunnel destination	فخ سم
tunnel ttl	TTL

ৗ ৗ Â

Ĥu ३ ৭ ৗ

ৗ	
RGOS10.4	Ĥu ३ ÿ RGOS10.4 Â

47.1.24 tunnel mode ipv6ip

Ĥu ३ IPV6 ص, Ĥu ३ no Ĥu ३ IPv6 ص Â

tunnel mode ipv6ip [**6to4** | **isatap**]

no tunnel mode

৭

৭	
6to4	ù 6to4 ╟ Â
isatap	ù ISATAP ╟ Â

… IPv6 ص ù Â

Ĥu ३ ৭ Â

৭ … ù ˘ Ĥu ३ tunnel mode ipv6ip a ≠ ù Â ╟ ù ȅ فخ سم Â

Ю 6to4 '

```
Ruijie(config)# interface tunnel 1
Ruijie(config-if)# tunnel mode ipv6ip 6to4
Ruijie(config-if)# tunnel source vlan 1
```

Ĥu ३

Ĥu ३	
tunnel source	فخ سم
tunnel destination	فخ سم
tunnel ttl	TTL

ƕu ३ ٦ ৶	৶	
	-	-

47.1.25 tunnel mode gre

ƕu ३ GRE ص, ƕu ३ no ƕu ३ L{F'0☒

ƒu ३ ٦ ৶	৸	
	-	-

47.1.26 tunnel source

ƒu ३ ѝ ৸ è ফ্রস্ত, ƒu ३ no ƒu ३ ফ্রস্ত Â

tunnel source {*ipv4-address* | *ipv6-address* | *interface-type interface-number*}

no tunnel source

৸	৸	
	ipv4-address	IPv4 ফ্রস্ত˘ IPv4 ফ্রস্ত ѝ জ ফ্রস্ত Â
	ipv6-address	tunnel mode ipv6 tunnel mode gre ipv6˜ ফ্রস্ত IPv6 ফ্রস্ত Â ৸ a ফ্রস্তস্ত ѝ ফ্রস্ত Â
	interface-type interface-number	ফ্রস্ত ৸˘ ipv6ip˘ ‡ ৸ ў ipv4 ফ্রস্ত ѝ জ IPv4 ফ্রস্ত' ipv6˜ ‡ ৸ ipv6 ´ ফ্রস্ত ѝ জ IPv6 ফ্রস্ত Â

ফ্রস্ত Â

ƒu ३ ৸

ফ্রস্ত ৲ Л IPv4 ফ্রস্ত ≠ ৲ Л ৸ Э IPv4 ফ্রস্ত,
╟ (6to4 Ω isatap) ৸ è ফ্রস্ত Â

a জ ৶ Э è صر à ফ্রস্ত Ω ফ্রস্ত
~ ৲ Â
জ ╟ ˘ ╟ ফ্রস্ত a ৲ Â

IPv6 '

```
Ruijie(config)# interface tunnel 1
Ruijie(config-if)# tunnel mode ipv6ip
Ruijie(config-if)# tunnel source vlan 1
Ruijie(config-if)# tunnel destination 192.168.5.1
```

ƚu ʒ	
tunnel mode	
tunnel destination	فذ سم
tunnel ttl	TTL

ƛ

ƚu ʒ ʔ ƛ	ʎ	
	-	-

47.1.27 tunnel ttl

IPv6 over IPv4 ˘ ƚu ʒ IPv4 TTL Â IPv4 over IPv6 Ω IPv6 over IPv6 صر ˘ ƚu ʒ IPv6 ⁸ Â ƚu ʒ no ƚu ʒ 255 Â

tunnel ttl *value*

no tunnel ttl

ʎ	
value	TTL

255 Â

ƚu ʒ ʎ

IPv6 over IPv4 ˘ ƚu ʒ IPv4 TTL Â IPv4 over IPv6 Ω IPv6 over IPv6 صر ˘ ƚu ʒ IPv6 ⁸ Â

```
Ruijie(config)# interface tunnel 1
Ruijie(config-if)# tunnel ttl 64
```

ค่าเริ่มต้น

ค่าเริ่มต้นการใช้งาน	
-	-

47.2

47.2.1 clear ipv6 neighbors

‖ ˜ ˚ Â

clrear ipv6 neighbors

৭	
-	-

ƚυ ३ ƚυ ३ ৲ ƱƱ ৲ ‖ ˜ ˚ ˘ a Â

```
Ruijie# clear ipv6 neighbors
```

ƚυ ३	
ipv6 neighbor	
show ipv6 neighbors	

৲

ƚυ ३ ৭ ৲	৲	
	-	-

47.2.2 show ipv6 general-prefix

ŋ́ ŋ́ ˘ **show ipv6 general-prefix** ƚυ ३ Â ƚυ ३ Ю'

Ĥu ३

show ipv6 general-prefix Ĥu ३ ŋ́ Â ŋ́ ˘ б DHCPv6 ˜ ˆ ŋ́ ˘ Â

ŋ́ ˘ ЮˆЮ

```
Ruijie# show ipv6 general-prefix
There is 1 general prefix.
IPv6 general prefix my-prefix, acquired via Manual configuration
       2001:1111:2222::/48
       2001:1111:3333::/48
```

Ĥu ३

Ĥu ३	
ipv6 general-prefix	ŋ́

ˇ ˇ Â

Ĥu ३ ˆ ˇ

ˇ	
RGOS10.4	Ĥu ३ ÿ RGOS10.4 Â

47.2.3 show ipv6 interface

IPV6 ˆ Â

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

ˆ

ˆ	
interface-id	ˆ ˆ ˆ aggregateport ˆ SVI ˆ ˜
ra-info	ˆ Э ˇ RA ˆ Â

Ĥu ३

Ĥu ३ ˇ IPV6 ˆ Э ND ˆ Â

```
Ruijie# show ipv6 interface vlan 1
Interface vlan 1 is Up, ifindex: 2001
address(es):
Mac Address: 00:00:00:00:00:01
INET6: fe80::200:ff:fe00:1 , subnet is fe80::/64
INET6: 2001::1 , subnet is 2001::/64 [TENTATIVE]
Joined group address(es):
ff01:1::1
ff02:1::1
ff02:1::2
```

total	৲ ŋ́ Â
fec0:1:1:1::/64	ɛ́ ŋ́ Â
Def	ŋ́ ৲ ŋ́ ৲ Â
Auto | CFG	Auto ŋ́ ج ৲ IPV6 فذ سم ╟ ŋ́ , CFG ŋ́ Â
!Adv	ŋ́ a ʼῺ Â
vltime	ŋ́ ( ) Â
pltime	ŋ́ ( ) Â
L | !L	L ŋ́ on-link Æ Э Â !L б Э ৻ Â
A | !A	A ŋ́

ƪu ३

1' SVI 1 ^ Э

```
Ruijie# show ipv6 neighbors vlan 1
IPv6 Address Linklayer Addr   Interface
fa::1         00d0.0000.0002   vlan 1
fe80::200:ff:fe00:2  00d0.0000.0002  vlan 1
```

2'

```
Ruijie# show ipv6 neighbors verbose
IPv6 Address  Linklayer Addr Interface
2001::1      00d0.f800.0001 vlan 1
       State: Reach/H Age: - asked: 0
fe80::200:ff:fe00:1    00d0.f800.0001 vlan 1
       State: Reach/H Age: - asked: 0
```

IPv6 Address	IPV6 فخ سم
Linklayer Addr	فخ سم Mac فخ سم ˜ ‡ ˆ incomplete
Interface	جم ^

State	' state/H(R) STATE Ю' INCMP(Incomplete)— فذ سم جم ˘ (NS) ˩ ˺ (NA) Â REACH(Reachable) — ÿ ˺ ˘ جم ˩ ˩ a ╟ Â STALE — ѝ ˩˺ ˺ ˘ جم a ╟ ˺ ˩ ˺ Э˘ . ȣ ╟ NUD (Neighbor Unreachability Detection) Â DELAY— ˩ STALE ˩ ˘ STALE ѝ DELAY ˘ جم DELAY_FIRST_PROBE_TIME seconds(5) ˺ ˩ ˘ ȝ DELAY ѝ PROBE˘ ˩ ˩ ˩ (NS)˘ ȣ ╟ NUD Â PROBE— NUD ȣ ╟˘ ˩ ˘ RetransTimer milliseconds ˩ ˩ (NS) ˺ ˺ ˩ ˺ Э MAX_UNICAST_SOLICIT(3) ?— /R— ѝ /H— ѝ ў
Age	ѝ ˩˺ ˘ '-' ˩ ˘ ї ˩ Â 'expired' AË"

Interface

G Q ¸Á/ P Yb Q V@Idr Q)b Sc“hG / Q`Ab •a-a ðÀ R T

ƪ ३

show ipv6 router ⅄ ∩ ‘Ὼ Â ∧˘ ‡ ˆ ‘Ὼ Â

IPv6 ⅄ ˘ ƗΟ'

```
Ruijie# show ipv6 router
Router FE80::2D0:F8FF:FEC1:C6E1 on VLAN 2, last update 62 sec
  Hops 64, Lifetime 1800 sec, ManagedFlag=0, OtherFlag=0, MTU=1500
  Preference=MEDIUM
  Reachable time 0 msec, Retransmit time 0 msec
  Prefix 6001:3::/64 onlink autoconfig
    Valid lifetime 2592000 sec, preferred lifetime 604800 sec
  Prefix 6001:2::/64 onlink autoconfig
    Valid lifetime 2592000 sec, preferred lifetime 604800 sec
```

ƪ ३

ƪ ३	
-	-

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∧ Â

48 OSPFv3

48.1

48.1.1 area default-cost

جم stub Ш ممم ABR Э ЮЧ ЗЦ˘ ЮЖ stub Ш ممم ЗЦ' Â ЮЧ ЗЦ **no** Â

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

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

ЯЧ		
ЯЧ	*area-id*	stub Ш ممم Ш ممم Л Â È Л Л Ю й IPv4 ЯЛ Â
	cost	stub Ш ممم ЗЦ' Â تن 1-16777214 Â

	default-cost й 1 Â
ЮЧ ЗЦ	Â
	ЮЧ ЗЦ Л جم stub Ш ممم ABR Э Â
	Ю ˘ stub Ш ممم 50 ЗЦ' й 100'

```
ipv6 router ospf 1
area 50 stub
area 50 default-cost 100
```

ЮЧ ЗЦ		
ЮЧ ЗЦ	**area stub**	stub Ш ممم Â

Л

ЮЧ ЗЦ ЛЛ	Л	

-	-

48.1.2 area range

Ю ३ Ш فخ سم تن Ю ३ **no** تن
تن ৭ Â

area *area-id* **range** *ipv6-prefix/prefix-length* [**advertise|not-advertise**]

no area *area-id* **range** *ipv6-prefix/prefix-length*

৭		
৭	*area-id*	Ш ৭ /৭ Â è ৲ ৲ ৷ ৷ IPv4 ৷ Â
	ipv6-prefix/prefix-length	فخ سم تن Â
	advertise	Ω تن Â
	not-advertise	a Ω تن Â ৷ Ω Â

Ю Ш فخ سم تن Â

Ю ३ Â

Ю ३ ৭ ج ABR Э Ш ৭ è Ш
৭ Â ৷ ৷ ৭ ج Ш ৭ Ш ৭ Э ৷ é
è Ш ৭ ৭ ৷ Â з ৲ ৲ advertise Ω
not-advertise α ï Ω تن ৷ Ω ৲
Ω Â ৲ ৲ cost Â
৲ ৲ Ю Ш ৭ Ю ३ OSPF ৭ ৷ ৷ ÷
৲ Â
з ↑ ü ৲ ৭ ‡
area range Â

Ю ৲ Ш ৭ 1 '

```
ipv6 router ospf 1
area 1 range 2001:DB8:1:2::/64
```

Ю ३		
Ю ३	**summary-prefix**	فخ سم تن Â

Ю ३ ٦ ৸

৸	
	-

48.1.3 area stub

Ю ३ … stub Ш ৸ stub Ш ৸ ˘ Ю ३ **no** ѝ Ш ৸ stub Ш ৸ Â

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

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

৸	
area-id	stub Ш ৸ Ш ৸ ৸ Â è ৸ Л ѝ IPv4 ń Â
no-summary	৸ ج stub Ш ৸ ABR Э ˘ ABR ৸ ص 3 LSA Ω ˆ ↑ stub Ш ৸ ˘ a Ą Ω ˆ ص 3 è LSA Â

Ю stub Ш ৸ Â

Ю ३ Â

Ш ৸ ↑ ˘ ৸ Л Ш ৸ ѝ stub Ш ৸ ˘ stub Ш ৸
area stub Ю ३ Â Ш ৸ ѝ stub Ш ৸ ˘ è ˘ a↑ AS
(type 5 LSAs) ˘ ج ˘ ج ৸ ´
˘ Л stub Ш ৸ ৸ ˘ ↑ ˘ ÿ æ
OSPFv3 ˜ ´ Â
ج stub Ш ৸ ABR Э ص 3 LSA Ω ˆ ↑ stub Ш ৸ ˘
˘ stub Ш ৸ ৸ Л ↑ AS Â
totally stub ˆ stub ˜ Ш ৸ ˘ ৸ ج ABR Э area stub Ю ३ ˘
no-summary Â

Ю ˘ stub Ш ৸ 10 ABR Э ৸ Ω ˆ ↑ stub Ш ৸ '

```
ipv6 router ospf 1
area 10 stub
area 10 stub no-summary
```

ƀυ ३	
area default-cost	stub ४ ॐ ३ Â

ƒ

ƀυ ३ ৭ ƒ	
-	-

48.1.4 area virtual-link

ƀυ ३ … ৭ ˘ ƀυ ३ **no** ৲ ∫υ
৭ Â

area *area-id* **virtual-link** *router-id* [**hello-interval** *seconds*] [**dead-interval** *seconds*] [**retransmit-interval** *seconds*] [**transmit-delay** *seconds*] [**instance** *instance-id*]

no area *area-id* **virtual-link** *router-id* [**hello-interval**] [**dead-interval**] [**retransmit-interval**] [**transmit-delay**] [**instance**]

৭	

Ю ’

hello-interval й 10 ’

dead-interval й hello-interval ني ’

retransmit-interval й 5 ’

transmit-delay й 1 Â

Ю ३ Â

ج OSPFv3 ˘ Ш б ў Ш ˘ Л ˜ ↑

OSPFv3 Â Ш б ў Ш ˘ ↓ Л

Ш ↓ ў Ш Â

~	Â ج Ш a stub Ш Â Â ч Э ˘ **hello-interval** à**dead-interval** Ω **instance** ˘ ї ‡ Â

Ю ˘ ’

```
ipv6 router ospf 1
area 1 virtual-link 192.1.1.1
```

Ю ३

Ю ३	
show ipv6 ospf	OSPFv3 Â
show ipv6 ospf neighbor	OSPFv3 Â
show ipv6 ospf virtual-links	OSPFv3 Â

↓

Ю ३ ↑ ↓

↓	
-	-

48.1.5 auto-cost

OSPFv3 ˜ ↑ ˘ Ю ३ ї ╟ ↑

↑ ˘ Ю ३ **no** ↑

↑ Â

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

no auto-cost [**reference-bandwidth**]

৭	
reference-bandwidth *ref-bw*	৭ ˘ Л Mbps ѝ ´ Æ Â ت 1-4294967 Â

৭ ৭ ˘ ৭ ѝ 100Mbps Â

ƪ ʒ Â

no auto-cost reference-bandwidth ৭ Â
৲ Л ج ৭ Ю ƪ ʒ **ipv6 ospf cost** ѝ ৭ ʒ ˘ ε ˝ I
৭ Â

Ю ˘ ৭ ѝ 10M
```
ipv6 router ospf 1
auto-cost reference-bandwidth 10
```

ƪ ʒ	
ipv6 ospf cost	৭ ʒ Â
show ipv6 ospf	OSPFv3 Â

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ƪ ʒ ৲ ৶	
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48.1.6 bfd all-interfaces (OSPFv3)

OSPFv3 ৭ BFD ˘ ج OSPFv3 Ю
bfd all-interfaces Â ƪ ʒ no Â

bfd all-interfaces

no bfd all-interfaces

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OSPFv3 ˜ Hello ╟ ┘ ˘ OSPFv3 ŭ ╟ D0 Tc 2.527 0 Td[<1879>2

Ю ˘ ŭ ╟ OSPFv3

```
enable
clear ipv6 ospf process
```

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48.1.8 default-information originate

OSPFv3 ˘ ƕ ३ **default-information originate** Â ƕ ३ **no** Â

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

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

ƛ	
always	ˆ ˩ ˜ OSPFv3 ˘ a ˘ ī Â

metric *–D*

redistribute **default-information** ЪU ३ ˘ OSPFv3 ╟ ┘ й ASBR˜ ˜ Â

redistribute ˘ ˜ OSPFv3 Â ASBR ˘ **default-information originate** ЪU ३ Â

always ٩ ˘ a ї ج ˘ OSPFv3 ┘ ˜ Â س a ˘ ї ˘ ┘ Л **show ipv6 ospf database** OSPFv3 ÂOSPFv3 **show ipv6 route** ЪU ३˘ ┘ Л ↑ Â ˘ ٩ **default-information originate** ЪU ३ ЪЖ˘ a ЪU ३ **default-metric** Â

OSPFv3 ч ˘ ص 1 ┘˘ ص 2 ش a ┘ Â↑ ج ч ˘ ┘ ˘ ص 1 ص 2 ˝l ˘ Л **show ipv6 route** ٩ ص 1 Â stub Ш س a ┘ Л Â

Ю ˘ ↑ '

```
default-information originate always
```

ЪU ३	
redistribute	↑ ┘ Â
show ipv6 ospf	OSPFv3 Â
show ipv6 ospf database	OSPFv3 Â

٩

ЪU ३ ٦ ┘	
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48.1.9 default-metric

ЪU ३ ↑ ┘ ˘ ЪU ३ **no** Â

default-metric *metric-value*

no default-metric

٩	
metric-value	↑ ┘ Â ش 1-16777214 Â

20

Ĥu ३ Â

Ĥu ३ ⌟ **redistribute** Ĥu ३ ˘ ţ ⌟ Â Ĥu ३
ч '
Â **default-information originate** Ĥu ३ '
Â ţ ⌟ ˘ ţ ⌟ 20 й Â

Ю ˘ ţ ⌟ metric й 10'
`default-metric 10`

Ĥu ३	
redistribute	ţ ⌟ Â
show ipv6 ospf	OSPFv3 Â

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Ĥu ३ ⌉ ⌟	
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48.1.10 distance

⌟ ص OSPFv3 ˘ Ĥu ३ **no**
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Ш ' й 110

Ш ' й 110

' й 110

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OSPFv3 a л ص a л ˘ Ъ ъ Â

a л ˜ ˝I ˘ ˘ ˝I

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Â a л OSPFv3 ˝I ˘

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Â й 255˜ a л ˘ a ^ б ^ Â

ЛЪЮ ˘ OSPFv3 й 160

```
Ruijie(config)# ipv6 router ospf 20
Ruijie(config-router)# distance ospf external 160
```

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Ъ ъ	
ipv6 router ospf	ŭ ╟ OSPFv3 Â

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48.1.11 ipv6 ospf area

Ъ ъ ^ ^ б OSPFv3 ˘ Ъ ъ **no** ╖ Â

ipv6 ospf *process-id* **area** *area-id* [**instance** *instance-id*]

no ipv6 ospf *process-id* **area** [**instance** *instance-id*]

^

^	
process-id	ospf Л ت 1-65535 Â
area *area-id*	^ ^ б OSPFv3 Ш ش Â è л Лu й IPv4 ŋń Â

instance *instance-id*	ϧ OSPFv3 ϫ 0-255 Â

ϥ Â

Ϸ ϟ ϧ Â

ϩ ϫ ϩ ϟ Ϸ ϟ ϟ ϟ

	disable	OSPF ^l BFD 8 Â

instance *instance-id* ۸ OSPFv3 ˘ 0-255 تن

OSPFv3 ใน ๆ

MTU Â

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OSPFv3 ϯ ϡ MTU Ϩ ϡ MTU ϊ ϡ
ϡ ϡ MTU ϡ MTU ϡ
a Â ϡ Ϭ MTU ϖ Â

ϬϪϴ ϡ ethernet 1/0

	ч Hello ˇ ї ‡ Â
	Ю ˇ ч ч hello й 20s'

```
ipv6 ospf hello-interval 20
```

	Ю ъ	
Ю ъ	**ipv6 ospf dead-interval**	ч Э й Â
	show ipv6 ospf interface	OSPFv3 ч Â
	ipv6 ospf area	ч ч б OSPFv3

ч	

	ч	
Ю ъ ˥ ч	-	-

48.1.17 ipv6 ospf neighbor

Ю ъ OSPFv3 ˇ Ю ъ **no** Â

ipv6 ospf neighbor *ipv6-address* {[**cost** <1-65535>] | [**poll-interval** <0-2147483647> | **priority** <0-255>]} [**instance** *instance-id*]

no ipv6 ospf neighbor *ipv6-address* {[**cost** <1-65535>] | [**poll-interval** <0-2147483647> | **priority** <0-255>]} [**instance** *instance-id*]

	ч	
ч	**cost** *cost*	ˆ ˥ ˜ ˆ ˆ ˇ Ю ч Э cost' ˜ 1-65535 Â ˆ صر(point-to-multipoint)
	poll-interval *seconds*	ˆ ˥ ˜ ˇ Лu й ´ Æ ˇ ˜ 1-2147483647 Â صر(NBMA) Â
	priority *priority*	ˆ ˥ ˜ ˇ ˜ 0-255 Â صر(NBMA) Â

instance

OSPFv3 ใน ๆ

point-to-multipoint non-broadcast	ص
instance *instance-id*	٨ OSPFv3 تن 0-255 Â

ص Â

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ـ Л ص Ω ˘ ٨ ص Â

Ю ˘ ٨ б OSPFv3 ٨ ص ٨' ٨ ص

```
ipv6 ospf network point-to-point
```

ƚu ʒ	
ipv6 ospf priority	٨ ˝l Â
show ipv6 ospf interface	OSPFv3 ٨ Â
ipv6 ospf area	٨ ٨ б OSPFv3

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ƚu ʒ ˥ ـ٨	٨	
	-	-

48.1.19 ipv6 ospf priority

ƚu ʒ ٨ ˝l ˘ ƚu ʒ **no** Â

ipv6 ospf priority *number-value* [**instance** *instance-id*]

no ipv6 ospf priority [**instance** *instance-id*]

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number-value	٨ ˝l Â تن 0-255 Â
instance *instance-id*	٨ OSPFv3 ˘ تن 0-255 Â

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ฺ DR/BDR(ฺ / ฺ) Â ฺ DR/BDR
ฺ ฺ ฺ ฺ DR BDR ฺ ฺ ฺ Router-ID
ฺ ฺ ฺ DR BDR Â
ฺ ฺ ฺ a ฺ ฺ DR/BDR Â
ฺ DR ฺ BDR ฺ ฺ ฺ ฺ a ฺ ฺ ฺ ฺ
DR BDR ฺ ฺ ฺ Â

ฺ ฺ ฺ ฺ DR/BDR ฺ a ฺ ฺ DR BDR
0 1 Tf 2 Trd 108 0 T222 0 1.659 22 021 pw [<03D.581E2 Rip_0 1v6 0 @g Â bH˜ hÕf†Â Ú ì <2°Q ýð < TÂ bH $FhdÀ 6„$C˜fL Q4f„tÀ
```
ipv6 ospf priority 0
```

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ѝ ৻ ˘ ৻ LSA ˘ ˆ Â ৻Л
˘ Ъu ३ ˘ ھ
ˆ ˘ LSA Â

Ю ˘ LSA ѝ 10s'

```
ipv6 ospf retransmit-interval 10
```

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```
ipv6 ospf transmit-delay 2
```

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ƚu ३	
show ipv6 ospf interface	OSPFv3 ৲ Â

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48.1.22 ipv6 router ospf

ƚu ३ OSPFv3 ˘ ƚu ३ **no** OSPFv3 Â

ipv6 router ospf *[process-id]*

no ipv6 router ospf *process-id*

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৲	
process-id	OSPFv3 ৲ Â ৲ ˘ ŭ 1 Â

OSPFv3 Â

ƚu ३ Â

OSPFv3 ৲˘ Â
ৠ˘ ৲ p 32 OSPFv3 Â

Ю ˘ ŭ ╟ OSPFv3 '

```
ipv6 router ospf 1
```

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ƚu ३	
ipv6 ospf area	৲ ৲ б OSPFv3 Â
show ipv6 ospf	OSPFv3 Â

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48.1.23 log-adj-changes

Ю ३ ї ง ˘ Ю ३ no Ґ default ง Л ๗ Â

log-adj-changes [**detail**]

no log-adj-changes [**detail**]

๗	
detail	ง

FULL ’

Ю ३ Â

ЛЫО ˘ ง Â

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# log-adj-changes detail
```

Ю ३	
show ipv6 ospf	ospf Â

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Ю ३ ๅ ๘	
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48.1.24 max-concurrent-dd

๘ DD Â

max-concurrent-dd *number*

no max-concurrent-dd

๗

number	DD ت 1-65535

й 5Â

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б ৶ ˘ è ৷ ! ˘ ȟυ ३˘ ৶ ⁸
OSPFv3 ৶ ৷ DD ↑ Â

Ю max-concurrent-dd й 4˜ ৷ ৶ б 4 DD '

```
router ipv6 ospf 1
max-concurrent-dd 4
```

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48.1.25 passive-interface

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

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

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৷	
default	৷ й ৷ Â
interface-type interface-number	৷ й ৷ Â

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level-1 | **level-1-2** | **level-2**	৲ ĭ ৲ IS-IS ˘ level ĭ ৲ Â
match	৲ ĭ ৲ OSPFv3 ˘ ĭ ৲' internal' ש б ש ' external [1|2]' E1 à E2
metric *metric-value*	OSPFv3 external 2 LSA metric˘ metric-value metric ˘ ৲ ت' 0-16777214
metric-type {*1|2*}	ص й E-1 E-2
route-map *route-map-name*	ĭ ৲ Â map-tag ۱ a 32 Â
tag *tag-value*	ĭ ĭ OSPFv3 tag ˘ ৲ ت' 0-4294967295

˥ '

metric-type й 2'

ĭ ৲ ISIS ˘ ĭ ৲ level-2 '

ĭ ৲ OSPFv3 ˘ ĭ ৲ ص OSPFv3 '

route-map Â

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~ Â

ĭ ৲ ISIS ~ ˘ ۱ level-1 à level-2 level-1-2 ৲ ˘ ĭ ৲

ISIS '

```
route-map test permit 10
match metric 20
set metric 30
```

ЛЭ ╥ ˘ ǂ ч metric й 20 ˘ è metric й 30ʼ ǂ ч è metric й 10 Â

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ƚυ ३	
default-information originate	ǂ ч Â
default-metric	ǂ ч Â
summary-prefix	فخ سم تن Â
show ipv6 ospf	OSPFv3 Â
show ipv6 ospf database	OSPFv3 Â

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48.1.27 router-id

ƚυ ३ (Router ID)˘ ƚυ ३ **no** Router ID˘ Router ID Â

router-id *router-id*

no router-id

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৭	
router-id	Â IPv4 فخ سم Â

OSPFv3 هى ^ loopback˜ ৭ IPv4 فخ سم й ʼ IPv4 فخ سم هى ^ loopback˜ ৭˘ ক OSPFv3 ৲ è ৭ IPv4 فخ سم й Â

ƚυ ३ Â

৲ OSPFv3 Router ID Â৲ ЛЬ IPv4 فخ سم й ˘ ৲

ر ˘ ل ل OSPFv3 ˘ ≠
ر Â
ل ل˘ ˜ ˘ Лu a ў ل ˘
ї Â جھ ů ╟ OSPFv3 ل˘ ˝I
Router ID˘ جھ OSPFv3 ε ل Â

Ю ˘ ل б OSPFv3 й 1.1.1.1'

```
router-id 1.1.1.1
```

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Ĥu ३	**ipv6 ospf priority**	ل ˝I Â
	show ipv6 ospf	OSPFv3 Â

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1 à ৯ RGOS 10.4 ŋñ˘ a timers throttle spf ƕ ২ Â й timers spf 5 10

2 à RGOS 10.4 ˘ timers throttle spf ƕ ২ Â Ю timers spf

٩	
spf-delay	ĦȞ SPF ˘ Лu ùй´ Æ˘ ته 1-600000 ÂOSPFv3 ↑ ˩ ˩˘ ˩ SPF جه *spf-delay* ˩ Â
spf-holdtime	ĦȞ ч SPF ˘ Лu ùй´ Æ˘ ته 1-600000 Â
spf-max-waittime	ĦȞ ч SPF ˘ Лu ùй´ Æ˘ ته 1-600000 Â

spf-delay' 1000 '

spf-holdtime' 5000 '

spf-max-waittime' 10000 Â

```
Number of AS-Scoped Unknown LSA 0
Number of LSA originated 11
Number of LSA received 4
Log Neighbor Adjency Changes : Enabled
Number of areas in this router is 2
Area BACKBONE(0)
Number of interfaces in this area is 1(1)
SPF algorithm executed 4 times
Number of LSA 3.  Checksum Sum 0x1DDF1
Number of Unknown LSA 0
```

OSPFv3 б BFD ╟, ج ৷ Э ╗ ”BFD is enabled”, Ю'

```
Ruijie# show ipv6 ospf
Routing Process "OSPFv3 (1)" with ID 1.1.1.1
Process uptime is 24 minutes
SPF schedule delay 5 secs, Hold time between SPFs 10 secs
Minimum LSA interval 5 secs, Minimum LSA arrival 1 secs
Number of incomming current DD exchange neighbors 0/5
Number of outgoing current DD exchange neighbors 0/5
Number of external LSA 0. Checksum Sum 0x0000
Number of AS-Scoped Unknown LSA 0
Number of LSA originated 11
Number of LSA received 4
Log Neighbor Adjency Changes : Enabled
Number of areas in this router is 2
BFD is enabled
Area BACKBONE(0)
Number of interfaces in this area is 1(1)
SPF algorithm executed 4 times
Number of LSA 3.  Checksum Sum 0x1DDF1
Number of Unknown LSA 0
```

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ipv6 router ospf	ŭ ╟ OSPFv3 Â
default-information originate	ĭ ৷ Â
default-metric	ĭ ৷ Â
router-id	OSPFv3 Â

timers spf	OSPFv3 ج Î ˩ ע ˘ SPF ˘ Л ۱ ч SPF à Â

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48.2.2 show ipv6 ospf database

OSPFv3 Â

show ipv6 ospf [*process- id*] **database** [*lsa-type* [**adv-router** *router-id*]]

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process- id	OSPFv3 ۱
lsa-type	LSA ص˘ ЛЮ ' AS-external-LSAs à Link-LSAs à Inter-Area-Prefix-LSAs à Inter-Area-Router-LSAs à Intra-Area-Prefix-LSAs à Network-LSAs à Router-LSAs ۱ ˘ LSA
adv-route*r router-id*	router LSA Â

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Ю OSPFv3

```
Ruijie# show ipv6 ospf database
OSPFv3 Router with ID (1.1.1.1) (Process 1)
Link-LSA (Interface FastEthernet 1/0)
Link State ID   ADV Router      Age  Seq#       CkSum  Prefix
0.0.0.2         1.1.1.1         197 0x80000001 0x7cd8     0
0.0.0.5         2.2.2.2         206 0x80000001 0x8c86     0
```

```
Link-LSA (Interface Loopback 1)
Link State ID   ADV Router      Age  Seq#       CkSum  Prefix
0.0.64.1        1.1.1.1          82 0x80000001 0xb760     0
Router-LSA (Area 0.0.0.0)
Link State ID   ADV Router      Age  Seq#       CkSum   Link
0.0.0.0         1.1.1.1       17 0x80000006 0x62a1     1
0.0.0.0         2.2.2.2         156 0x80000003 0x8653     1
Network-LSA (Area 0.0.0.0)
Link State ID   ADV Router      Age  Seq#       CkSum
0.0.0.5         2.2.2.2         157 0x80000001 0xf8f6
Router-LSA (Area 0.0.0.1)
Link State ID   ADV Router      Age  Seq#       CkSum   Link
0.0.0.0         1.1.1.1          17 0x80000002 0x0529     0
Inter-Area-Prefix-LSA (Area 0.0.0.1)
Link State ID   ADV Router      Age  Seq#       CkSum
0.0.0.1         1.1.1.1          77 0x80000002 0x83b4
AS-external-LSA
Link State ID   ADV Router      Age  Seq#       CkSum
0.0.0.1         1.1.1.1          1 0x80000001 0x6035 E2
```

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ipv6 router ospf	ŭ ╟ OSPFv3 Â

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48.2.3 show ipv6 ospf interface

OSPFv3 ฝ Â

show ipv6 ospf interface [*interface*

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ȮOȶu ३ OSPFv3 ৲

```
Ruijie# show ipv6 ospf interface
FastEthernet 1/0 is up, line protocol is up
Interface ID 2
IPv6 Prefixes
fe80::2d0:22ff:fe22:2223/64 (Link-Local Address)
OSPFv3 Process (1), Area 0.0.0.0, Instance ID 0
Router ID 1.1.1.1, Network Type BROADCAST, Cost: 1
Transmit Delay is 1 sec, State BDR, Priority 1
Designated Router (ID) 2.2.2.2
Interface Address fe80::c800:eff:fe84:1c
Backup Designated Router (ID) 1.1.1.1
Interface Address fe80::2d0:22ff:fe22:2223
Timer interval configured,Hello 10,Dead 40,Wait 40,Retransmit 5
Hello due in 00:00:02
Neighbor Count is 1, Adjacent neighbor count is 1
Hello received 26 sent 26, DD received 5 sent 4
LS-Req received 1 sent 1, LS-Upd received 3 sent 6
LS-Ack received 6 sent 2, Discarded 0
```

৲ ȕ ȣ BFD ╟, ȶ ȶu ३ ╗ ľ **BFD enabled** Ľ

```
Ruijie# show ipv6 ospf interface
FastEthernet 1/0 is up, line protocol is up
Interface ID 2
IPv6 Prefixes
fe80::2d0:22ff:fe22:2223/64 (Link-Local Address)
OSPFv3 Process (1), Area 0.0.0.0, Instance ID 0
Router ID 1.1.1.1, Network Type BROADCAST, Cost: 1
Transmit Delay is 1 sec, State BDR, Priority 1ˇ BFD enabled
Designated Router (ID) 2.2.2.2
Interface Address fe80::c800:eff:fe84:1c
Backup Designated Router (ID) 1.1.1.1
Interface Address fe80::2d0:22ff:fe22:2223
Timer interval configured,Hello 10,Dead 40,Wait 40,Retransmit 5
```

```
Hello due in 00:00:02
Neighbor Count is 1, Adjacent neighbor count is 1
Hello received 26 sent 26, DD received 5 sent 4
LS-Req received 1 sent 1, LS-Upd received 3 sent 6
LS-Ack received 6 sent 2, Discarded 0
```

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ipv6 router ospf	ŭ ╟ OSPFv3 Â
ipv6 ospf area	ŭ ╟ OSPFv3 Â

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48.2.4 show ipv6 ospf neighbor

OSPFv3 Â

show ipv6 ospf [*process- id*] **neighbor** [*interface-type interface-number* [**detail**]| *neighbor-id* |**detail**]

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process-id	OSPFv3 ƻ
detail	Â
interface-type interface-number	ٺ صر Â
neighbor-id	Router ID Â

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1' ƪƪ ३ ٻ OSPFv3

```
Ruijie# show ipv6 ospf neighbor
OSPFv3 Process (1) , 1 Neighbors, 1 is Full:
```

```
Neighbor ID  Pri  State     Dead Time   Interface     Instance ID
2.2.2.2      1   Full/DR    00:00:33    FastEthernet 1/0     0
  2
```

48.2.5 show ipv6 ospf route

OSPFv3 Â

show ip

count	OSPFv3

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ƖOƖU ३ OSPFv3

```
Ruijie# show ipv6 ospf route
OSPFv3 Process (1)
Codes: C - connected, D - Discard, O - OSPF, IA - OSPF inter area,
E1 - OSPF external type 1, E2 - OSPF external type 2
Destination                              Metric
Next-hop
E2 2001:DB8:1::/64                                1/20
via fe80::c800:eff:fe84:1c, FastEthernet 1/0
O  2001:DB8:2::/64                                  11
via fe80::c800:eff:fe84:1c, FastEthernet 1/0, Area 0.0.0.0
```

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ipv6 router ospf	

OSPFv3 Â

show ipv6 ospf [*process-id*] **summary-prefix**

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process- id	OSPFv3 ৸

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ƪOƪ ३ OSPFv3

```
Ruijie# show ipv6 ospf summary-prefix
OSPFv3 Process 1, Summary-prefix:
2001:db8::/64,Metric 16777215,Type0,Tag0,Match count0,advertise
```

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ipv6 router ospf	ŭ ╟ OSPFv3 Â
summary-prefix	OSPFv3 ঙ

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48.2.7 show ipv6 ospf topology

OSPFv3 0 ` ججي # « Ụ - ~

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ƪƟƪυ ३ OSPFv3 ᴣ

```
Ruijie# show ipv6 ospf topology
OSPFv3 Process (1)
OSPFv3 paths to Area (0.0.0.0) routers
Router ID       Bits  Metric    Next-Hop
Interface
1.1.1.1          EB  --
2.2.2.2          E   1        2.2.2.2
FastEthernet 1/0
OSPFv3 paths to Area (0.0.0.1) routers
Router ID       Bits  Metric    Next-Hop
Interface
1.1.1.1          B   --
```

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ƪυ ३	
ipv6 router ospf	ŭ ╟ OSPFv3 Â
area range	OSPFv3 ᴣ فخسم تن

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48.2.8 show ipv6 ospf virtual-links

OSPFv3 Â

show ipv6 ospf [*process- id*] **virtual-links**

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ƻ	
process- id	OSPFv3 ƺ

ƪu ३ Â

ƪOƪu ३ ৲ OSPFv3

```
Ruijie# show ipv6 ospf virtual-links
Virtual Link VLINK1 to router 2.2.2.2 is down
Transit area 0.0.0.1 via interface FastEthernet 1/0, instance ID 0
Local address *
Remote address 2001:DB8::1/128
Transmit Delay is 1 sec, State Down,
Timer intervals configured,Hello 10,Dead 40,Wait 40,Retransmit 5
Hello due in inactive
Adjacency state Down
```

ƪu ३

ƪu ३	
ipv6 router ospf	ŭ ╟ OSPFv3 Â
area virtual-link	OSPFv3 Â
show ipv6 ospf neighbor	OSPFv3 Â

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49

	10.4	RGOS 10.4

49.1.2 tunnel keepalive

GRE

tunnel keepalive *period* *retries*

no tunnel keepalive

period	2

ใช้ได้	10.4	RGOS 10.4 ' ใช้ได้ 10.4 1

49.1.3 tunnel checksum

ใช้ ห ให้ **tunnel checksum** ใช้ turnnel ห ˘ ใช้ no ห Â

tunnel checksum

no tunnel checksum

ห	-	-

	a .
ใช้	ห Â

ใช้ ห GRE

49.1.4 tunnel destination

value	tunnel ˘ ห جهتن 0-4294967295 Â

Â

ใช้งาน ห Â

ف Â ˘ ห ห้ Â
Â **tunnel key** ใช้งาน ห جهت GRE ห ใน Â

1' جهت tunnel 0 ห 1234'

```
Ruijie(config)# interface tunnel 0
Ruijie(config-if)# tunnel key 1234
```

ใช้งาน

ใช้งาน ห Â

Tunnel Tunnel ~ ÂTunnel ห GRE Â ˘
≠ ล Ло α Tunnel ห ˘ ใช้ Ю˘ ล Ло a
ใช้ ล Ло IP GRE Â

1' ใช้ tunnel 0 ห Э GRE IP Â

```
Ruijie(config)# interface tunnel 0
Ruijie(config-if)# tunnel mode gre ip
```

ใช้งาน

ใช้งาน	
show interface tunnel	tunnel ห

ค่า

ใช้งานโดย

ค่า	
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49.1.7 tunnel path-mtu-discovery

ใช้ ห Ю ใช้งาน **tunnel path-mtu-discovery** PMTUD ๊ ˘
ใช้งาน no Â

tunnel path-mtu-discovery [**age-timer** {*aging-mins* | **infinite** } |

min-mtu *mtu-bytes*]

no tunnel path-mtu-discovery

ห

ห	
age-timer	^ ล ~ ห MTU ย ˘ ˘ ล MTU' *aging-mins*' ย ˘ ช่วง 10-30 ˘ ค่าเริ่มต้น 10 ' infinite' MTU ย ไม่ Â
min-mtu	^ ล ~ ห ล PMTUD MTU Ю
mtu-bytes	MTU Ю ˘ ช่วง 92-65535 ˘ ค่าเริ่มต้น 92

ใช้ IP a PMTUD ๊ Â

ใช้งาน ห Â

~ ม ล ห MTU ำ ั .
IP DF Don't Fragment ั Æ ÂRGNOS ตั้ง ห ยู่ ใน
tunnel path-mtu-discovery ใช้งาน ั ╟ ำ PMTU ั tunnel
ห mtu ั ÿ ำ Â
' ใช้งาน ตั้ง 10.4 2 ั ใน ห ม Â

1' ตั้ง tunnel 0 ห ย PMTUD ╗

```
Ruijie(config)# interface tunnel 0
Ruijie(config-if)# tunnel path-mtu-discovery
```

ใช้งาน

ใช้งาน	
show interface tunnel	tunnel ห

ม

ใช้งานคำสั่ง

ม	
10.4	' ใช้งาน ตั้ง 10.4 2 ั ใน ห ม Â

49.1.8 tunnel path-mtu-discovery

ตั้ง ห ยู่ ใน ใช้งาน **tunnel path-mtu-discovery** PMTUD ╗ ั
ใช้งาน no ใช้งาน Â

tunnel path-mtu-discovery *aging-mins mtu-bytes*

no tunnel path-mtu-discovery

พารามิเตอร์

พ	
age-timer	ห MTU ย ั ั ล MTU
min-mtu	ห ล PMTUD MTU ยู่ ั ตน 92-1500

ตั้ง IP a PMTUD ╗ Â

ใช้งาน ห Â

1' interface tunnel 1 GRE ~ ToS 20 γ 8
00010100 Â

```
Ruijie(config)# interface tunnel 1
Ruijie(config)# tunnel tos 20
```

show interface tunnel	tunnel A

10.4	RGOS 10.4 ' 10.4 2 Â

49.1.11 tunnel ttl

ใช้	ใช้	
	show interface tunnel	tunnel ห

ห

ใช้ ได้	ห	
	-	-

49.1.12 tunnel vrf

~ IPv4 ف VRF ห Â Юใช้'

tunnel vrf [*vrf-name*]

no tunnel vrf

ห	ห	
	vrf-name	~ IPv4 VRF

10.4 RGOS 10.4

' ใบ ๓ ฉ 10.4 2

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50.1.2 distance ō IPv6 Ŏ

RIPng ˘ ȶυ ३ **distance** Â ȶυ ३ **no** Â

distance *distance*

no distance

٩	٩	
	distance	RIPng ˘ <1-254>

й 120 Â

ȶυ ३ Â

й RIPng ˘ ȶυ ३ Â

ЛυЮ ˘ RIPng й 160

```
Ruijie(config)# ipv6 router rip
Ruijie(config-router)# distance 160
```

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ȶυ ३ ٦ ৶	٨	
	-	-

50.1.3 distribute-list

prefix-list / ˘ ȶυ ३ **distribute-list** Â ȶυ ३ **no** ৶ Â

distribute-list

originate	˜ ipv6 ˘ ≠ ˜ è
metric *metric-value*	˘ ৷ ‘ت' 1-15 Â

Â *metric* ѝ 1 Â

Ъu ३ ৷ Â

ج ৷ Э Ъu ३ ৷˘ ÿ ৷ ˜ IPv6 ˘ a
╗Ĭ ৷ Ω RIPng Â
ѝ ˘ ৷ Ъu ३˘ RIPng ˜
Â

ЛЪЮ ˘ ج ৷ ethernet0/0 Э… ĭ RIPng ˘ ৷ ৷
˜ Â

```
Ruijie(config)# interface ethernet 0/0
Ruijie(config-if)# ipv6 rip default-information only
```

Ъu ३

Ъu ३	
show ipv6 rip	RIPng ˜ ৷ б
show ipv6 rip database	RIPng

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Ъu ३ ˥ ৷

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50.1.5 ipv6 rip enable

৷ ╗ RIPng ˘ ৷ Ъu ३ **ipv6 rip enable** Â Ъu ३ **no** ৷ ج
৷ Э RIPng Â

ipv6 rip enable

no ipv6 rip enable

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Ю ३ ৲ Â

Ю ३ ৲ б RIPng ˜ ৲ Â ج Ю ३ ৸˜ RIPng ˜ ˘ ‡ Ю ३ ╟ RIPng ˜ Â

Ю ethenet 0/0 ╗ RIPng Â

```
Ruijie(config)# interface ethernet 0/0
Ruijie(config-if)# ipv6 rip enable
```

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50.1.6 ipv6 rip metric-offset

৲ Э ˘ ৲ Ю ३ **ipv6 rip metric-offset** *value* Â Ю ३ **no** ‡ Â

ipv6 rip metric-offset *value*

no ipv6 rip metric-offset

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৲	
value	৲ ˘ ৴ ئتن 1-16

й 1 Â

Ю ३ ৲ Â

ج ╗ ৸˜ metric ╗ Э ৲ Э Â Л৴ ৴ Л৴ ৲ : Â

ЛЮ ৲ ethernet 0/1 Э ৲ й 5 Â

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50.1.8 passive-interface ō RIPng Ŏ

ʎ ج ʌ Э ʎ ˇ ʌ Ĥu ʒ **passive-interface** Ĥu ʒ Â
Ĥu ʒ **no** ŭ ʎ Â

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

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

ʌ	ʌ	
	default	ʌ ʌ ŷ passive
	interface-type interface-num	ʌ صر б ʎ

ʌ ŷ passive Â

Ĥu ʒ Â

passive-interface default Ĥu ʒ ʌ ŷ passive ˇ ʎ Ʌu **no**
passive-interface *intface-type interface-num* Ĥu ʒ ʌ ŷ passive Â

ЛuЮ ʌ ŷ passive ˇ ʎ ethernet0/0 ŷ passive

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

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50.1.9 redistribute

è ʍ ʔ ʔ RIPng ˇ Ĥu ʒ **redistribute** Ĥu ʒ Â
Ĥu ʒ **no** ʎ ʔ Â

redistribute {**bgp | connected | isis** [*area-tag*] **| ospf** *process-id* **| static**} [**metric** *metric-value* | **route-map** *route-map-name*]

no redistribute {**bgp | connected | isis** [*area-tag*] **| ospf** *process-id* **| static**} [**metric** *metric-value* | **route-map** *route-map-name*]

৭	
bgp	ÿ BGP ĭ
connected	ÿ ĭ
isis [*area-tag*]	ÿ ISIS ĭ ˘ *area-tag* ĭ ISIS
ospf *process-id*	ÿ OSPF ĭ ˘ *process-id* ĭ ospf ˘ *process-id* ৷ 'ন 1-65535
static	ÿ ĭ
metric *metric-value*	ˆ ৷ ˜ ˜ ৎ ভ

50.1.11 timers (ipv6)

RIPng ˘ Ъ ३ **timers** Â Ъ ३ **no** Â

timers *update invalid flush*

no timers

৭		
৭	*update*	˘ Л Âupdate Ѭ ৸ ˘ invalid Ω flush Æ Â 30 ৸ Â
	invalid	˘ Л ˘ ÿ Âinvalid Ѭ ج ৸ й Â й Ь ˘ ج ˘ ৸ й ˘ invalid ' invalid ˘ Æ Â Invalid й 180 Â
	flush	˘ Л ˘ ÿ RIPng invalid Â flush ˘ invalid Â flush й 120 Â

Ю й 30 ˘ й 180 ˘ й 120 Â

Ъ ३ Â

Л Э ˘ ৸ ˘ Л ৭ Â ج ৸ Э ˘ RIPng Â a RIP ˘ Â

ৠ RIPng ৭ ˘ ৸ Л **show ipv6 rip** ३ Â

~	ج æ Э ˘ ˘ ج й Â ৸ ج Л 2Mbps Л Э ˘ ৸ Л ˘ ৸ Л Â	

ЛЮ ˘ RIP 10 ৸ Â 30 ˘ ৸ й ˘ invalid ' invalid ˘ 90 ˘ Â

```
Ruijie(config)# ipv6 router rip
Ruijie(config-router)# timers 10 30 90
```

	ƒu ३	
ƒu ३	**show ipv6 rip**	RIPng ~ ৲ б
	show ipv6 rip database	RIPng

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	৲	[redacted]
ƒu ३ ৲	-	- 29/C2_0

```
    Redistributing protocol connected route-map rm
    Redistributing protocol static
    Redistributing protocol ospf 1
Default version control:  send version 1, receive version 1
Interface              Send   Recv
    VLAN 1             1      1
    Loopback 1          1      1
Routing Information Sources:
    None
```

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ใบ ๓	
show ipv6 rip	RIPng ~ ง б

```
S(r)   2001:db8:1::/64, metric 1, tag 0
          Loopback 0/::
S(r)   2001:db8:2::/64, metric 1, tag 0
          Loopback 0/::
C(r)   2001:db8:3::/64, metric 1, tag 0
          VLAN 1/::
S(r)   2001:db8:4::/64, metric 1, tag 0
          Null 0/::
C(i)   2001:db8:5::/64, metric 1, tag 0
          Loopback 1/::
S(r)   2001:db8:6::/64, metric 1, tag 0
          Null 0/::
```

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하우 ३	
show ipv6 rip	RIPng ~ ৲ б

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51 IPv6

51.1 IPv6

51.1.1 clear ipv6 mroute

ƪ ३ IPv6 ৲ Â

clear ipv6 mroute {***** | *v6group-address* [*v6source -address*]}

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*	IPv6 ৲ Â
v6group-address	IPv6 IPv6 فخ سم Â
v6source -address	IPv6 IPv6 فخ سم Â

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ƪ ३ IPv6 ৲ Â

ЛЫЮ

```
Ruijie# clear ipv6 mroute *
```

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show ipv6 mroute	-
clear ipv6 mroute statistics	-

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51.1.2 clear ipv6 mroute statistics

ƪ ३ IPv6 ৲ Â

v6rpf-address	ˆ v6source-address Ю ipv6 فخ سم
interface-type *interface-number*	٨ صر Ω ٨ ٨
distance	˘ ā ĭ RPF Â й 0 Â

IPv6

Ъυ ३ Â

IPv6 ˘ ~ هج سم IPv6 rpf
Â ”I ÿ´ ~ ˜ ˆ Â
٨ Ю ip˘ ж ٨ й صر Â
rpf ‡ ' ÿ ˘ ۷ جم bgp Ω
˘ ‡ ”I' ÿ´ ´ ' γ
˘ й rpf ' ۷ distance˘ distance
й rpf ' distance ۷˘ й rpf

ЛυЮ ˘ 2233ˆ ' /64 ۷ 3333ˆ ' 3333 فخ سم ˆ Â

```
Ruijie(config)# ipv6 mroute 2233ˆ ' /64 3333::3333
```

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Ъυ ३ ٦ ٨

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51.1.4 ipv6 multicast boundary

IPv6 تن IPv6 Â Ъυ ३ **no** IPv6 Â

ipv6 multicast boundary *access-list-namer*

limit й 1024

threshold й 2147483647

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ƪ ३	⁸ ╗ ╽ IPv6 Â
~	a ⅄ ص ⅄ ˚ ˘ ˚ ˚ ⅄˘ Ю Â

ЛƱЮ ⁸ ╗ ╽ IPv6 й 100ˆ й 90 Â

```
Ruijie(config)# ipv6 multicast route-limit 100 90
```

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51.1.6 ipv6 multicast-routing

ƪ ३ ŭ ╟ IPv6 ⅄ Â ƪ ३ **no** IPv6 ⅄ Â

ipv6 multicast-routing

no ipv6 multicast-routing

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ŭ ╟ IPv6 ⅄

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ƪ ३ ŭ ╟ IPv6 ⅄ Â ŭ ╟ IPv6 ⅄ ˘ ~ ≠ a ŭ ╟ Â

~	ŭ ╟ IPv6 ╥ ˘ Ħυ ३ Â ╥ Ω IGMP snooping ╥ ˘ ŭ ╟ IGMP snooping ╥ ˘ ж Ħυ ३ a Â

ЛЪЮ ŭ ╟ IPv6 ┘ Â

```
Ruijie(config)# ipv6 multicast-rounting
```

ΛƱΟ ˥

```
Ruijie(config)# ipv6 multicast rpf longest-match
```

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-	10.4ˆ 2˜ ƪ ʒ

51.2 IPv6

51.2.1 show ipv6 mroute

ƪ ʒ IPv6 ˩ Â

show ipv6 mroute *[v6group-address] [v6source-address]* [**summary**] [**count**]

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v6group-address	IPv6 فخ سم Â
v6source-address	IPv6 فخ سم Â
summary	IPv6 Â
count	IPv6 Â

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ƪ ʒ IPv6 ˩ Â

1' ΛƱΟ

```
Ruijie# show ipv6 mroute
IPv6 Multicast Routing Table
Flags: I - Immediate Stat, T - Timed Stat, F - Forwarder installed
Timers: Uptime/Stat Expiry
Interface State: Interface (TTL)
```

```
(2222::1234, ff56::1234), uptime 00:00:31, stat expires 00:02:59
Owner PIM-SMv6, Flags: TF
Incoming interface: FastEthernet 2/1
Outgoing interface list:
FastEthernet 1/3
  2' ЛЫЮ
Ruijie# show ipv6 mroute count
IPv6 Multicast Statistics
Total 1 routes using 168 bytes memory
Route limit/Route threshold: 1024/2147483647
Total NOCACHE/WRONGVIF/WHOLEPKT recv from fwd: 77/147/0
Total NOCACHE/WRONGVIF/WHOLEPKT sent to clients: 77/147/0
Immediate/Timed stat updates sent to clients: 0/29
Reg ACK recv/Reg NACK recv/Reg pkt sent: 0/0/0
Next stats poll: 00:00:09
Forwarding Counts: Pkt count/Byte count, Other Counts: Wrong If pkts
Fwd msg counts: WRONGVIF/WHOLEPKT recv
Client msg counts: WRONGVIF/WHOLEPKT/Imm Stat/Timed Stat sent
Reg pkt counts: Reg ACK recv/Reg NACK recv/Reg pkt sent
(2222::1234, ff56::1234), Forwarding: 1/0, Other: 0
  Fwd msg: 0/0, Client msg: 0/0/0/0,  Reg: 0/0/0
  3' ЛЫЮ
Ruijie# show ipv6 mroute summary
IPv6 Multicast Routing Table
Flags: I - Immediate Stat, T - Timed Stat, F - Forwarder installed
Timers: Uptime/Stat Expiry
Interface State: Interface (TTL)
(2222::1234, ff56::1234), 00:00:28/00:03:25, PIM-SMv6, Flags: TF
```

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ھو ۶	
clear ipv6 mroute	-
clear ipv6 mroute statistics	-

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ھو ۶ ٦ ھ

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51.2.2 show ipv6 rpf

ЪЦ ३ IPv6 فخ سم RPF Â

show ipv6 rpf *v6source-address*

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v6group-address	IPv6 IPv6 فخ سم Â

ЪЦ ३

ЪЦ ३ IPv6 فخ سم RPF Â

ЛЪЮ ¡ 2222::3333 RPF

```
Ruijie# show ipv6 rpf 2222::3333
  RPF interface: GigabitEthernet 0/1
  RPF neighbor: ::
  RPF route: 2222::/64
  RPF type: unicast (connected)
  RPF recursion count: 0
  Doing distance-preferred lookups across tables
  Distance: 0
  Metric: 0
```

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51.2.3 show ipv6 mroute static

IPv6 Â

show ipv6 mroute staitc

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```
Ruijie#show ipv6 mvif
Interface              Mif   Owner          Uptime
                       Idx   Module
Register               0                    03d03h09m
VLAN 1                 1     PIMSMV6        03d03h09m
```

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51.3 IPv6

51.3.1 debug nsm mcast6 all

IPv6 Â ƚυ ३ **no** IPv6

debug nsm mcast6 all

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51.3.2 debug nsm mcast6 fib-msg

IPv6 ˜ ক্ষ Â ƚu ३ **no**

debug nsm mcast6 fib-msg

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˘ ৷ ৷ IPv6 ˜ ক্ষ Â

IPv6 ˜ ক্ষ

```
Ruijie# debug nsm mcast6 fib-msg
```

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51.3.3 debug nsm mcast6 register

IPv6 ̈Ą ∧ ∩ ̈Ą Â ħυ ३ **no**

debug nsm mcast6 register

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52 PIM-SMv6

52.1 PIM-SMv6

52.1.1 clear ipv6 mroute

clear ipv6 mroute {* | ipv6_group_address | ipv6_group_address ipv6_source_address }

参数

参数	
*	Â
ipv6_group_address	Â
ipv6_group_address ipv6_source_address	Â

命令模式

配置说明

使用指南

```
Ruijie# clear ipv6 mroute *
Ruijie# clear ipv6 mroute ff66::6666
Ruijie# clear ipv6 mroute ff66::6666 3333::3333
```

权限级别

权限级别	
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平台

命令信息

信息	
-	-

52.1.2 clear ipv6 mroute statistics

clear ipv6 mroute statistics {* | *ipv6_group_address* [*ipv6_source_address*] }

৭	
*	Â
ipv6_group_address	Â
ipv6_group_address *ipv6_source_address*	Â

	⫦ ⫦
	Ruijie# **clear**
ƚu ३	
⋗	

ipv6 multicast-routing

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˘ a ŭ ╟ IPv6

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ŭ ╟ IPv6 ˘ ƪ ३ Â ج ৭ Ɔ ŭ ╟ PIM-SMv6 ˘ ≠ ƪ ३˘ ĭ ‡˘ **ipv6 pim sparse-mode** ƪ ३˘ PIM-SMv6 ŭ ╟ Â

```
Ruijie(config)# ipv6 multicast-routing
```

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52.1.6 ipv6 pim accept-bsr list

ipv6 pim accept-bsr list *WORD*

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WORD	v6 acl

PIM-SMv6 ৷ BSM Â

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ج PIM-SMv6 ৷ Ɔ ƪ ३˘ ৸ BSR تن Â

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim accept-bsr list bsr-list
```

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ج BSR Э a prefix-count ŷ 0 C-RP-ADV Â

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ج BSR Э ƿ ʒ˘ BSR ŷ BSR ˘ prefix-count ŷ 0 C-RP-ADV ˘ з ŷ C-RP Â

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim accept-crp-with-null-group
```

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-	-10.4 2˘ ƿ ʒ

52.1.9 ipv6 pim accept-register

ipv6 pim accept-register {**list** *ipv6_access-list* | **route-map** *map-name*}

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ʅ	
ipv6_access-list	ipv6_access-list ƿ ʅ acl
map-name	ƿ ‡

˘ a ƿ ʒ˘ ج RP Э ˝Ą فخ سم فخ سم a 8

ƿ ʒ

ج RP Э 8 فخ سم فخ سم ˝Ą ˘ ƿ ʒ Â ˆ ˝Ą ˘ RP . هى Register-Stop Â

```
Ruijie# configure terminal
```

```
Ruijie(config)# ipv6 pim accept-register list register-access-list
Ruijie(config)# ipv6 access-list register-access-list
Ю ˘ a fe80::2d0:f8ff:fe22:33ad ”Ą
Ruijie(config-ipv6-acl)# deny ipv6 fe80::2d0:f8ff:fe22:33ad/128
any
```

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ipv6 access-list	-

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52.1.10 ipv6 pim bsr-border

ipv6 pim bsr-border

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˘ a ƚu ३˘ . ৰ a BSR

ƚu ३ ৰ

ŷ ⁸ BSM ˘ ৷ ƛu ج ৰ Э BSR ˘ ৰ ↑ BSM ৷
. ˘ BSM ≠ a ÿ ৰ ৷ Â

ج g 0/3 Э BSR G!

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52.1.11 ipv6 pim bsr-candidate

ipv6 pim bsr-candidate *interface-type interface-number* [*hash-mask-length*] [*priority-value*]

৸	৸	
	interface-type terface-number	৸
	hash-mask-length	ন ঈ <0-128>˘ ঈ RP ⁸ HASH ˘ 126
	priority-value	ন ঈ <0-255>˘ BSR ˝I ৸ ˘ 64

˘ a ƚυ ३˘ . a BSR

ƚυ ३

ج PIM-SMv6 ঙ ˘ ج ر ৷ BSR Â BSR ৸
RP Â BSR ر Ω BSR Â ج BSR
ɱ˘ C-BSR ঈ BSR˘ ج PIM-SMv6 ঙ ৸ ˘ ↑ Ü
BSR ফ ∩ ˝I Â
ƚυ ३ ৸ ∫υ ʃ BSR ফ ৸ PIM ˘
৷ ˝I BSR ফ ৸ ʃ ফ ˘ ৸ ʃ ফ IPV6
б ˘ ফ ঈ BSR ফ˘ ৸ ’ ‡
Â
ɱ ঈ BSR˘ ʃ ÿ ৸ BSR ʃ ˘ ˆ ɱ
˝I ˆ ˝I ˘ IPV6 ফ˜ Â

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim bsr-candidate g 0/3 30 100
Ruijie(config)# ipv6 pim bsr-candidate g 0/3
```

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	-	-

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52.1.12 ipv6 pim dr-priority

ipv6 pim dr-priority *priority-value*

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	priority-value	˜ ˜ Â <0-4294967294> й' 1 Â

˜ DR й 1

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DR ˘ Ю ৭ '

ipv6 pim ignore-rp-set-priority

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52.1.15 ipv6 pim neighbor-tracking

ipv6 pim neighbor-tracking

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˘ ৭ ╗ ⁸ ╒ Â ৭ ╗ ⁸ ╒ ╖ ╟ ˘ ⅄ Э ৷
join ˘ ˚ Э ⅄ ৷ join ˘ ⅋˘ ⅄ join
⁸. a ৷ ' ৭ ╗ ⁸ ╒ ˘ ⅋ ⅄ ৷ Л
৷ join Â Ю ╗ ⁸ ╒ ˘ Э ৷ Л ˚
join ˘ ˚ Ю ˘ . Â

Ю ৭ ╗ ⁸ ╒

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim neighbor-tracking
```

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Ю ३	
ipv6 pim propagation-delay	-

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52.1.16 ipv6 pim neighbor-filter

ipv6 pim neighbor-filter *ipv6_access-list*

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ipv6_access-list	ipv6_access-listʹ ƪ ৶ acl

˘ ৭ ŷ ╗

ƪ ३ ৭

˘ ╗ PIM ˘ ⁸ Â ৭
˘ ‡ PIM-SMV6 a б ˆ peering˜ ˘ б
Â

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim neighbor-filter acl
Ruijie(config-if)# exit
Ruijie(config)# ipv6 access-list acl
Ю ˘ fe80::2d0:f8ff:fe22:33ad
Ruijie(config-ipv6-acl)# deny ipv6 fe80::2d0:f8ff:fe22:33ad/128
any
```

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ipv6 access-list	-

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52.1.17 ipv6 pim override-interval

ipv6 pim override-interval *interval-milliseconds*

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interval-milliseconds	৷ ন<1-65535>ˇ ´ Æ ঌ

ˇ Hello Override-Interval 2500

ھو ३ ৷

৷ Override-Interval Â

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J/P-override-interval Â ˜ Э J/P-override-interval
Join-Prune holdtime ˇ ĭ ‡ ৷ Â ˇ
Â

Ю ৷ Override-Interval ঌ 3000

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim override-interval 3000
```

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ipv6 pim propagation-delay	-

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52.1.18 ipv6 pim probe-interval

ipv6 pim probe-interval *interval-seconds*

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interval-seconds	৷ ন ঌ <1-65535>ˇ ´ Æ ঌ

ˇ ”Ą 5s

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”Ą ˇ . ھ ”Ą ⁸ ŋ˜ DR ৷ RP ৷ ”Ą .

NULL-Register Â

~	ŽĄ a ŽĄ ⁸ `˘ ï ‡˘ a ╖ Â ɜ . Warning Â ɜ 3* ŽĄ ⁸ + ŽĄ a 65535˘ ï ‡˘ . Warning Â

Ю ŽĄ й 6s

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim probe-interval 6
```

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ipv6 pim register-suppression	-

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```
Ruijie(config-if)# ipv6 pim propagation-delay 600
```

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ipv6 pim override-interval	-
ipv6 pim neighbor-tracking	-

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52.1.20 ipv6 pim query-interval

ipv6 pim query-interval *interval-seconds*

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Interval-seconds	ন ঈ <1-65535> ˘ ´ Æ ঈ

˘ Hello ৭ 30s

ƪ ३ ৰ

Hello ৭ ˘ Hello ≠ ЛЮ ‡ ' Hello ঈ Hello ৭ 3.5 ' Hello ৭ * 3.5 > 65535˘ ৩ Hello ৭ ⁸ ঈ 18725 Â

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim query-interval 60
```

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52.1.21 ipv6 pim register-checksum-wholepkt

ipv6 pim register-checksum-wholepkt [**group-list** *ipv6_access-list*]

৭	
ipv6_access-list	*ipv6_access-list* Ĥu ɹ acl Â group-list ipv6_access-list ˘ فذ سم Â

˘ Ą Ω PIM Ω Ą ˘ PIM
Â

Ĥu ३

ĭ ڈ Ą Ω ѝ PIM ˜ ŭ ȅ
˘ ´ Ą PIM Â ѝ ˘ Ĥu ३ Â

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim register-checksum-wholepkt
Ruijie(config)# ipv6 pim register-checksum-wholepkt
group-list checksum-access-list
Ruijie(config)# ipv6 access-list checksum-access-list
Ю ff66::6666/64 Ą Ω
Ruijie(config-ipv6-acl)# permit ipv6 any ff66::6666/64
```

- T 3 - 1 1 1 5 6 (- T 3 1 1 1 . 6 0 5 . 6 6 0 7 1

ipv6 pim register-rate-limit *rate*

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rate	৷ register ˘ ৷ ন <1-65535>

a ”Ą ৷

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ƕ ३ ˆ S˜ G˜ ”Ą ৷ ˘ a ”Ą ৷ Â ŭ ╟ ƕ ३ æ DR ∩ RP ˘ a ⁸ ”Ą ৷ Â

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim register-rate-limit 3000
```

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[redacted]		[redacted]

52.1.23 ipv6 pim register-rp-reachability

ipv6 pim register-rp-reachability

```
Ruijie# configure terminal
```

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RP ≠ RP ∩ BSR ⁸ ⌟ Â Ԧ ʒ Ю '

Â ' BSR ⁸ ∩ RP ⌟ ˘ ˝I ╟ Â

Â γ ' ⁸ RP ⌟ Л ˆ ACL˜

ˆ a ACL˜ ˘ RP a Â

Â Ь ' RP ⌞ ⌟ ˘ IPv6 RP ˝I

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interface-type interface-number	۸
priority-value	۷ ˘ ۷ تن ۸ <0-255>˘ priority priority-value ˘ ”I 192
Interval-seconds	۷ ˘ ۷ تن ۸ <1-16383>˘ interval interval-seconds ˘ interval-seconds 60s
ipv6_access-list	۷ ˘ ħυ ۷ acl˙ group-list ipv6_access-list ˘ Â

˘ RP

ipv6_acl_name	ipv6_acl_name RP ƒƨ ƨƨ IPV6 ƨƨ ƒƨ ƨƨ ƒƨ RP ƨƨ Â ˘ RP ƨƨ ƒƨ IPV6 ƨƨ ƒƨ ƨƨ ƒƨ RP ƨƨ Â

ƬU ३

˘ RP ƨƨ ƒƨ IPV6 ƨƨ ƒƨ ƨƨ ƒƨ RP ƨƨ Â

ƨƨ ƒƨ RP ƨƨ ˘ ƛU ৭ ৯ƛU ৯ RP ƨƨ ƒƨ IPV6 ƨƨ ƒƨ ƨƨ ƒƨ RP ƨƨ '

ƛƬƲ RP ƨƨ ƒƨ IPV6 ƨƨ˘ƒƨ ƨƨ ƒƨ RP ƨƨ '

```
Ruijie(config)# ipv6 pim rp embedded
```

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ipv6 access-list	-

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52.1.29 ipv6 pim rp-register-kat

ipv6 pim rp-register-kat *seconds*

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seconds	KAT ৯ Â৯ <1-65535>˘ ´ Æ ৸ Â

˘ RP Э KAT 210s **Â**

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RP Э KAT

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim rp-register-kat 250
```

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52.1.30 ipv6 pim sparse-mode

ipv6 pim sparse-mode

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ৰ Э a ŭ ╟ PIM-SMv6

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ह ৰ Э ŭ PIM-SMv6 ˇ ƚu ३ Â

&

ह ŭ ╟ PIM-SMv6 ɱ˜ ह Ю ŭ ╟ ৷ ╥ ˇ
ĭ ‡. ŭ ╟ PIM-SMv6 ≠ a ৷ Â
ह ŭ ╟ PIM-SMv6 ৲ ˇ MLD ह ৰ ৰ Э ⋮ ╟ ŭ ╟ˇ a
╟ Â
ƚu ३ ˇ ľ Failed to enable PIM-SMv6 on <
ৰ ৲ >, resource temporarily unavailable, please try again Ľˇ Ą
ƚu ३ Â
ƚu ३ ˇ ľ PIM-SMv6 Configure failed! VIF limit
exceeded in NSM!!! Ľˇ ɱ ৰ ˆ
৲ ৰ Э Â Ÿ ह ৰ Ю ŭ PIM-SMv6
ˇ a PIM-SMv6 PIM-DMv6 ৰ Â

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim sparse-mode
```

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BSR ⁸ RP ˝I RP Â

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ƬU ३ ʌ˘ RP ˝I BSR ⁸ RP Â

ƬO ƬU ३ RP ˝I Â

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim static-rp-preferred
```

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e *g 0/3*

pim triggered-hello-delay *3*

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52.2.2 show ipv6 pim sparse-mode bsr-router

show ipv6 pim sparse-mode bsr-router

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	BSR .

```
Ruijie# show ipv6 pim sparse-mode bsr-router
PIMv2 Bootstrap information
This system is the Bootstrap Router (BSR)
BSR address: 3333::8888
Uptime:00:03:31, BSR Priority: 64, Hash mask length: 126
Next bootstrap message in 00:00:47
Role: Candidate BSR  Priority: 64, Hash mask length: 126
State: Elected BSR
Candidate RP: 3333::8888(GigabitEthernet 0/5)
Advertisement interval 60 seconds
Next Cand_RP_advertisement in 00:00:37
```

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52.2.3 show ipv6 pim sparse-mode interface

show ipv6 pim sparse-mode interface [*interface-type interface-number* [detail]]

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interface-type interface-number	৲ ˘ ৭ interface-type interface-number ˘ ৭
detail	৲ ˘ ৭

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PIM-SMv6 ৭ Â

```
Ruijie# show ipv6 pim sparse-mode interface detail
GigabitEthernet 0/5 (vif 1):
Address fe80::2d0:f8ff:fe22:33ad, DR fe80::2d0:f8ff:fe22:34b3
Hello period 30 seconds, Next Hello in 6 seconds
Triggered Hello period 5 seconds
Secondary addresses:
   3333::8888
   4444::4444
  Neighbors:
   fe80::2d0:f8ff:fe22:34b3
```

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interface-type interface-number	৲ ˘ ৸˘ ˘ ƚu ३ ৸

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PIM-SMv6 ৸ Э ম MLD Â

```
Ruijie# show ipv6 pim sparse-mode local-members
PIM Local membership information
GigabitEthernet 0/5:
  (*, ff66::6666) : Include
```

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52.2.5 show ipv6 pim sparse-mode mroute

show ipv6 pim sparse-mode mroute {*ipv6_group_address* | *ipv6_source_address* }

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ipv6_group_address	IPv6 ফ ম Â
ipv6_source_address	IPv6 ফ ম Â

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52.2.6 show ipv6 pim sparse-mode neighbor

show ipv6 pim sparse-mode neighbor [**detail**]

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detail	৲ ˘ ৰ

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```
Ruijie# show ipv6 pim sparse-mode neighbor detail
Nbr fe80::2d0:f8ff:fe22:34b3 (GigabitEthernet 0/5)
 Expires in 86 seconds
  Secondary addresses:
   6666::6666
```

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```
Ruijie# show ipv6 pim sparse-mode rp mapping
PIM Group-to-RP Mappings
This system is the Bootstrap Router (v2)
Group(s): ff00::/8
  RP: 3333::1
    Info source: 3333::1, via bootstrap, priority 192
        Uptime: 00:12:40, expires: 00:01:50
```

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52.2.9 show ipv6 pim sparse-mode rp-hash

show ipv6 pim sparse-mode rp-hash *ipv6_group-address*

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ipv6_group-address	IPv6 فخ سم

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فخ سم ipv6_group-address RP Â

```
Ruijie# show ipv6 pim sparse-mode rp-hash ff66::6666
RP: 3333::8888
Info source: 3333::8888, via bootstrap
PIMv2 Hash Value 126
```

```
Errors:
Malformed packets:                          0
Bad checksums:                                      0
Send errors:                                        0
Packets received with unknown PIMv6 version:        0
```

53 MLD

53.1

53.1.1 clear ipv6 mld group

ƪυ ३ MLD ˜ ˝ ˆ ╟ ˘ Â ╟ ˘ ˝ report
˘ Â

clear ipv6 mld group [*group-address*] [*interface-type interface-number*]

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	╟ ˝ ˆ ˘ Â
group-address	128 Æ IPv6 فذ سم
interface-type	৭ صر
interface-number	৭ ৸

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MLD ˘ ε ў ╗ ف ,
≠ ╗ ˘ ≠ جم Â ÿ MLD ˘ ╟
˘ ˘ ⊿ ⎍ a ৭ **clear ipv6 mld group** ƪυ ३ Â

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```
Ruijie# clear ipv6 mld group
```

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```
Ruijie# clear ipv6 mld group ff1e::100
```

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```
Ruijie# clear ipv6 mld group ff1e::100 interfa fa0/1
```

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show ipv6 mld groups	-
show ipv6 mld interface	-

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ipv6 mld access-group *word*

no ipv6 mld access-group

৭	
Word	IPv6 ⁸ ACL ⅃

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Ъu ३ ৭

ج ৭ Э ˘ ⅃ Л Ъu ३ Â Ъu ३ Э ACL˘ ↑ ACL deny report ˘ Â Ъu ३ ACL˘ ↑ MLDv2 Â

~	⁸ Ъu ३ ACL Â ↑ MLD report ^ S1,S2,S3…Sn,G˜ ˘ Ъu ३ (0,G) ACL ৭ Â Л Ъu ३˘ ACL (0, G)˘ ⅃ Л ^ S1,S2,S3…Sn,G˜ Â

ج Ю ˘ ج ৭ Eth0/1 ↑ report acl˘ Â

```
Ruijie(config)#ipv6 access-list acl
Ruijie(config-ipv6-acl)#permit ipv6 ::/64 ff66::100/64
Ruijie(config-ipv6-acl)#permit ipv6 2222::3333/64 ff66::100/64
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if)# ipv6 mld access-group acl
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ह ^ Э ^ ŷ Ю ╗ Â ƪu ३ **no** ^ ╗ Â

ipv6 mld immediate-leave group-list *word*

no ipv6 mld immediate-leave group-list

^

^	
Word	IPv6 ⁸ ACL ⅄

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ह ƪu ३ Ю˘ ˆ MLD ⅄˘ ^
Â ⅄˘ ÿ ŷ ˸ ˘ ÿ ˘
Â ^ ā ⅄ ˘ Ω MLD ⅃ ˘ Ю
2s Â
ƪu ३˘ ˆ ⅄˘ a ^ Â
Â ^ Ю ^ ŷ Ю˘ Â

Ю ╗ Â

```
Ruijie# configure terminal
Ruijie(config)#ipv6 access-list acl
Ruijie(config-ipv6-acl)#permit ipv6 2222::3333/64 ff66::100/64
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if)# ipv6 mld immediate-leave group-list acl
```

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ipv6 mld last-member-query-interval	-

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53.1.5 ipv6 mld join-group

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Ipv6 mld join-group *group-address*

no ipv6 mld join-group *group-address*

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group-address	ipv6 ﺴﻢ ﻓﺨ

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ƚυ ʅ

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ƚυ ʅ ꟼ ΰ ╟ MLD ꟼ ў ӥ ╗ Â ꟼ ˧ Ꙃ ў ╟ ˧ ˘ ≠ ˧ Ꙃ Â

ﺠ ﺠ ꟼ Э ╗ ˜ ƚυ ʅ Â

╗ Ꙃ 0xFF*1 à 0xFF3* ﺴﻢ ﻓﺨ˘ a Â Ꙃ 0xFF*2 ﺴﻢ ﻓﺨ˘ a Â

ꙂЮ ╗ ў ˜ ˌ

```
Ruijie# configure terminal
Ruijie(config)# interface fast 0/1
Ruijie(config-if)# ipv6 mld join-group ff55::100
```

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-	-

53.1.6 ipv6 mld last-member-query-count

last-member-query-count ΰ ╟ MLD ꟼ ˥ done ꟼ˘ ˧ Â ƚυ ʅ **last-member-query-count** Â **no** ƚυ ʅ Â

ipv6 mld last-member-query-count *number*

no ipv6 mld last-member-query-count

ฯ	MLD

Ћu ʒ ʌ

ʌ ʃ MLD ˘ جھ Ÿ ˘ ʌ Э MLD ˜ Â й **mld last-member-query-count** ╗ Э ` Â

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```
Ruijie# configure terminal
Ruijie(config)# interface fa 0/1
Ruijie(config-if)# ipv6 mld last-member-query-interval 200
```

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ipv6 mld immediate-leave	-

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Ћu ʒ ˥ ʌ

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-	-

53.1.8 ipv6 mld limit ( )

Ћu ʒ جھ ʌ MLD ˜ ˩Лu ˜ ʃ ˜ Â ʌ ˘ **no** Â

ipv6 mld limit *number* [**except** *access-list*]

no ipv6 mld limit

ʌ

ʌ	
number	MLD ˘ a ˩ p 8 تن a Â й 1024 Â
except *access-list*	ˆ ˩ ˜ 8 جھ تن ˩

Ю 8 й 1024 Â

Ћu ʒ ʌ

Ћu ʒ MLD ˜ ʃ ˜ 8˘ ˜ 8 ˘ Л ʃ report ˘ a Â ˩

≠ except ˘ ‡ ↑ ج access-list ˘ ˘ a ↓ ˘
8˘ ج ˘ 8 Ю ↓ Л ˘ .
Ъυ ३ ≠ ↓ Л ⁂ ↑ ˘ ↑ Π ↓ Л ˘
8 ↑ ˘ Л ¨I Â

ЛЪЮ 8 й 300˝
Ruijie(config-if)# **ipv6 mld limit** *300*
ЛЪЮ 8 й 300˝ acl Ÿ ↓ Л ˘ ↑ ˘ a ↓ 8'
Ruijie(config-if)# **ipv6 mld limit** *300 except acl*

Ъυ ३

Ъυ ३	
-	-

↓

Ъυ ३ ↑ ↓

↑	
-	-

53.1.9 ipv6 mld limit ( )

Ъυ ३ MLD ˘ ↑ ˘ Â ↓ ˘ no Â

ipv6 mld limit *number* [**except** *word*]

no ipv6 mld limit *number* [**except** *word*]

↑

↑	
number	MLD ˘ ↑ ˘ ˘ تن 1-65536 Â
except	ˆ ↓ ˜
word	ˆ ↓ ˜ ipv6

a ↓ p a Â

Ъυ ३

Ъυ ३ ˘ ↑ ˘ 8˘ ˘ ج 8 ↑
a MLD ˘ a ↓ Â ↑ Ü ج except ˘ a ↓ 8 Â

Ъu ३ ٦ ⊿	⊿	
	-	-

53.1.11 ipv6 mld proxy-service

Ъu ३ ŭ ╟ Ю mroute-proxy ⊿ ╚╗ Âæ ⊿ Э Ъu ३˘ ⊿
й mroute-proxy Э ⊿˘ Ю ⊿˘ Ю ⊿ ˆ Э Â

ipv6 mld proxy-service

no ipv6 mld proxy-service

⊿	⊿	
	-	-

⊿ a й proxy-service

Ъu ३ ⊿

Ĥ ę ˘ ˇ ˛ Ĵ **no** ˀ Â

ipv6 mld query-interval *seconds*

no ipv6 mld query-interval

ˀ	
seconds	˘ Ã Æ ˀ ˇ ˛ ˆ ˀ 1˙ 18000 Â

125 Â

Ĥ ę ˀ

˛ Ĵ ˘ ˇ ˛ ˛ ˇ Â

ˆ ˀ Ethernet 0 ˇ ˘ ˀ 120s Â

```
Ruijie(config-if)# ipv6 mld query-interval 120
```

ˆ ˀ Ethernet 0 ˇ ˘ ˀ Â

```
Ruijie(config-if)# no ipv6 mld query-interval
```

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Ĥ ę ˆ ˀ	
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53.1.13 ipv6 mld query-max-response-time

Ĥ ę ! ˇ ˛ Ĵ **no** ! ˀ Â

ipv6 mld query-max-response-time *seconds*

no ipv6 mld query-max-response-time

ˀ	
seconds	! Â´ Æ ˇ ˀ ˆ ˀ 1˙ 25 Â

10s Â

Ĥu ३ ^

Ĥu ३ ⁸ ج ˅ ˅ ˇ ˇ ! Â ج ˆ ! ˅ ˇ ˇ ˆ ˇ MLD ˇ ˇ Â Ĥu ३ˇ ˅ Ĵu ⁸ ˇ ! Â

ج ^ gigabitEthernet 0/1 ˇ ˅ ˇ ˇ 20s Â

```
Ruijie(config-if)# ipv6 mld query-max-response-time 20
```

ج ^ gigabitEthernet 0/1 ˇ ˅ ˇ ˇ Â

```
Ruijie(config-if)# no ipv6 mld query-max-response-time
```

Ĥu ३

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Ĥu ३ ˥ ˅

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53.1.14 ipv6 mld querier-timeout

Ĥu ३ ˇ ˅ Ĵu no ˇ ˇ ˇ ˇ ˇ .

ipv6 mld querier-timeout *seconds*

no ipv6 mld querier-timeout

^

^	
seconds	ˇ ˇ Â´ Æ ˇ ˇ 60˙ 300 Â

255s Â

Ĥu ३ ^

Ю˘ ч **ip mld query-interval** ˇ ˇ 255s Â ج ˇ ˆ ˇ ˇ ˇ Â

ह ^ Ю ˘ è ⅟ 200s Â

```
Ruijie(config-if)# ipv6 mld querier-timeout 200
```

ह ^ Ethernet 0 ˘ ⅟ ѝ Â

```
Ruijie(config-if)# no ipv6 mld querier-timeout
```

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ħυ ३ ˥ ^

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-	-

53.1.15 ipv6 mld robustness-variable

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ipv6 mld robustness-variable *number*

no ipv6 mld robustness-variable

^

^	
number	˩ ˘ ن ѝ è 2-7 Ê Â

ѝ 2

ħυ ३ ^ Â

ЛυЮ ˩ ѝ 3

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0
Ruijie(config-if)# ipv6 mld robustness-variable 3
```

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53.1.16 ipv6 mld ssm-map enable

Ю ३ ॐ Ю ŭ ╟ **mld ssm-map** ╥ ˘ Ю ३ й'

Ipv6 mld ssm-map enable

no ipv6 mld ssm-map enable

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╥ a ŭ ╟ Â

Ю ३

Ю ३ ˘ ╟ ˉ ˆ ⁸ ╦ Â Ю ३
Ю ३ **ipv6 mld ssm-map static** ৗ Â

ॐ Ю ŭ **mld ssm-map** ╥ Â

```
Ruijie(config)# ipv6 mld ssm-map enable
```

Ю ३	

no ipv6 mld ssm-map static *access-list X:X:X:X::X*

৭	
access-list	ipv6 ħυ ɹ ACL
X:X:X:X::X	´ فخ سم

فخ سم

ħυ ३

ħυ ३ б **ipv6 mld ssm-map enable** ɹ ˘ ħυ ३ ɹ˘ ↑ mldv2 ЛυЮ Э Â

ACL ɹ й te Э فخ سم 4444::1234 Â ħυ ३ й'

Ъu ३ ج ৲ Э ╗ Â б join-group ш ⁞ a
╗ ˆ ˘ ╗ Â
ج ج ৲ Э ╗ ˘ Ъu ३ Â a clear Ъu ३ , ৲
no ipv6 mld static-group Â

ЛЪЮ ╗ ў ˘ '

```
Ruijie# configure terminal
Ruijie(config)# interface fast 0/1
Ruijie(config-if)# ipv6 mld static-group ff55::3
```

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Ъu ३ ৲ ৲		[redacted]
	-	-

53.1.19 ipv6 mld version

Ъu ३ ج ৲ MLD i 5 1

[redacted]

[redacted]

```
Ruijie(config-if)# ipv6 mld version 1
```

ใช้งาน

ใช้งาน	
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2' ƻO '

```
Ruijie# show ipv6 mld groups detail
Interface:     VLAN 1
Group:         ff66::1
Uptime:        00:10:26
Group mode:    Exclude (Expires: 00:02:47)
Last reporter:  fe80::2d0:f8ff:fe22:3378
Source list is empty
```

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53.2.2 show ipv6 mld interface

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

```
MLD interface limit is 1024
MLD interface has 0 group-record states
MLD interface has 1 join-group records
MLD interface has 0 static-group records
MLD activity: 0 joins, 0 leaves
MLD query interval is 125 seconds
MLD querier timeout is 255 seconds
MLD max query response time is 10 seconds
Last member query response interval is 10 (1/10s)
Last member query count is 2
Group Membership interval is 260
Robustness Variable is 2
```

ใช้งาน

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ใช้งานโดยค่า

ค่า	
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53.2.3 show ipv6 mld ssm-mapping

ใช้งาน ระดับสิทธิ์ Â

show ipv6 mld ssm-mapping [

```
Ruijie# show ipv6 mld ssm-mapping ff66::1234
Group address: ff66::1234
Database     : Static
Source list  : 5555::1234
Ruijie# show ipv6 mld ssm-mapping
SSM Mapping : Enabled
Database    : Static mappings configured
```

协议

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说明

协议配置说明

说明	
-	-

54 MLD Snooping

54.1

54.1.1 ipv6 mld profile

MLD profile ⁸ ⅆ Â profile ˘ ”I جه
Ю profile Â ħu ३ ħu ३˘ profile-number˘ mld
profile Â

ipv6 mld profile *profile-number*

no ipv6 mld profile *profile-number*

٩	
profile-number	profile ٨˘ تن 1-1024

Â

ħu ३ Â

MLD Profiles Э ⅆ˘ I' SVGL فخسم تن ـا ـà I'
٩ تن ـا ـà I' MLD Filtering تن ـا ٨ ٦ Â يج ˘ ѝ profile
˘ profile Ω ٦ Â

Ю … ٨ ѝ 1 profile profile Â

```
Ruijie(config)# ipv6 mld profile 1
Ruijie(config-profile)#
```

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range	profile فخسم تن
deny	profile ѝ ѝ deny
permit	profile ѝ ѝ permit

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	10.4

54.1.2 range

profile ˘ profile ˘ profile ƻ
ƚυ ३ range˘ ⅃ Ɲ ´ ˘ ≠ ⅃ Ɲ ˘ Â
ƚυ ३ no Â

range *low-ipv6-address* [*high-ipv6-address*]

no range *low-ipv6-address* [*high-ipv6-address*]

ᑎ	
low-ipv6-address	æ
high-ipv6-address]	

Â

ƚυ ३ profile Â

low-ipv6-address high-ipv6-address ˘ ˘

54.1.3 deny

ˉ profile ˇ profile Ю ƪu ३ deny Â

deny

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profile deny Â

ƪu ३ profile Â

˝I ج profile Ю range ƪu ३ ˇ Â

Ю … ˉ FF77::100 profile :

```
Ruijie(config)# ipv6 mld profile 1
Ruijie(config-profile)# range FF77::100
Ruijie(config-profile)# deny
```

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ƪu ३	
ipv6 mld profile	… profile
range	ˇ فخ سم
permit	profile й й permit

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54.1.4 permit

profile ˇ profile Ю ƪu ३ permit Â

permit

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ह Ю ॲ VLAN Â ў ॲ б ॲ VLAN
ॲ ' ह ॅ VLAN ॅ ॲ
ॲ VLAN ॅ ॲ ॲ Â

Ю ह Э mld snooping ivgl

```
Ruijie(config)# ipv6 mld snooping svgl profile 1
```

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ipv6 mld snooping ivgl	mld snooping ivgl
ipv6 mld snooping ivgl-svgl	mld snooping ʌ

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54.1.8 ipv6 mld snooping svgl ivgl-svgl

mld snooping ivgl-svgl ˘ ƪ ʒ **ipv6 mld snooping ivgl-svgl** Â ƪ ʒ no mld snooping Â

ipv6 mld snooping ivgl-svgl *profile-number*

no ipv6 mld snooping

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profile-number	profile ʌ˘ ته 1-1024

ŭ ╟ mld snooping Â

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˘ ‡ IVGL ǎ SVGL ч Â IVGL Ω SVGL ч ˩ ʃ ʌ ˘ ˩ ʃ MLD Profile ǐ فخسم تن SVGL˘ جم فخسم تن ˘ ˩ ˘ ʎ ˩ ʃ VLAN ˩ ˘ ǵ فخسم تن ˩ ˘ ʎ ʌ VLAN Â

Ю جم Э mld snooping ivgl-svgl ˘ profile1 فخسم تن SVGL تن'

```
Ruijie(config)# ipv6 mld snooping ivgl-svgl
Ruijie(config)# ipv6 mld snooping svgl profile 1
```

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ƪ ʒ	
ipv6 mld snooping ivgl	mld snooping ivgl

ipv6 mld snooping ivgl-svgl	mld snooping ʌ

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10.4	

54.1.9 ipv6 mld snooping dyn-mr-aging-time

ipv6 mld snooping dyn-mr-aging-time *time* ╟ ৲ ৸ ৸ ৸˘ **no ipv6 mld snooping dyn-mr-aging-time** Â

ipv6 mld snooping dyn-mr-aging-time *time*

no ipv6 mld snooping dyn-mr-aging-time

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৲	
time	╟ ৲ ৸ ˘ ৸ й 1-3600˘ ´ Æ й

300s Â

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╟ ৲ ج È ৸ ɱ ˆ MLD IPv6 PIM Hello ˘ ৲ ÿ ৸ Â

Ю ╟ ৲ ৸ й 500s˘

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

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54.1.10 ipv6 mld snooping query-max-response-time

ipv6 mld snooping query-max-response-time *time* MLD
ˈ ˘ **no ipv6 mld snooping query-max-response-time**
Â

ipv6 mld snooping query-max-response-time *time*

no ipv6 mld snooping query-max-response-time

৭	
time	MLD ˈ ˘ ৷ ঋ 1-65535˝ ´ Æ ঋ

10s Â

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ঞ ˆ MLD ʌ˘ γ ˚ ৭ ৯ ঝ˘
ঝ ঋ ˈ ˘ ঝ ঋ 0 ˘ ‡ ঋ ৭ a ̈Ą ˚
˘ γ ৭ ÿ mld snooping ৷ Â
ঞ ˆ MLD ʌ˘ γ ˚ ৭ ŭ ╟ ৯
ঝ˘ ঝ ঋ ˈ ˘ ঝ ঋ 0 ˘ ‡ ঋ ৭ a ̈Ą
˚ ˘ γ ৭ ÿ mld snooping ৷ Â
MLD ˘ a ঝ Â

Ю MLD ˈ ঋ 15s˝

```
Ruijie(config)# ipv6 mld snooping query-max-response-time 15
```

.62 ref0 lw280TjET(config)#

no ipv6 mld snooping vlan *vid*

৭	
vid	vlan id ৸˘ ৶ ৸ 1-4094

ह ŭ ╟ mld snooping ˘ vlan ŭ ╟ mld snooping Â

ƚυ ३

ह ŭ ╟ mld snooping ˘ vlan ŭ ╟ mld snooping ' ৶ ৸υ vlan mld snooping ╥ Â

Ю VLAN 1 mld snooping ╥ '

```
Ruijie(config)# no ipv6 mld snooping vlan 1
```

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ƚυ ३ ৭ ৶	
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54.1.12 ipv6 mld snooping vlan mrouter learn

╟ ŭ MLD query PIM ˘ ৸υ ╟ ⁞ ৸˘ ƚυ ३ **ipv6 mld snooping vlan mrouter learn** Â ƚυ ३ no ৶ ╟ ˘ Â

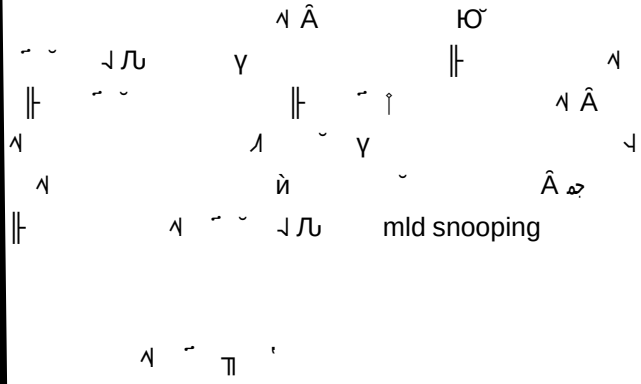
ipv6 mld snooping vlan *vid* **mrouter learn**

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

৭	
vid	vlan id ৸˘ ৶ ৸ 1-4094

╥

ƚυ ३




```
snooping vlan 1 mrouter learn
```

fastEthernet *0/1*

	ใช้งาน	
ใช้งาน	**ipv6 mld snooping vlan mrouter interface**	

ƕ ३ ৭ ৶	৸	
	10.4	

54.1.16 ipv6 mld snooping suppression enable

mld snooping suppression˘ ƕ ३ **ipv6 mld snooping suppression enable** Â ƕ ३ no mld snooping suppression Â

ipv6 mld snooping suppression enable

no ipv6 mld snooping suppression enable

৭	৭	

ƕ ३

MLD ˜ ˇ ⁸ ╗ ৸˘ ج γ ৭ ˆ IPv6 MLD ˜ ˇ ৭ Ь ˘ a ৶ Ь ৭ ৶ ε MLD ˜ ˇ ˘ ৭ ∫∪ Â

ƕ ३ ৸˘ suppression ╗ ŭ ╟˘ MLD v1 report ⁸˘ a MLD v2 report ⁸ Â

Ю ج Э mld snooping suppression˙

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

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	10.4	

54.1.17 ipv6 mld source-check port

ʌ 8 ʌ ʌ Â mld snooping
ʌ ╖ ˘ Ъu ३ **ipv6 mld snooping source-check port** Â
Ъu ३ no ʌ ╖ Â

ipv6 mld snooping source-check port

no ipv6 mld snooping source-check port

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Ъu ३

mld snooping ʌ ш MLD ʌ Â ʌ ˘ ÿ
ʌ ʎ ʅ ˘ γ mld snooping ˩
˩↑ Ä ˘ ʌ Э Â mld snooping ʌ ˘ ʌ ÿ ʌ
ʅ ˘ γ ˩ ˩ Ä ʌ' ÿ ʌ
й ˘ Â
ʌ ˘ ˘ ʌ˘ ї ‡
Â

Ю mld snooping ʌ ╖ '

```
Ruijie(config)# ipv6 mld snooping source-check port
```

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54.1.18 ipv6 mld snooping filter

ʌ ʌ ˘ ج ʌ Ю Ъu ३
profile Â Ъu ३ no profile Â

ipv6 mld snooping filter *profile-number*

no ipv6 mld snooping filter

ƪu ३ ৲

ˇ ‡ جھ ৲ Ɔˇ تن تن ˇ a ˇĄ
à MLD Report Â

Ю ˇI ৲ 0/1 Ɔ ৲ 100 '

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ipv6 mld snooping max-group 100
```

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ƪu ३	
ipv6 mld snooping filter	৲

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54.1.20 clear ipv6 mld snooping gda-table

‖ ˉ ৲ , ƪu ३ **clear ipv6 mld snooping gda-table** ƪu ३ Â

clear ipv6 mld snooping gda-table

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‖ ˉ ৲ Â

‖ ˉ ৲ '

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

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54.1.21 debug mld-snp

mld ╚ , ħυ ३ **debug mld-snp** ħυ ३ Â

debug mld-snp

undebug mld-snp

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৭	

ħυ ३

mld ╚ Â

mld ╚ '

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

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54.2

54.2.1 show ipv6 mld snooping

mld snooping Â

Show ipv6 mld snooping [**gda-table** | **interfaces** | **mrouter**|

mld profile

1' **show ipv6 mld profile** ھو ۋ MLD profile '

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

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ھو ۋ	

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ھو ۋ ۇ ۋ

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10.4	

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55.1.1 protected-ports route-deny

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protected-ports route-deny

no protected-ports route-deny

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ᴺ Ь ᴳᴵ

ᵗᵘ ᶜᵍ

ᴺ ᵝᵢ ᴺ ᴶ˘ ᴺ ˩Л᳡ 3 ˘ ᵗᵘ ᶜᵍ ᴶ˘

ᴺ a 3 Â **show running-config** ᵗᵘ ᶜᵍ Â

"$Dᵉ6666ᵐ@3ᵐ@95"“%#4QgB)!AaA@Â!ᵐR) 1ᵐ4ᵐ

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

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

ৰ

ৰ	
broadcast	৪ ৗ Â
multicast	৲ ৪ ৗ Â
unicast	৲ ´ ৪ ৗ Â
percent	Ռ ˆ 20 20%
packets	Ռ pps ঙ´ Æ . packets per second
Rate-bps	Â
64k-2M	Ռ 64k ঙ´ Æ Â
2-100M	Ռ 1M ঙ´ Æ Â
100M Ռ Э	Ռ 8M ঙ´ Æ Â

ৰ ৰ Â

ৰ Э ˆ à ´ ↑ ˘ ↑ ˘
৲ Ռ ৗ Â ˜ ৲
Â
৲ Ռ ˆ ⋮ à Ռ´ ৪ Â ˆ à ´ ↑
˘ ص ↑ ৲ ˆ ˆ ↑ ৲
˜ Â

show storm-control ৰ Â

Ю ৰ GigabitEthernet 1/1 Э ৪ ৗ ˘ 3
ঙ 4M Â

```
Ruijie# configure terminal
Ruijie(config)# interface GigabitEthernet 1/1
Ruijie(config-if)# storm-control multicast 4096
Ruijie(config-if)# end
```

ৰ

ৰ	
show storm-control	৪ Â

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ㅏㅇ ㅋ ㅅ	ㅅ	
	-	-

55.1.3 switchport protected

ㅏㅇ ㅋ ㅅ ㅎ ㅅ Â ㅏㅇ ㅋ **no** ㅅ Â

switchport protected

no switchport protected

ㅅ	ㅅ	
	-	-

	ㅅ
ㅏㅇ ㅋ	ㅅ
	ㅅ ㅎ ㅅ ㅈ˘ Ю ㅅ Ω ㅅ a γ ㅓ Λ ㅇ З ˘ ㅅ б ㅅ ㅓ Λ ㅇ Â **show interfaces** ㅏㅇ ㅋ Â
	Ruijie(config)# **interface gigabitethernet** *1/1* Ruijie(config-if)# **switchport protected**

ㅏㅇ ㅋ	ㅏㅇ ㅋ	
	show interfaces	ㅅ Ω Â

ㅅ	-

ㅏㅇ ㅋ ㅅ	ㅅ	
	-	-

55.1.4 switchport port-security

ㅅ ㅠ ˘ ㅅ Â ㅏㅇ ㅋ no ㅅ ˘

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

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

[illegible]	
port-security	[illegible]
violation protect	[illegible]
violation restrict	[illegible] trap [illegible]
violation shutdown	[illegible] Trap [illegible]

[illegible]

[illegible]

[illegible] MAC [illegible] IP([illegible]) [illegible] a [illegible] 1 [illegible] M [illegible]

Ю [illegible] Gigabitethernet 1/1 [illegible] shutdown'

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# switchport port-security
Ruijie(config-if)# switchport port-security violation shutdown
```

[illegible]	
show port-security	[illegible]

[illegible]

[illegible]	
-	-

55.1.5 switchport port-security aging

[illegible]

switchport port-security aging {**static** | **time time** }

no switchport port-security aging {**static** | **time** }

[illegible]	
Static	[illegible]
time time	[illegible] 0 [illegible] 1440 [illegible]

[illegible]

[illegible]

[illegible] **no switchport port-security aging time** [illegible] **no switchport port-security aging static** [illegible]

show port-security [illegible]

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# switchport port-security aging time 8
Ruijie(config-if)# switchport port-security aging static
```

[illegible]	
show port-security	[illegible]

[illegible]

[illegible]	
-	-

55.1.6 switchport port-security binding

٨ ١٥ فخ سم ˘
˘١ ١
Â no ٦

[**no**] **switchport port-secur** ss |
ipv6-address

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

٨

ﻧ

ﻳﻮﻳﺮ ﻳﺎ ﻧ

ﻧ	
-	-

55.1.7 switchport port-security binding interface

ﻳﻮ ﻫﻫﻫﻫ ﻫﻫﻫﻫ ﻳﺎ ﻳﻮ ﻫﻫﻫﻫ IP+ MAC IP ﻳ
ﻧﻳ ﻧ ﻫﻫﻫﻫ ﻳﺎ ﻳﻮ ﻳ a ﻧ
Â no ﻳ ﻫﻫﻫﻫ'

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

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

ﻧ

ﻧ	
interface-id	ﻧ ID
mac-address	MAC ﻫﻫﻫﻫ
Vlan_id	MAC VID
Ipv4-address	Ipv4 Ip ﻫﻫﻫﻫ
Ipv6-address	Ipv6 Ip ﻫﻫﻫﻫ

ﻳﻮﻳﺮ

switchport port-security binding	[illegible]
Switchport port-security mac-address	[illegible]
switchport port-security aging	[illegible]
show port-security	[illegible]

[illegible]

[illegible]	
-	-

55.1.8 switchport port-security maximum

[illegible] no [illegible]

switchport port-security maximum *value*

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

[illegible]	
value	[illegible] 1-128

128

[illegible]

[illegible] 128 [illegible]

[illegible]

1' [illegible] 10 [illegible] 2'

```
Ruijie(config)#inter g0/10
Ruijie(config-if)# switchport port-security maximum 2
```

[illegible]	
switchport port-security	[illegible]
switchport port-security binding	[illegible]

Switchport port-security mac-address	[illegible]
switchport port-security aging	[illegible]
show port-security	[illegible]

[illegible]

[illegible]	
-	-

55.1.9 switchport port-security mac-address

[illegible] no [illegible]

[**no**] **switchport port-security mac-address** ***mac-address*** [*vlan vlan-id*]

[illegible]	
mac-address	[illegible]
vlan-id	MAC [illegible] VID [illegible] TRUNK [illegible] vlan-id

[illegible]

[illegible]

[illegible] 1' TRUNK [illegible] 10 [illegible] 00d0.f800.5555 VID=2'

```
Ruijie(config)#inter g0/10
Ruijie(config-if)# switchport port-security mac-address 00d0.f800.5555 vlan 2
```

[illegible]	
switchport port-security	[illegible]
switchport port-security binding	[illegible]

switchport port-security mac-address interface	[illegible]
switchport port-security aging	[illegible]
show port-security	[illegible]

[illegible]

[illegible]	
-	-

55.1.10 switchport port-security mac-address interface

[illegible] no [illegible]

[**no**] **switchport port-security interface** *interface-id* **mac-address** *mac-address* [*vlan vlan-id*]

[illegible]	
interface-id	[illegible] ID
mac-address	[illegible]
vlan-id	MAC [illegible] VID [illegible] TRUNK [illegible] vlan-id

[illegible]

[illegible]

[illegible]

1' TRUNK [illegible] 10 [illegible] 00d0.f800.5555 VID=2'

```
Ruijie(config)# switchport port-security interface g0/10 mac-address 00d0.f800.5555 vlan 2
```

[illegible]	
switchport port-security	[illegible]
switchport port-security binding	[illegible]

Switchport port-security mac-address	٨ ٦٥ فذ سم
switchport port-security aging	٨ فذ سم لا
show port-security	٨

٨

٦ ٣ ٤	
٨	
-	-

55.2

55.2.1 show storm-control

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show storm-control [*interface-id*]

٨	
٨	
interface-id	٨ ٨ Â

Â

٣ ٤

```
Ruijie# show storm-control gigabitethernet 1/1
Interface Broadcast Control Multicast Control Unicast Control
------------------------------------- ---------------
Gi1/1 Disabled Disabled Disabled
```

٣ ٤	
٣ ٤	
storm-control	٨ ٨ Â

٨

ตัวอย่างที่ 1	ค่า	
	-	-

56 802.1X

56.1 dot1x

56.1.1 dot1x auto-req

802.1X ǔ ╟ ╗ ˘ ƪ ३ **dot1x auto-req** Â ƪ ३ **no** ৲ ǔ ╟ ╗ Â

[**no**] **dot1x auto-req**

	৲	

Ю ३ ٦ ৶	৸	
	-	-

56.1.3 dot1x auto-req req-interval

ў ╟ ৻ ˘ **no** й

dot1x auto-req req-interval *interval*

no dot1x auto-req req-interval

৸	৸	
	interval	ў ╟ ৻ ˘ ´ Æ s

30

Ю ३ Â

ў ╟ ৻ ˘ ৻ Л **show dot1x auto-req** Ю ३ ╖ Â

Ю ৻ 802.1x й 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
```

Ю ३	Ю ३	
	show dot1x auto-req	ў ╟ Â

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Ю ३ ٦ ৶	৸	
	-	-

56.1.4 dot1x auto-req user-detect

ŭ ╟ ˩ ˘ no й Â

dot1x auto-req user-detect

no dot1x auto-req user-detect

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ƪ ʒ Â

ŭ ╟ ˩ ˘ ˩ Л **show dot1x auto-req** ƪ ʒ ˥ Â

Ю ŭ ج Э Л 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
```

ƪ ʒ	
show dot1x auto-req	ŭ ╟ Â

˩

ƪ ʒ ˥ ˩	
-	-

56.2 dot1x

56.2.1 dot1x timeout quiet-period

Ĥu ३ ˆ ৸ ३ ˜ ⅄↑ ˆ
˜ Â Ĥu ३ **no** ѝ Â

dot1x timeout quiet-period *seconds*

no dot1x timeout quiet-period

৸		
	seconds	⅄↑ Â تن 0 ↑ 65535 Â´ Æ s

	10 Â
Ĥu ३	Â

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

Ъ ъ

Ъ ъ	
show dot1x	802.1x Â

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Ъ ъ ˆ Л

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56.2.2 dot1x timeout re-authperiod

جھ Л˘ Ъ ъ ˘ .
 Â Ъ ъ **no** й Â

dot1x timeout re-authperiod *seconds*

no dot1x timeout re-authperiod

Л

Л	
seconds	Â ت 0 ↑ 65535 Â´ Æ s Â

3600

Ъ ъ Â

˩ Л **show dot1x** Ъ ъ 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
Supplicant Timeout:   3 sec
Server Timeout:      5 sec
Re-authen Max:       3 times
Maximum 2Request:     3 times
Filter Non-RG Supp:   Disabled
Client Oline Probe:   Disabled
Eapol Tag Enable:    Disabled
Authorization Mode:   Group Server
```

-	-

56.2.5 dot1x timeout tx-period

Л˘ Ъu ъ ˘ . Â
Ъu ъ no й Â

dot1x timeout tx-period *seconds*

no dot1x timeout tx-period

٩	
seconds	Â تن 0 ˆ 65535 Â

3 Â

Ъu ъ Â

˩ Л˘ **show dot1x** Ъu ъ 802.1x Â

Ю й 10s'

```
802.1X Status:       Enabled
Authentication Mode:  EAP-MD5
Authed User Number:   0
Re-authen Enabled:    Disabled
Re-authen Period:     1000 sec
Quiet Timer Period:   1000 sec
Tx Timer Period:      10 sec
Supplicant Timeout:   10 sec
Server Timeout:       10 sec
Re-authen Max:        3 times
Maximum Request:      3 times
Filter Non-RG Supp:   Disabled
Clie(times )]TJ0.bled
```

```
Authorization Mode:   Group Server
```

ใบ ๓	
show dot1x	802.1x Â

```
Re-authen Period:    1000 sec
Quiet Timer Period:   1000 sec
Tx Timer Period:     10 sec
Supplicant Timeout:   10 sec
Server Timeout:      10 sec
Re-authen Max:       3 times
Maximum Request:     3 times
Filter Non-RG Supp:   Disabled
Client Oline Probe:   Disabled
Eapol Tag Enable:    Disabled
Authorization Mode:   Group Server
```

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Ъu ३	
show dot1x	802.1x Â

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56.3.2 dot1x reauth-max

Ъu ३ Â Ъu ३ **no** Â

dot1x reauth-max *count*

no dot1x reauth-max

ৰ

ৰ	
count	Â

й 3

Ъu ३ Â

Ъu ३˘ ‡ ৲ ᒐ Â ৲ ᒐ **show dot1x** Ъu ३ 802.1x Â

Ю ᒥ '

```
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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ھو ۶	
show dot1x	802.1x Â

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56.4 dot1x

56.4.1 dot1x probe-timer

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

no dot1x probe-timer

৭	
no	
interval	hello
alive	ह
interval	৯

Hello ŷ 20 ’

ह ŷ 250 Â

ƪ ३ Â

ह ৯˘ ৲ ৸ **show dot1x** ƪ ३ 802.1x Â

hello ŷ 30 , ह ŷ 120 '

```
Ruijie# configure terminal
Ruijie(config)# dot1x probe-timer interval 30
Ruijie(config)# dot1x probe-timer alive 120
Ruijie(config)# end
Ruijie# show dot1x probe-timer
Hello Interval: 30 Seconds
Hello Alive: 120 Seconds
```

ƪ ३	
Show dot1x probe-timer	ह ৯ Â

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ใบ ๓	Â	
	๒ ๗ Â	
	๒ ๗ '	

```
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
```

56.5 dot1x

56.5.1 dot1x authentication

ج AAA ĤÕ̆ AAA Ĺ ˘ Ĥu ɜ̨
Â Ĥu ɜ̨ **no** Â

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

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

৭	

56.5.2 dot1x auth-address-table

ƪu ३ 802.1X فخ سم Â ƪu ३ **no** ┘ فخ سم Â

dot1x auth-address-table address *mac-addr* **interface** *interface*

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

٩		
٩	*mac-addr*	┘ فخ سم Â
	Interface	٩ ٨ Â

┘ فخ سم Â

ƪu ३ Â

┘ جم فخ سم فخ سم 802.1X Â **show dot1x auth-address table** ƪu ३ فخ سم Â

Ю جم ٩ Ɜ ╗ فخ سم Â

```
Ruijie# configure terminal
Ruijie(config)# dot1x auth-address-table address
00d0f8000000 interface ehternet 1/1
Ruijie(config)# end
Ruijie#
```

ƪu ३		
ƪu ३	**show dot1x auth-address-table**	802.1X فخ سم Â

٨

ƪu ३ ٦ ٨	٨	
	-	-

56.5.3 dot1x auth-mode

802.1x Â

dot1x auth-mode {**eap-md5** | **chap** | **pap**}

no dot1x auth-mode

৭	
eap-md5	802.1x EAP-MD5 Â
chap	802.1x CHAP Â
pap	802.1x PAP Â

৭

Ĥu ३ Â

⌟ Л **show dot1x** Ĥu ३ 802.1x Â

Ю 802.1x ৲ '

```
Ruijie# configure terminal
Ruijie(config)# dot1x default
Ruijie(config)# end
Ruijie# end
```

Ĥu ३

Ĥu ३	
show dot1x	802.1x Â

```
Ruijie(config)# dot1x dynamic-vlan enable
Ruijie(config)# end
Ruijie#
```

Ъ ъ

Ъ ъ	
show dot1x	802.1x Â

Л

Ъ ъ Ъ Л

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56.5.6 dot1x guest-vlan

ї **guest vlan** Â Ъ ъ **no** Л Л Â

dot1x dynamic-vlan <1 - 4094>

no dot1x guest-vlan

Л

Л	
vid	Л <1 - 4094>

й

Ъ ъ Л Ю

Â ' guest vlan guest vlan a Â **dot1x dynamic-vlan enable** Ъ ъ ї ‡ guest vlan a Â

Â γ ' guest vlan a Л γ è Л vlan Â

Â Ь ' Л Л **show running-config** Ъ ъ 802.1x Â

Ю 802.1x guest vlan '

```
Ruijie# configure terminal
Ruijie(config)# dot1x guest-vlan 10
Ruijie(config)# end
Ruijie#
```

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ใบ ๓	
show running-config	802.1x Â

ง

ใบ ๓ ๆ ง

ง	
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56.5.7 dot1x eapol-tag

EAPOL TAG ╗ Â

dot1x eapol-tag

no dot1x eapol-tag

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-	-

й

Ю ३ Â

৷ Л৬ **show dot1x** Ю ३ 802.1x Â

Ю 802.1X tag '

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

Ю ३	
show dot1x	802.1x Â

৶

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-	-

56.5.8 dot1x max-req

ج DOT1X ∩ ⊢ ⋚ ˘ DOT1X ج ⁾ ⊢ ⋚ ; ˘ ‡
DOT1X ¨Ą ⌋ ⊢ ⋚ ৷ Â Ю ३ ⌋ ⊢ ⋚ Â
Ю ३ **no** Â

dot1x max-req *count*

no dot1x max-req

๑	

	৲ Л৬ **show dot1x private-supplicant-only** Ю ३ 802.1x Â

Ю ৲ '

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

Ю ३

Ю ३	
show dot1x private-supplicant-only	Â

৲

Ю ३ ৲

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-	-

56.5.10 dot1x port-control auto

ह ৲ ˘ ৲ ï ৲ ╗ Â Ю ३ **no**
Â

dot1x port-control auto

no dot1x port-control

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-	-

	৲ a ৲ ╗ 802.1x Â

Ю ३ ৲

	৲ Л৬ **show dot1x** Ю ३ 802.1x 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#

Ъu ३

Ъu ३	
show dot1x	802.1x Â

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Ъu ३ ˥ ᴶ

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-	-

56.5.11 dot1x port-control-mode

802.1x ⁸ Ю ⁂ MAC ⁸ ˘ ᴺ
˘ ȅ ج ᴶ ᴺ ˘ ⁂ ᴺ ⁸ ˥
ᴺ ˘ ᴺ ᴶ ᴺ˘ ج ᴺ Ю
Â ⁂ ᴺ´ ⁸ ˘ ᴺ Ю ᴺ ´ ˘
ᴺ ᴶ ᴺ˘ Â ج´ ⁸ Ю˘ ᴺ ᴶ й
ᴺ˘ ˥ ᴺ ȅ ج˘ ‡ ᴺ Ю ˘ Â
Ъu ३ Ю˙

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

no dot1x port-control-mode

ᴺ

ᴺ	
mac-based	⁂ mac 802.1X ⁸
port-based	⁂ ᴺ 802.1X ⁸
single-host	⁂ ᴺ´ 802.1x ⁸

й ⁂ mac-based ⁸

Ъu ३ ᴺ Â

˥ Л **show dot1x port-control** Ъu ३ ᴺ 802.1x Â
single-host ⁂ ᴺ´ 802.1x ⁸˘ ج **show dot1x port-control** Э
ᴺ й port-based˘ ج **show running-config** й **dot1x port-control-mode port-based single-host** Â
single-host ᴺ ´ ˘ ╟ ᴺ default-user-limit˘ ج single-host
Â ج single-host ᴶ˘ ᴺ Ю default-user-limit˘

single-host ˘ ˆ ˇ ´ Э Â

1' Ю ˆ 802.1x ˆ 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 ˆ´ 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#
```

Ъu ъ

Ъu ъ	
show dot1x port-control	ˆ 802.1x Â
Show running-config	Â

ˇ

Ъu ъ ˇ ˇ

ˇ	
-	-

56.5.12 dot1x stationarity enable

802.1x ˆ ˆ 8 Ю˘ Ю˘ ╟ ˇ ˇ ˆ ˇ ˘ Ю˘ й a ÿ 802.1X ˆ ˆ è ˆ˘ ˇ ˇ ЛЪЮЪu ъ ˆ Â

dot1x stationarity enable

no dot1x stationarity enable

ˆ

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й ╟ ˇ ˇ ˆ Â

ใบ รุ

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1' ل فخ' ruijie.net/web'

```
Ruijie(config)# dot1x redirect url http://ruijie.net/web
```

802.1X

dot1x redirect for special tcp-destination port	⌟
dot1x redirect num for special source-ip	⌟ ⌟
show dot1x	dot1x ⌟

⌟

ƒu ३ ⌉ ⌟	
⌠	
-	-

56.5.16 dot1x redirect num for special source-ip

⌟ ⌟ ˘ 1 ˘ ⌟ ن ⌠ 1-10 Â no ⌟ ⌠ ƒu ३ '

dot1x redirect num for special source-ip *num*

no dot1x redirect num for special source-ip

⌠	
⌠	
num	⌟

1

ƒu ३

1' ⌟ ⌠ 3'

```
Ruijie(config)# dot1x redirect num for special source-ip 3
```

ƒu ३	
ƒu ३	
dot1x redirect url	⌟ ⌠
dot1x redirect for special tcp-destination port	⌠ ⌠˘ ip ip web ⌟
dot1x redirect time-out	⌟

show dot1x	dot1x ⌋

⌋

ƪu ३ ⌉ ⌋	⌋	
	-	-

56.6 dot1x

56.6.1 show dot1x

802.1x Â

show dot1x

⌋	⌋	
	-	-

ƪu ३ Â

Ю '

```
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#
```

ھۇ ۋ

ھۇ ۋ	
dot1x auth-mode	802.1x Â
dot1x max-req	Â
dot1x port-control auto	۸ ۱ ۸ ╗ Â
dot1x reauth-max	
dot1x re-authentication	۱ Â
dot1x timeout quiet-period	۸۱ Â
dot1x timeout re-authperiod	Â
dot1x timeout server-timeout	∩ ╘ ⌊ Â
dot1x timeout supp-timeout	∩ Â
dot1x timeout tx-period	˘ . Â

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ھۇ ۋ 802.1X فىڭ Â

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

۸

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mac-addr	٦ فىڭ
interface	۸ ۸

Â

Ю '

```
Ruijie# show dot1x auth-address-table
interface:g3/1
-----------------------------------
mac addr: 00D0.F800.0001
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

-	-

56.6.3 show dot1x auto-req

ў ╟ ৲ 802.1x Â

show dot1x auto-req

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56.6.4 show dot1x private-supplicant-only

show dot1x private-supplicant-only

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```
Ruijie# show dot1x private-supplicant-only
private-supplicant-only:: disabled
Ruijie#
```

dot1x auth-mode	802.1x
dot1x max-req	
dot1x port-control auto	
dot1x reauth-max	
dot1x re-authentication	
dot1x timeout quiet-period	
dot1x timeout re-authperiod	
dot1x timeout server-timeout	

dot1x timeout supp-timeout	Ô Â
dot1x timeout tx-period	˘ . Ô Â

ค่าเริ่มต้น

ใบรับรอง	ค่าเริ่มต้น
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56.6.5 show dot1x max-req

show dot1x max-req

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```
Ruijie# show dot1x max-req
max-req: 2 times
Ruijie#
```

dot1x auth-mode	802.1x
dot1x max-req	
dot1x port-control auto	
dot1x reauth-max	
dot1x re-authentication	
dot1x timeout quiet-period	
dot1x timeout re-authperiod	
dot1x timeout server-timeout	
dot1x timeout supp-timeout	
dot1x timeout tx-period	

ห	

	dot1x timeout server-timeout	∩ ⊨ ⋊ Â
	dot1x timeout supp-timeout	∩ Â
	dot1x timeout tx-period	˘ . ▯ Â

⋪

dot1x reauth-max	
dot1x re-authentication	ĩ Â
dot1x timeout quiet-period	ʌ↑ Â
dot1x timeout re-authperiod	Â
dot1x timeout server-timeout	∩ ⊨ ⋊ Â
dot1x timeout supp-timeout	∩ Â
dot1x timeout tx-period	˘ . ▯ Â

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56.6.8 show dot1x re-authentication

show dot1x re-authentication

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Ĥu ३ Â

Ю '

```
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

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56.6.9 show dot1x reauth-max

show dot1x reauth-max

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	Â
	Â

[illegible]

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

[illegible]

[illegible]	
dot1x auth-mode	802.1x [illegible]
dot1x max-req	[illegible]
dot1x port-control auto	[illegible]
dot1x reauth-max	
dot1x re-authentication	[illegible]
dot1x timeout quiet-period	[illegible]
dot1x timeout re-authperiod	[illegible]
dot1x timeout server-timeout	[illegible]
dot1x timeout supp-timeout	[illegible]
dot1x timeout tx-period	[illegible]

[illegible]

[illegible]	
-	-

56.6.10 show dot1x summary

[illegible] 802.1X

show dot1x summary

[illegible]

[illegible]	
-	-

[illegible]

[illegible]

Â

[illegible]

```
[illegible]
Ruijie# show dot1x summary
ID    MAC       Interface VLAN Auth-State
Backend-State Port-Status Type
---------------- --------------- ---------------
1 00d0f8000000 Gi0/1       1  Authenticated Idle
Authed     Static
Ruijie#
```

[illegible]

[illegible]	
dot1x auth-mode	802.1x Â
dot1x max-req	Â
dot1x port-control auto	[illegible] Â
dot1x reauth-max	
dot1x re-authentication	[illegible] Â
dot1x timeout quiet-period	[illegible] Â
dot1x timeout re-authperiod	Â
dot1x timeout server-timeout	[illegible] Â
dot1x timeout supp-timeout	[illegible] Â
dot1x timeout tx-period	[illegible] Â

[illegible]

[illegible]

[illegible]	
-	-

56.6.11 show dot1x user id

Ĥu ३ 802.1X

show dot1x user id *<id>*

৭	
id	ج show summary id

Ĥu ३ Â

```
Ю '
Ruijie# show dot1x user id 1
User name: caikov
id: 1
Type: static
Mac address is 0013.2049.8272
Vlan id is 217
Access from port Gi0/13
User ip address is 192.168.217.64
Max user number on this port is 6000
COS on this port is 5
Up-bandwidth is 1024 kbps
Down-bandwidth is 1024 kbps
Authorization vlan is dep7
Authorization seesion time is 1000000 seconds
Authorization ip address is 192.168.217.64
Start accounting
Permit proxy user
Permit dial user
IP privilige is 2
```

Ĥu ३

Ĥu ३	
dot1x auth-mode	802.1x Â

dot1x max-req	Â
dot1x port-control auto	৲ ৲ ৲ ╗ Â
dot1x reauth-max	ᒪ

ৰ

ƪO '

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

ƪu ३	
dot1x auth-mode	802.1x Â
dot1x max-req	Â
dot1x port-control auto	ৰ ĭ ৰ ╗ Â
dot1x reauth-max	
dot1x re-authentication	ĭ Â

dot1x timeo/Tpf-0.0024 Tw 1.198 <4-0.0024 Tw 1.] 0.47A48 20.1 33.36 394.9840.1 F909B7>E2080

57 AAA

57.1

57.1.1 aaa authentication dot1x

AAA 802.1X ˘ Ĥu ३ **aaa authentication dot1x** 802.1X Â Ĥu ३ no 802.1X Â

aaa authentication dot1x {**default** | *list-name*} *method1* [*method2*...]

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

৭	
default	৭ ˘ ‡ ৶ Ĥ ঋ ঌ 802.1X Â
list-name	Ĥ ঋ 802.1X ˘ ৷ Ɲ Â
method	ľ local à none à group Ĺ ˘ 4
local	৯ ৶
none	a
group	Ĺ ৷ ˘ ৸ RADIUS Ĺ ৷

Ĥu ३ Â

ŭ AAA 802.1X Ĺ˘ AAA 802.1X ˜ ك Â **aaa authentication dot1x** Ĥu ३ ৷ 802.1X Â

৷ ৸ ; ˘ ৶ Â

Ĥ O Ĥ ঋ ৶ ঌ rds_d1x AAA 802.1X Â ˝I RADIUS Ĺ ৷ ˘ ج ↑ RADIUS Ĺ ৷ ˘ ‡ ৯ Â

```
Ruijie(config)# aaa authentication dot1x rds_d1x group radius local
```

ᒃᑐ ᖃ	
aaa new-model	AAA ᒪ
dot1x authentication	ᓄᑦ 802.1X ᐝ Ɜ
username	ᒪᕕ ᓴᓂ

ĤO ĤĦ AAA Enable Â ˝I RADIUS
ĹĻ ˘ ج ˆ RADIUS ĹĻ ˘ ‡
ـــ Â

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


Â

ŭ AAA AAA Login ˜ Â

aaa authentication login Login Â

Login a

Â

Ю list-1 AAA Login Â

RADIUS RADIUS

Â

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

aaa new-model	AAA
username	
login authentication	Login

ppp2_0	1 Tf0 Tc

local	⌘ ⌊
none	a
group	⊨ ⊻ ˘ ⋔ RADIUS ∩ TACACS+ ⊨ ⊻

Ъu ३ Â

ŭ AAA PPP ⊨˘ AAA PPP ˜ ⌫ Â **aaa authentication ppp** Ъu ३ ⌟ PPP Â ⌟ ⋔ ⁝ ˘ ⌊ Â

Ю Ъ⌘ ⌊ й rds_ppp AAA PPP Â ˝I RADIUS ⊨ ⊻ ˘ ⌠ ⌠ RADIUS ⊨ ⊻ ˘ ˘ ‡ ⌘ Â

```
Ruijie(config)# aaa authentication ppp rds_ppp
```

default	৲ ˘ Login Â
list-name	⊠ Login Â

Ъu ३ Â

Login ˘ ‖ ˆ Э Â ج Э
Login ˘ ৲ ३ Â في ⊠ ˘ ‡
˜ ˘ Э Login a ˘ ⊠ Login
Â

Ю ⊠ ⅃ й list-1 AAA Login Â ⌐
Â ⅃ ج 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
```

Ъu ३

Ъu ३	
aaa new-model	AAA ⊢
username	⊠ ⌐
login authentication	Login

৲

Ъu ३ ˥ ৲

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57.2

57.2.1 aaa authorization commands

ˆ NAS CLI Э ˘ AAA Ъu ३ ╗ Ъu ३
˘ ε Ъu ३ Â Ъu ३ **aaa authorization commands** Â Ъu ३ no AAA Ъu ३ ╗ Â

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

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

৭	
level	ƚυ ३ৃ ⁝˘ ন 0~15˘ ā ف ⁝ ƚυ ३ৃ ⁄ Â
default	৭ ˘ ‡ ⁄ ⁋ ’] Ư Ă –

57.2.2 aaa authorization config-commands

AAA ˆ ↑ ˊ ˋ ˜ Ю Ϸ ϳ ˇ
Ϸ ϳ **aaa authorization config-commands** Â Ϸ ϳ no AAA Ю Ϸ
ϳ ˥ Â

aaa authorization config-commands

no aaa authorization config-commands

ˊ	
-	-

a ЮϷ ϳ Â

Ϸ ϳ Â

˃ ˆ ˜ Ю Ϸ ϳ ˇ ˃ ˇ Ϸ ϳ no
˥ ˇ ‡ ˊ ˋ Ю Ϸ ϳ a Ϸ ϳ ˃ ˇ Â

Ю ЮϷ ϳ ˥ '
Ruijie(config)# **aaa authorization config-commands**

Ϸ ϳ	
aaa new-model	AAA ˩
aaa authorization commands	ЮЖ AAA Ϸ ϳ

˃

Ϸ ϳ ˅ ˃	
-	-

57.2.3 aaa authorization console

AAA ⁸ ˃ ˇ Ϸ ϳ ˇ Ϸ ϳ **aaa**
authorization console Â Ϸ ϳ no AAA ⁸ ˃ Ϸ ϳ
˥ Â

aaa authorization console

no aaa authorization console

৭	
-	-

a ⁸ ৶ Ъυ ३ Â

Ъυ ३ Â

RGOS Ш ⁸ ৶ Ո ὲ ˘ ৲ Ռ ⁸ ৶ ˘
ї Ъυ ३ Â ⁸ ৶ Ъυ ३ ╗ ˘ ‡ ˆ ⁸ ৶
Ъυ ३ a Â

Ю ⁸ ৶ Ъυ ३ ╗ '

```
Ruijie(config)# aaa authorization console
```

Ъυ ३	
aaa new-model	AAA ╚

AAA Խ ३

৭	
default	' ৭ ˘ ‡ ⅄ Ъ ॐ ѝ Network Â
method	ľ none à group Ь ˘ 4
none	a
group	Ь ⅄ ˘ ⅿ RADIUS Ω TACACS+ Ь ⅄

AAA Network ╗ Â

Ъу ३ Â

RGOS Ь PPP ãSLIP ˜ Â ˘ ‡ ৭ ‖ Â ⅃ Л Ъ a ⅃ ˘ б ˘ ৭ ⅿ ! ˘ ⅄ ˘ ⅿ ˘ ‡ a ¨Ą è ⅄ Â

RADIUS TACACS+ Ь ⅄ ھ Â Л ج ھھ Э ˘ ৭ ⅃ ৭ Â

Ю RADIUS Ь ⅄ Ь '

```
Ruijie(config)# aaa authorization network default group radius
```

Ъу ३	
aaa new-model	AAA Ь
aaa accounting	Ъ AAA
aaa authentication	Ъ AAA

Ъu ३ جه Э˘ Ъu ३ **authorization commands** Â Ъu ३ no ৸ Э Ъu ३ ╥ Â

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

no authorization commands *level*

৭	
level	Ъu ३ ⁞˘ تن 0~15˘ ā ف ⁞ Ъu ३ ৸ Â
default	৭ ˘ Ъu ३ Â
list-name	⊠ Ъu ३ Â

AAA Ъu ३ ╥ Â

Ъu ३ Â

Ъu ३ ˘ ╟ ˆ Э Â جه Э Ъu ३ ˘ ৸ ३ Â في ⊠ ˘ ‡ ˘ ˘ Э Ъu ३ a ˘ ⊠ Ъu ३ Â

Ю ৸ й cmd Ъu ३ ˘ 15 Ъu ३ ˘ TACACS+ й ⊨ ⊻˘ ⊨ ⊻ ؛ none Â ৸ ˆ 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
```

Ъu ३	
aaa new-model	AAA ⊨
aaa authorization commands	⊠ AAA Ъu ३

৸

Ъu ३ ৭ ৸	
-	-

57.2.7 authorization exec

Exec جه Э˘ Ъu ३ **authorization exec** Â
Ъu ३ no ৸ Э Exec ╖ Â

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

no authorization exec

৭

৭	
default	৭ ˘ Exec Â
list-name	ЪЖ Exec Â

AAA Exec ╖ Â

Ъu ३

Â

Exec ˘ ╟ ↑ Э Â جه Э
Exec ˘ ৸ ३ Â في ЪЖ ˘ ‡
˘ ˘ Э Exec a ˘ ЪЖ Exec
Â

Ю ৸ й exec-1 Exec ˘ RADIUS й ╘ ৸˘
╘ ৸ : none Â ৸ ↑ VTY 0 – 4 Э'

```
Ruijie(config)# aaa authorization exec exec-1 group radius none
Ruijie(config)# line vty 0 4
Ruijie(config-line)# authorization exec exec-1
```

Ъu ३

Ъu ३	
aaa new-model	AAA ╘
aaa authorization commands	ЪЖ AAA Exec

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Ъu ३ ৭ ৸

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57.3

57.3.1 aaa accounting commands

‖ ˘ ˆ NAS Ɔ Ԧ ʒ ‖ ˘

Ԧ ʒ **aaa accounting commands** Â Ԧ ʒ no ˅ Ԧ ʒ ˥ Â

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

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

˄

˄	
level	Ԧ ʒ ⋮ ˘ ش 0~15 ā ف ⋮ Ԧ ʒ ˘ Â
default	˄ ˘ ‡ ˅ ⋈ ѝ Ԧ ʒ Â
list-name	⋈ Ԧ ʒ ˘ ˅ ⎍ Â
method '	ˈ **none à group** ⊢ ˘ 4 '
none	a
group	⊢ ⊻ ˘ ⋔ TACACS+ ⊢ ⊻

˥

Ԧ ʒ Â

RGOS غ ɔ ʒ ɔ ɔ

aaa new-model	AAA
aaa authentication	AAA
accounting commands	Exec

-	-

57.3.3 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**

RADIUS

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

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

-	-

57.3.4 aaa accounting update

aaa accounting update **no aaa accounting update**

-	-

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


aaa new-model	AAA 上
aaa accounting network	网络

从	

-	-

57.3.6 accounting commands

accounting commands Â

no Э

Â

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

no accounting commands *level*

level	0~15
default	Â
list-name	Â

Â

Э Â Э

a

Â

Ю cmd 15 TACACS+ none Â VTY 0 – 4 Э'

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

aaa new-model	AAA
aaa accounting commands	AAA

-	-

57.3.7 accounting exec

Exec **accounting exec** no Exec

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

no accounting exec

default	Exec
list-name	Exec

Exec

Exec a Exec

Ю exec-1 Exec RADIUS none VTY 0 – 4

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

aaa new-model	AAA
aaa accounting commands	AAA Exec

-	-

-	-

57.4 AAA

57.4.1 aaa domain

ǽ ˘ ǽ Â Ĥu ३ no ৲ Ĥu ३ Â

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

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

	৲	
৲	**default**	৲ ˘ ǽ
	domain-name	ǽ ৶

	ǽ Â
Ĥu ३	Â
	ǽ ǽ ৶ AAA ⊨ Âdefault ঁ ǽ ˘ ≠ ǽ ˘ Â *domain-name* ঁ ǽ ৶ ˘ ǽ ৶˘ ‡ ǽ Â ŋ 32 ǽ Â

	Ю ǽ ৶ '
	 `Ruijie(config)# aaa domain ruijie.com`
	 `Ruijie(config-aaa-domain)#`

	Ĥu ३	

57.4.2 aaa domain enable

ааа ааа ر AAA ⊨ ˘ Ю й Â ˘ ”I ааа
ааа ر AAA ⊨ Â ЂU ३ no Â

aaa domain enable

no aaa domain enable

৭	৭	

"

	ह ˘ ५ ˘ default Â
Ĥu ३	ह Â
	ŷ ह Network Â
	Ю ह Network '

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

Ĥu ३

Ĥu ३	
aaa new-model	AAA Ĺ
aaa domain enable	ह ह ५ AAA Ĺ
show aaa domain	ह

५

Ĥu ३ ʔ ५

५	
-	-

57.4.5 authentication dot1x

ह ह Ю IEEE802.1x ˘ Ĥu ३ no ५ Ĥu ३ Â

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

no authentication dot1x

५	
default	५ ˘
list-name	५

	ह ˘ ५ ˘ default Â
Ĥu ३	ह Â

Й ॐ IEEE802.1x Â

ЮO ॐ IEEE802.1x '

```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)# authentication dot1x default
```

ЪU ३

ЪU ३	
aaa new-model	AAA ⊢
aaa domain enable	ॐ ॐ ⊥ AAA ⊢
show aaa domain	ॐ

⊥

ЪU ३ ⊤ ⊥

⊥	
-	-

57.4.6 authorization network

ॐ ॐ ЮO Network ˘ ЪU ३ no ⊥ ЪU ३ Â

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

no authorization network

⊥

⊥	
default	⊥ ˘
list-name	⊥

ॐ ˘ ⊣ ˘ default Â

ЪU ३ ॐ Â

Й ॐ Â

ЮO ॐ '

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

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

ใบ ๓	

aaa new-model	AAA ใหม่
aaa domain enable	เปิดใช้งาน AAA ใหม่
show aaa domain	แสดง

ค่าเริ่มต้น

ใช้งานโดย	**ค่าเริ่มต้น**	
	-	-

57.4.8 show aaa domain

คำสั่ง แสดง Â

show aaa domain [**default**

aaa new-model	AAA Ի
aaa domain enable	ՀՍՍ ՍՍ Ի AAA Ի

Ի

Ի	
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57.4.9 username-format

ՀՍՍ ՀՈ NAS Ն Ի Ի Ի Ի ՍՍ Ի ՀՅ no
Â

username-format {**without-domain** | **with-domain**}

no08 154.38 1.5 r

-	-

57.5 AAA

57.5.1 aaa group server

AAA

no

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

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

name	RADIUS TACACS+

RADIUS TACACS+

```
Ruijie(config)# aaa group server radius ss
Ruijie(config-gs-radius)# end
Ruijie# show aaa group
Group Name:  ss
Group Type:  radius
Referred:   1
Server List:
```

show aaa group	aaa

ƚu ३ ٦ ৶	٨	
	-	-

57.5.2 ip vrf forwarding

ѝ AAA ╚ ⅄ vrf no Â

ip vrf forwarding *vrf_name*

no ip vrf forwarding

٩	٩	
	vrf_name	vrf ⅄

ƚu ३	╚ ⅄ Â

	ѝ ╚ ⅄ vrf Â

Ю Â
`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`

ƚu ३	ƚu ३	
	aaa group server	aaa ╚ ⅄
	show aaa group	aaa ╚ ⅄

৶

ƚu ३ ٦ ৶	٨	
	-	-

57.5.3 server

╗ AAA ╞ ⅄ ╞ ⅄˘ no Â

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

no server *ip-addr* [**authen-port** *port1*] [**acct-port** *port2*]

৭	
ip-addr	╞ ⅄ ip فخ سم
port1	╞ ⅄ ৭ˆ RADIUS ╞ ⅄ ~
port2	╞ ⅄ ৭ˆ RADIUS ╞ ⅄ ~

╞ ⅄

ƚu ३ ╞ ⅄ Â

╞ ⅄ ╗ ╞ ⅄˘ a ৭ Â

Ю Â

```
Ruijie(config)# aaa group server radius ss
Ruijie(config-gs-radius)# server 192.168.4.12
acct-port 5 authen-port 6
Ruijie(config-gs-radius)# end
Ruijie# show aaa group
Group Name:  ss
Group Type:  radius
Referred:   2
Server List:
IP Address: 192.168.4.12
Authentication Port: 6
Accounting Port: 5
Referred:  1
```

ƚu ३	
aaa group server	aaa ╞ ⅄
show aaa group	aaa ╞ ⅄

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57.5.4 show aaa group

AAA ㄴㄌ Â

show aaa group

ㄅ	ㄅ	
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ㄷㄨ ㄋ Â
ㄷㄨ ㄋ AAA 8 ㄴㄌ Â

ㄅㄛ 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
```

ㄷㄨ ㄋ	ㄷㄨ ㄋ	
	aaa group server	AAA ㄴㄌ

ㄅ

ㄷㄨ ㄋ ㄱ ㄅ	ㄅ	
	-	-

57.6 AAA

57.6.1 aaa local authentication attempts

login

aaa local authentication attempts *max-attempts*

৭	৭	
	max-attempts'	˘ ৷ ন 1~2147483647 Â

й 3

Ĥ ३ Â

ƪu ३ Â

login ˘

Ю '

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

ƪu ३

ƪu ३	
Show running-config	ɱ
Show aaa lockout	ɱ login ৲

৲

ƪu ३ ৲

৲	
-	-

57.6.3 aaa new-model

RGOS AAA ╚ ˘ ƪu ३ **aaa new-model** AAA Â
ƪu ३ **no** AAA ╚ Â

aaa new-model

no aaa new-model

৲

৲	
-	-

AAA ╚

ƪu ३ Â

ƪu ३ AAA ƪu ३˘ AAA ╚˘ **aaa new-model**
AAA ╚ Â ŭ AAA˘ ‡ AAA ƪu ३ a ৲ Â

Ю AAA ╚ Â

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

认证	
aaa authentication	授权
	授权
aaa accounting	授权

级别

认证配置级别	级别	
	-	-

57.6.4 clear aaa local user lockout

57.6.5 debug aaa

AAA Â **no** Â

debug aaa event

no debug aaa event

-	-

EXEC Â

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-	-

57.6.6 show aaa method-list

AAA Â

show aaa method-list

-	-

Â

ƪu ३ AAA Â

ƪO AAA Â

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

ɱń ˘ Лυ ৭ Â

Ю '

```
Ruijie# show aaa user lockout all
```

ƚυ ३	
show running-config	ɱń
show aaa lockout	ɱń login ৭

৶

ƚυ ३ ৭ ৶	
-	-

58.1.2 radius attribute

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

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

৲	
id	৷৷ id <1-255>
type	type

৲ ৷ ⋮ '

id	৷৷	type
1	max down-rate	1
2	qos	2
3	user ip	3
4	vlan id	4
5	version to client	5
6	net ip	6
7	user name	7
8	password	8
9	file-diractory	9
10	file-count	10
11	file-name-0	11
12	file-name-1	12
13	file-name-2	13
14	file-name-3	14
15	file-name-4	15
16	max up-rate	16
17	version to server	17
18	flux-max-high32	18
19	flux-max-low32	19
20	proxy-avoid	20
21	dailup-avoid	21
22	ip privilige	22

23	login privilige	42

'

id	ll	type
1	max down-rate	76
2	qos	77
3	user ip	3
4	vlan id	4
5	version to client	5
6	net ip	6
7	user name	7
8	password	8
9	file-diractory	9
10	file-count	10
11	file-name-0	11
12	file-name-1	12
13	file-name-2	13
14	file-name-3	14
15	file-name-4	15
16	max up-rate	75
17	version to server	17
18	flux-max-high32	18
19	flux-max-low32	19
20	proxy-avoid	20
21	dailup-avoid	21
22	ip privilige	22
23	login privilige	42
24	limit to user number	50

Ĥu ३ Â

Ĥu ३ ص Â

Ю max up-rate ص ' ٦

ƪ ȝ

ƪ ȝ	
radius set qos cos	radius Ю qos й ˀ cos

ˀ

ƪ ȝ ˥ ˀ

ˀ	
-	-

58.1.3 radius-server deadtime

ˀ ˀ˘ جھ t تن ˆ ھی ˘ ‡ й ˩ ˘ t й
ˆ deadtime˜ ˘ RGOS RADIUS ˘ ƪ ȝ
radius-server deadtime Â ƪ ȝ **no** ˘ Â

radius-server deadtime *minnutes*

no radius-server deadtime

ˀ

ˀ	
minnutes	ˆ ´ Æ й ˆ ˜ Â ˀ تن й 1-1000 Â

5ˆ

ƪ ȝ Â

ƪ ȝ ˀ Â

Ю ƪ й 10ˆ '
Ruijie(config)# **radius-server deadtime** *10*

ƪ ȝ

ƪ ȝ	
radius-server host	ƪ RADIUS ˩ ŭ
radius-server retransmit	ƪ RADIUS ˀ
radius-server key	ƪ RADIUS ˀ ȝ
radius-server timeout	ƪ RADIUS

radius-server key	RADIUS
radius-server retransmit	RADIUS
radius-server timeout	RADIUS

-	-

58.1.5 radius-server key

RADIUS

radius-server key Â no Â

radius-server key *text-string*

no radius-server key

text-string	

Â

Â

RADIUS Â RADIUS

RADIUS Â

```
Ruijie(config)# radius-server key aaa
```

radius-server host	RADIUS
radius-server retransmit	RADIUS
radius-server timeout	RADIUS

∧	

ใช้คำสั่ง RADIUS เพื่อกำหนดค่าเวลาที่ใช้รอการตอบกลับจากเซิร์ฟเวอร์ RADIUS ใช้งาน **radius-server timeout** Â ใช้งาน **no** เพื่อยกเลิกค่าเวลาที่ใช้รอการตอบกลับ Â

radius-server timeout *seconds*

no radius-server timeout

ค่าเริ่มต้น

qos й dscp

Ъ ३ Â

Ъ ३˘ ৲ Л Ю qos

radius attribute	٨/ صر
radius set	qos ĩ cos

٨

٨/	
-	-

ħu ३ ٦ ٨

58.2 RADIUS

58.2.1 debug radius

RADIUS Â ħu ३ no RADIUS Â

debug radius [**event | detail**]

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

٨	**eve320.0044>Tj2C2_0 .58 459.26 -2**

RADIUS ᄂ ᄅ ᄀ Â

show radius parameter

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ƪ ३ Â

ƪ ३ radius ᄂ ᄅ ᄀ Â

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

radius-server host	ᄒ RADIUS ᄂ ᄅ ǔ
radius-server retransmit	ᄒ RADIUS
radius-server key	ᄒ RADIUS ३
radius-server timeout	ᄒ RADIUS

ھو ۋ Â

ھو ۋ radius ۇ ۇ Â

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

ھو ۋ

ھو ۋ	
radius-server host	ھۆ RADIUS ۇ ۇ ۈ
radius-server retransmit	ھۆ RADIUS ۇ
radius-server key	ھۆ RADIUS ۋ ۋ
radius-server timeout	ھۆ RADIUS

ۋ

ھو ۋ ۇ ۋ

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58.2.4 show radius vendor-specific

RADIUS ص Â

show radius vendor-specific

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ƪ ३ Â

ƪ ३ radius ص Â

```
Ruijie# show radius vendor-specific
id    vendor-specific       type-value
----- -------------------- ----------
1     max down-rate         76
2     qos                   77
3     user ip               3
4     vlan id               4
5     version to client     5
6     net ip                6
7     user name             7
8     password              8
```

คำสั่ง

ใช้งานคำสั่ง

คำสั่ง	
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59 TACACS+

59.1 TACACS+

59.1.1 aaa group server tacacs+

ħu ३ TACACS+ ╚ ⅄ ˘ a ⅃ TACACS+ ╚ ⅄ ˆ ˆ a ⅃ Â

aaa group server tacacs+ *group-name*

no aaa group server tacacs+ *group-name*

৭	
group-name	TACACS+ ╚ ⅄ ⅃

TACACS+ ╚ ⅄ Â

ħu ३ Â

TACACS+ ╚ ⅄ ˆ ˘ à à ⅃ Λ a ⅃ ╚ ⅄ Â

Ю ⅃ й tac1 TACACS+ ╚ ⅄ ˘ 3 جم 1.1.1.1
TACACS+ ╚ ⅄ فذسم '

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

ħu ३	
server	TACACS+ ╚ ⅄ server
ip vrf forwarding	TACACS+ ╚ ⅄ VRF ⅃

৭

ħu ३ ৭ ⅃	
-	-

59.1.2 ip tacacs source-interface

ħu ३ TACACS+ فخ سم Â

ip tacacs source-interface *interface*

no ip tacacs source-interface

٩	
Interface	TACACS+ فخ سم ٨

0 TACACS+ فخ سم **q Ãl p)TÑ[X ¤Ã 3 ¤ E ¥ ¤ Ã ¤ 4 ÀF** 0 E 6 < 0 5 5 F 1 8 D B B 5 B 2 1 6 E 0

vrf-name	vrf ɹ

ƕυ ३

TACACS+ ⊨ ɻ Â

ɨ TACACS+ ⊨ ɻ vrf ɹ Â

Ю ɨ TACACS+ ⊨ ɻ VRF ɹ ɨ vpn1'

```
Ruijie(config)# aaa group server tacacs+ tac1
Ruijie(config-gs-radius)# server 1.1.1.1
Ruijie(config-gs-radius)# ip vrf forwarding vpn1
```

ƕυ ३

ƕυ ३	
aaa group server tacacs+	TACACS+ ⊨ ɻ
server	TACACS+ ⊨ ɻ server

ɹ

ƕυ ३ ʔ ɹ

ɹ	
-	-

59.1.4 server(TACACS+)

ƕυ ३ TACACS+ ⊨ ɻ ⊨ ɻ ڤڎ سم Â

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

no server {*ip-address* | *ipv6-address*}

ɹ	
ip-address	TACACS+ ÄÈ9BB"f'#"B?ÃÃno

ħu ३ ŋńˇ ħu ३ **aaa group server tacacs+** TACACS+ Â TACACS+ ╚ ⅄ ╚ ⅄ ˇفخ سم جه ЮˇŸ **tacacs-server host** ħu ३ ╚ ⅄ Â

╚ ⅄ TACACS+ ╚ ⅄ ˇفخ سم ╚ ⅄ ؛ ˇ ⅃ ЮO ╚ ⅄ ⅃ Â

ЮO ⅃ ńˇ tac1 TACACS+ ╚ ⅄ ˇ 3 جه 1.1.1.1 TACACS+ ╚ ⅄ ˇفخ سم

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

ㄴㅁ ㅋ

Â

й TACACS+ AAA ㄴ˘ ㅎㅋ TACACS+ ㄴㅈ Â ㄱㄴ
tacacs-server ㄴㅁ ㅋ ㅎㅋ TACACS+ ㄴㅈ Â

Ю ㅎㅋ TACACS+ ㄴㅈ ў '

```
Ruijie(config)# tacacs-server host 192.168.12.1
Ruijie(config)# tacacs-server host 2001::1
```

ㄴㅁ ㅋ

ㄴㅁ ㅋ	
aaa authentication	ㅎㅋ AAA
tacacs-server key	ㅎㅋ TACACS+ ㄴㅈ ㅅ ㅋ
tacacs-server timeout	ㅎㅋ TACACS+ ㄴㅈ : ㅈ

ㅅ

ㄴㅁ ㅋ ㄱ ㅅ

ㅅ	
-	-

59.1.6 tacacs-server key

й ⊨ ⋊ a ⋭ ˘ host ħu ३ key ˘
⋭ Л∪ key ⊨ ⋊ key Â

Ю ħ⋣ TACACS+ ⊨ ⋊ ⋀ ३ й aaa'

```
Ruijie(config)#tacacs-server key aaa
```

ħu ३

ħu ३	
tacacs-server host	ħ⋣ TACACS+ ⊨ ⋊ ў
tacacs-server timeout	ħ⋣ TACACS+ ⋊

⋭

ħu ३ ⅂ ⋭

⋀	
-	-

59.1.7 tacacs-server timeout

ħu ३ б TACACS+ ⊨ ⋊ ˘ ⊨ ⋊ Â

tacacs-server timeout *seconds*

no tacacs-server timeout

⋀

⋀	
seconds	ˆ ´ Æ й ˜ Â ⋭ تن й 1-1000 Â

5

ħu ३ Â

ħu ३ : Â й ⊨ ⋊ a ⋭
˘ host ħu ३ timeout /¦

	tacacs-server host	ħ TACACS+ ᄂ ᄅ ў
	tacacs-server key	ħ TACACS+ ᄉ ३

ᄅ

ħυ ३ ᄀ ᄅ	ᄅ	
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59.2 TACACS+

59.2.1 debug tacacs+

TACACS+ Â ħυ ३ no TACACS+ Â

debug tacacs+

no debug tacacs+

ᄉ	

59.2.2 show tacacs

∩ ⁄ TACACS+ ⊨ ⋓ Â

60 SSH

60.1 SSH

60.1.1 crypto key generate

ᒪ ᔑ Ὠ ˘ ج ᗝ ħu ३'

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

৭	
rsa	RSA
dsa	DSA

ᗝ SSH Server Ὠ Â

ħu ३

SSH Server ᒪ ˘ ħu ३ SSH ᒪ ᔑ Ὠ Â ᔑ
enable service ssh-server ħu ३˘ SSH Server ╗ ÂSSH 1 RSA ' SSH 2 RSA DSA Â ج ˘ ᗝ RSA ˘ ‡ SSH1 б SSH2 ᔑ ᒥ ' DSA ˘ ‡ SSH2 ᔑ ᒥ Â

~ ˘ a ج ħu ३ **no crypto key generate**˘ ħu ३ **crypto key zeroize** ħu ३ Â

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

ħu ३	
show ip ssh	SSH Server ᗝ Â

ħu ३

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

-	-

60.1.2 crypto key zeroize

SSH ╞ ⅄ Ὼ ˘ ج Ю˘ ħu ३'

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

৭	
rsa	RSA
dsa	DSA

ħu ३

ħu ३ ╞ ⅄ Ὼ Â ⅄˘ SSH Server ὶ ὶ DISABLE Â SSH Serverĭ **no enable service ssh-server** ħu ३ Â

```
Ruijie# configure terminal
Ruijie(config)# crypto key zeroize rsa
```

ħu ३	
show ip ssh	SSH Server ɱ Â
crypto key generate {**rsa|dsa**}	DSA б RSA Â

৶ ˘ RGOS10.1 ЛЪЭ

ħu ३ ৶	
-	-

60.1.3 ip ssh authentication-retries

SSH Server Â ħu ३ no ὶ Â

ip ssh authentication-retries *retry times*

no ip ssh authentication-retries

ħυ ३

ħυ ३ SSH Server Âÿ ৷ ˘ 120s ╗ ˘ ‡ ѝ Â **show ip ssh** ħυ ३ SSH server Â

ѝ 100s˙

```
Ruijie# configure terminal
Ruijie(config)# ip ssh time-out 100
```

ħυ ३

ħυ ३	
show ip ssh	ssh-server ŋń Â

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˚ RGOS10.1 ЛЪЭ

ħυ ३ ˥ ৷

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-	-

60.1.5 ip ssh version

SSH server Â ħυ ३ no ѝ Â

ip ssh version {**1** | **2**}

no ip ssh version

৷

৷	
1	SSH Server SSH1
2	SSH Server SSH2

Ю SSH 1 Ոٔ 2 Â Л˘ ৷ ৷ SSH ৷ Â **no ip ssh version** ħυ ३ ≠ ৷ Лъ ѝ Â

ħυ ३

ħυ ३ ⁸ SSH Server SSH ˜ Â Ю˘ SSH Server SSH1 б SSH2˘ SSH 1 SSH 2 ৷ Лъ Â 1 2˘ ৷ SSH Â **show ip ssh** ħυ ३ SSH Server ŋń Â

√ 2

```
Ruijie# configure terminal
Ruijie(config)# ip ssh version 2
```

ħυ ३

ħυ ३	[redacted]
show ip ssh	SSH Server m Â

√ RGOS10.1 ЛυЭ

	Clear line vty *line_number*	ŋń VTY Â

ʎ	RGOS10.1 ЛƱƎ

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60.2.2 show crypto key mypubkey

SSH Server Ὢ Ὢ ʈ Â

show crypto key mypubkey {***rsaldsa***}

ʎ	

show ip ssh

৭	
-	-

ħu ३

SSH Server ɱ Â ↑ ' à ï SSH Server à à Â

~ . SSH ˘ ⊨ ⋊ ˘ ÿ SSH ѝ a ⊣ Â	

```
Ruijie# show ip ssh
```

ħu ३	
Ip ssh version {1 | 2}	SSH Server Â
ip ssh time-out time	SSH Server Â
Ip ssh authentication-retries retry times	SSH Server Â

⊿ ˘ RGOS10.1 ⊿ Э

ħu ३ ⊤ ⊿	
-	-

60.2.4 show ssh

SSH Â

show ssh

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-	-

61 CPU

61.1

61.1.1 cpu-protect type packet-type pps pps_value

CPU ٨ ص Â

cpu-protect type { **arp** | **bpdu** | **dhcp** | **ipv6mc** | **igmp** | **rip** | **ospf** | **vrrp** |

CPU

ħυ ३ Â

ħυ ३ CPU ɱ Â

Ю S9610 CPU Â

```
Ruijie# show cpu-protect mboard
ype        Pps      Total    Drop
------------ --------- --------- ---------
arp         500       19       0
bpdu        200       24       0
dhcp        0         0        0
gvrp        0         0        0
ipv6-mc     0         0        0
dvmrp       0         0        0
igmp        0         0        0
ospf        0         0        0
pim         0         0        0
rip         0         0        0
vrrp        0         0        0
unknow-ipmc  0         0        0
ttl1        0         0        0
...
```

ħυ ३

ħυ ३	
show cpu-protect slot *slot-num*	´ CPU Â

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ħυ ३ ʅ ɥ

-	-

61.2.2 show cpu-protect slot

´ CPP Â

	slot_num	৲ ন ৸ 1-16 Â

61.2.3 show cpu-protect type

३ ص '

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

٩	

62 DoS

62.1

62.1.1 ip deny invalid-l4port

ษ๊ ๊ Â ħυ ३ **no** ๊ Â

ip deny invalid-l4port

no ip deny invalid-l4port

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ЮŎ ๊ Â

ħυ ३ Â

1' ๒ Э ษ๊ ๊ '

```
Ruijie(config)# ip deny invalid-l4port
```

ŭ TCP ╗ Â ƚυ ३ **no** TCP ╗ Â

ip deny invalid-tcp

no ip deny invalid-tcp

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ƗÖ TCP ╗ Â

ƚυ ३ Â

1' ھ Э ŭ TCP ╗ '

```
Ruijie(config)# ip deny invalid-tcp
```

2' ھ Э TCP ╗ '

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

ƚυ ३

ƚυ ३	
show ip deny invalid-tcp	TCP

৶ -

ƚυ ३ ৲ ৶

৶	
-	-

62.1.3 ip deny land

ŭ Land ╗ Â ƚυ ३ **no** Land ╗ Â

ip deny land

no ip deny land

৭	
.	.

ƗÖ Land ╗ Â

ƚƣ ʒ Â

1' ج Ɔ ŭ Land ˥ '

```
Ruijie(config)# ip deny land
```

2' ج Ɔ Land ˥ '

```
Ruijie(config)# no ip deny land
```

ƚƣ ʒ

ƚƣ ʒ	
show ip deny land	Land

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ƚƣ ʒ ʃ ʎ

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62.2

62.2.1 show ip deny invalid-l4port

Â

show ip deny invalid-l4port

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-	-

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

protect against invalid l4port attack Off

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-	-

62.2.2 show ip deny invalid-tcp

TCP Â

62.2.3 show ip deny land

Land Â

show ip deny land

63 GSN

63.1

63.1.1 security address-bind enable

ƚυ ३ ৲ ĭ ফ্ৰ Â

security address-bind enable

no security address-bind enable

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-	-

ƚυ ३ ৲ ˘ γ ৲ˆ a ↑ AP ∩ AP ˘ ৲ ˜ Â

ƚυ ३ Â ‡ ৲ ফ্ৰ . ˘ ƚυ ३ ج GSN Â

γ ˚ '

```
Ruijie(config-if)# security address-bind enable
```

ƚυ ३	
security gsn enable	GSN

৴ ˚ RGOS10.1 ΛυЭ Â

ƚυ ३ ৲ ৴	
-	-

63.1.2 security community

ƚυ ३ ∩ smp ⊨ ৷ ৴ Â

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

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

१

१	
community	৲ ৮ ৯ *community* Â
username	v3 ৲ Â

ħu ३

∩ ৮ ৯ ˘ ৮ ৯ ৲ ~
৲˘ v3˝ ‡ ج **snmp-server** ħu ३ Ю v3 ৲˘
ε SNMP ħu ३ १ Â

1' v1 community'

```
Ruijie(config)# security v1 community public
```

2' v3 ৲ ѝ start'

```
Ruijie(config)# security v3 user start
```

ħu ३	

5

ħu ३

ħu ३ Â **show security event interval** Â

Y˘ '

```
Ruijie(config)# security event interval 10
```

ħu ३

ħu ३	
show security event interval	Y˘ Â

ʎ ˘ RGOS10.1 ЛЪЭ

ħu ३ ʎ

ʎ	
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63.1.4 security gsn enable

ħu ३ ⁸ GSN ╗ Â no ɲ

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ৰ ˚ RGOS10.1 ЛЪЭ

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63.1.5 smp-server host

ħυ ३ smp-server ip ফ্ৰ সম Â

smp-server host *ip-address*

no smp-server host

৭

৭	
ip-address	smp server ip ফ্ৰ সম

smp server

ħυ ३

ħυ ३ Â **show smp-server** Â

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

ħυ ३

ħυ ३	
show smp-server	smp server

ৰ ˚ RGOS10.1 ЛЪЭ

ৰ	

Y ˇ Â

৭	
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ƻ ३

Y ˇ Â

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

ƻ ३	
security event interval *interval*	Y ˇ Â

৶ ˇ RGOS10.1 ЛЪ Э Â

ƻ ३ ৲ ৶	
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63.2.2 show smp-server

smp server IP ফ ম

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ƻ ३

smp server IP ফ ম Â

```
Ruijie# show smp-server
```

SMP-Server IP' 192.168.20.30

ЪЧ ३

ЪЧ ३	
smp-server host	smp server ip فخ سه Â

ЛЧ

RGOS10.1 ЛЧЭ Â

ЪЧ ३ ٦ ЛЧ

ЛЧ	
-	-

64 DAI

64.1 VLAN DAI

64.1.1 ip arp inspection vlan

Ĥ ʒ˘ ˩ Л ŭ *vlan-id* VLAN DAI ╗ Â Ĥ ʒ no ˩ Л *vlan-id* VLAN DAI ╗ ˘ ˥ *vlan-id* ‡ VLAN Э DAI ╗ Â

ip arp inspection vlan *vlan-id*

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

˥	
vlan-id	vlan ˩ Â

VLAN Э DAI ╗ Â

Ĥ ʒ Â

Ĥ ʒ ˩ ˘ ˝I ŭ DAI ╗ ˘ ˥ Э Â

ЛЮ ˘ й VLAN 1 Э ˆ ARP Â

```
Ruijie(config)# ip arp inspection
Ruijie(config)# ip arp inspection vlan 1
```

Ĥ ʒ	
show ip arp inspection vlan	VLAN ĭ DAI ╗ Â

˩ Â

Ĥ ʒ ˥ ˩	
-	-

64.2

64.2.1 ip arp inspection trust

γ ৲ ĭ ৶ ˘ ৲ ƚυ ३ **ip arp inspection trust** Â ƚυ ३ **no** γ ৲ ŭ a Â

ip arp inspection trust

no ip arp inspection trust

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৲	-	-

	৲ a Â
ƚυ ३	৲ Â

	৲ ĵ ARP ˚ DAI ˘ ৶ ƛυ ɛ ৶ ˘ a ৲ ĵ ARP ˘ ৸ Â
&	NFPP(⁂) p˘ ⁸ NFPP ˘ a ̈Ạ DAI ˘ ⁂ ƚυ ३ **show ip arp inspection interface** ৶ ৲ Â

ὖ VLAN DAI ╥ ˘ ɜ ARP γ ৲ a ৷ ˘
ARP ‡ ৴ ˘ DHCP Snooping .
˘ ‡ ÂDHCP Snooping ৲ ê DHCP
Snooping Ì Â

65 arp

ৰ ІО arp Â

show anti-arp-spoofing

ৰ

ৰ	

ħu ३

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

ħu ३

ħu ३	
anti-arp-spoofing ip	arp ħu ३

ৰ

ħu ३ ৭ ৰ

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-	-

66 IP Source Guard

66.1 IP Source Guard

66.1.1 ip source binding

جھ IP فخ سھ ╗ ˘ **no** Â

[**no**] **ip source binding** *mac-address* **vlan** *vlan-id ip-address* **interface** *interface-id*

৭	
mac-address	╗

show ip source binding	IP ﻫﺫ ﺳﻫ

ﻷ

ƪ ʒ ٦ ﻷ	ﻷ	
	-	-

66.2 IP Source Guard

66.2.1 ip verify source

ﻷ Э IP Source Guard ╥ ˘ **no** ╥ Â

[**no**] **ip verify source** [**port-security**]

ﻷ	ﻷ	
	port-security	IP Source Guard ╥ ﻫﻫ IP+MAC Â

Â

ƪ ʒ ﻷ Â

ƪ ʒ ﻷ IP Source Guard ╥ ˘ ⊥ Л ﻫﻫ IP ˘ ﻫﻫ IP+MAC ’

IP Source Guard ╥ ﻫﻫ DHCP Snooping ﻷ Э ˘ ≠ ˘ ﻫﻫ Trust ﻷ Л ⊥ DHCP Snooping ⁸ ﻷ Э IP Source Guard ╥ ˘ IP Source Guard ╥ a Â

Ю ﻷ 1 Э IP Source Guard ╥ '

```
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip verify source
Ruijie(config-if)# end
```

ƪ ʒ

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66.3 IP Source Guard

66.3.1 show ip source binding

ħu ३ IP فخ سه

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

٩	
ip-address	ip
mac-address	mac ي ’
dhcp-snooping	╟ پ
static	پ
vlan-id	vlan ي ’

ค่าเริ่มต้น

ค่าเริ่มต้น	
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ƪ ३ ص ´ ĭ Â

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

৭	
percent_vaule	ĭ ˘ ৷ ন 1ĭ 100

(Manage)´ ă ɯ ĭ ì 30˝
৷ (Route)´ ă ɯ ĭ ì 25˝
˜ (Protocol)´ ă ɯ ĭ ì 45 Â

ƪ ३

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

ƪ ३	
cpu-protect sub-interface { *manage* | *protocol* | *route* } **pps**	ص ´ ĭ

৷

ƪ ३ ৭ ৷	
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67.3 ARP

67.3.1 arp-guard attack-threshold

˘ . ˘ й جم й Â

arp-guard attack-threshold {**per-src-ip** | **per-src-mac** | **per-port**} *pps*

৭		
৭	**per-src-ip**	IP فخ سم Â
	per-src-mac	MAC فخ سم Â
	per-port	৭ Â
	pps	˘ ´ Æ ˘ ৷ تن [1,9999] Â

IP فخ سم Ω MAC فخ سم 8 ˘ ৭
200 Â

ƚυ 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
```

ƚυ ३	ƚυ ३	
	nfpp arp-guard policy	Ω
	show nfpp arp-guard summary	
	show nfpp arp-guard hosts	৷ ў
	clear nfpp arp-guard hosts	ў

৷

ƚυ ३ ৭ ৷	৷	
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67.3.2 arp-guard enable

ƒu ३ ARP ╗ Â

arp-guard enable

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-	-

ARP ╗

ƒu ३ NFPP

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

ƒu ३	
nffp arp-guard enable	ج ৭ ৩ ARP ╗
show nfpp arp-guard summary	

৶

ƒu ३ ৭ ৶	
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67.3.3 arp-guard isolate-period

ƒu ३ Â

arp-guard isolate-period {*seconds* | **permanent**}

৭	
seconds	˘ ´ Æ ˘ ৶ ন 0 [30, 86400] Â
permanent	

Ơ . a Â

ƪ ३ NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard isolate-period 180
```

ƪ ३

ƪ ३	
nfpp arp-guard isolate-period	ج ٨ Э
show nfpp arp-guard summary	

٨

ƪ ३ ٦ ٨

٨	
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67.3.4 arp-guard monitor-period

ƪ ३ Â

arp-guard monitor-period *seconds*

٨

٨	
seconds	˘ ´ Æ ˘ ٨ تن [180, 86400] Â

600 Â

ƪ ३ NFPP

Â ˘ ѝ Ơ ˚ ˘ ѝ
Â ج ˚ ˘ ѝ ˘ ╟ ˚
٨ ˚ ˘ з ѝ Â ج ѝ 0 Ю
Ƕ Â
Â ÿ ˘ ٨ ˘ a
˚ Â

```
Ruijie(config)# nfpp
```

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

show nfpp arp-guard summary

ƀυ ३ ٦ ৶	৸	
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67.3.7 arp-guard scan-threshold

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arp-guard scan-threshold *pkt-cnt*

৸	৸	
	pkt-cnt	˘ ৶ تن [1,9999] Â

15˝ ´ Æ 10 Â

ƀυ ३	NFPP

10 ˚ 15 ЛЭ ARP ˘ MAC ثن فخ سم IP فخ سم ৶ لا˘
MAC فخ سم Ω IP ثن فخ سم IP فخ سم a ৶ لا˘ ѝ
Â

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard scan-threshold 20
```

ƀυ ३	ƀυ ३	
	nfpp arp-guard scan-threshold	جم ৸ Э
	show nfpp arp-guard summary	
	show nfpp arp-guard scan	ARP
	clear nfpp arp-guard scan	ARP

৶

ƀυ ३ ٦ ৶	৸	
	-	-

67.3.8 clear nfpp arp-guard hosts

৶ ў ˘ ў ˘ Â

clear nfpp arp-guard hosts [**vlan** *vid*] [**interface** *interface-id*] [*ip-address* | *mac-address*]

৭	
vid	৯ ৯
interface-id	৭ ৶
ip-address	IP ফ্ৰ
mac-address	MAC ফ্ৰ

ƒu ३

a ৭ ˘ ў Â

VLAN 1 ৭ g 0/1 ў Â

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

ƒu ३	
arp-guard attack-threshold	
nfpp arp-guard policy	∩
show nfpp arp-guard hosts	৶ ў

৶

ƒu ३ ৲ ৶	
৯	
-	-

67.3.9 clear nfpp arp-guard scan

ARP Â

clear nfpp arp-guard scan

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-	-

ƚυ ३

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

ƚυ ३

ƚυ ३	
arp-guard scan-threshold	
nfpp arp-guard scan-threshold	
show nfpp arp-guard scan	ARP

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ƚυ ३ ˥ ƛ

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67.3.10 nfpp arp-guard enable

ƚυ ३ ج ƛ Ɔ ARP ˥ Â

nfpp arp-guard enable

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ƛ ARP ˘ Â

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ƛ ARP ˝I ARP Â

Ruijie(config)# **interface G0/1**
Ruijie(config-if)# **nfpp arp-guard enable**

ƚυ ३

ƚυ ३	
arp-guard enable	ARP ˥
show nfpp arp-guard summary	

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与 ३ ٦ 版本	版本
	10.4 与 ३

67.3.11 nfpp arp-guard isolate-period

جھ ٨ Ɔ Ω Â

nfpp arp-guard policy {**per-src-ip** | **per-src-mac** | **per-port**} *rate-limit-pps attack-threshold-pps*

٨	
per-src-ip	IP فذ سھ Ω Â
per-src-mac	MAC فذ سھ Ω Â
per-port	٨ Ω Â
rate-limit-pps	˘ ٧ تن 1↑ 9999 Â
attack-threshold-pps	˘ ٧ تن 1↑ 9999 Â

٨ Ω ˘ Ω Â

ƪ ३ ٨

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
```

ƪ ३	
arp-guard attack-threshold	
arp-guard rate-limit	
show nfpp arp-guard summary	
show nfpp arp-guard hosts	٧ ǔ
clear nfpp arp-guard hosts	ǔ

٧

ƪ ३ ٦ ٧	
٨	
10.4	ƪ ३

67.3.13 nfpp arp-guard scan-threshold

جھ ۸ Э Â

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

۹

۹	
pkt-cnt	˘ ۷ تن [1,9999] Â

ھھ ۸ ARP ˘ ARP Â

ھو ۶ ۸

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp arp-guard scan-threshold 20
```

ھو ۶

ھو ۶	
arp-guard scan-threshold	
show nfpp arp-guard summary	
show nfpp arp-guard scan	ARP
clear nfpp arp-guard scan	ARP

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ھو ۶ ٦ ۷

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10.4	ھو ۶

67.4 DHCP

67.4.1 dhcp-guard attack-threshold

˘ . ˘ ۸ جھ ۸ Â

dhcp-guard attack-threshold { **per-src-mac** | **per-port**} *pps*

۹

۹	
per-src-mac	MAC فخ سھ Â
per-port	۸ Â

pps	˘ ´ Æ ˘ ৷ ন [1,9999] Â

MAC ফ্ৰ 10 ˘ ৷ 300 Â

ƪ ३ NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard attack-threshold per-src-mac 15
Ruijie(config-nfpp)# dhcp-guard attack-threshold per-port 200
```

ƪ ३

ƪ ३	
nfpp dhcp-guard policy	∩
show nfpp dhcp-guard summary	
show nfpp dhcp-guard hosts	৷ ŷ
clear nfpp dhcp-guard hosts	৷ ŷ

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ƪ ३ ৷ ৷

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67.4.2 dhcp-guard enable

ƪ ३ DHCP ╗ Â

dhcp-guard enable

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৷ DHCP ˘ Â

ƪ ३ NFPP

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

ھو ۋ

ھو ۋ	
nffp dhcp-guard enable	جۇ ۋ ئ DHCP ئا
show nfpp dhcp-guard summary	

ۋ

ھو ۋ ئا ۋ

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67.4.3 dhcp-guard isolate-period

ھو ۋ Â

dhcp-guard isolate-period {*seconds* | **permanent**}

ۋ

ۋ	
seconds	ئۇ ۋ ئىز 0 [30, 86400]ئۈ 0 a Â
permanent	

Ø . a Â

ھو ۋ NFPP

ئۆ ۋ ئۇ ئۈ ۋ ئۇ . ئۇ Â
ۋ ئۇ ۋ ئۇ ئۇ ، ئۆ ‡ئۇ
ۋ Â

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard isolate timeout 180
```

ھو ۋ	[illegible]

show nfpp dhcp-guard summary	

ϟ

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67.4.4 dhcp-guard monitor-period

Ϸ ϟ Â

dhcp-guard monitor- period *seconds*

ϟ	
seconds	˘ ´ Æ ˘ ϟ ϖ [180, 86400] Â

600 Â

Ϸ ϟ NFPP

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Â ϑ ˚ ˘ ϋ ˘ ╟ ˚
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Ϸ Â
Â ÿ ˘ ϟ ˘ a

NFPP ใบ ๓

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

۹	
per-src-mac	MAC فذ سم
per-port	۹
pps	˘ ۱ تن [1,9999] Â

MAC فذ سم 5 ˘ ۹ 150 Â

ħu ३ NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard rate-limit per-src-mac 8
Ruijie(config-nfpp)# dhcp-guard rate-limit per-port 100
```


67.4.9 nfpp dhcp-guard isolate-period

67.4.10 nfpp dhcp-guard policy

جھ ۸ Э ∩ Â

nfpp dhcp-guard policy { **per-src-mac** | **per-port**} *rate-limit-pps attack-threshold-pps*

۸		
۸	**per-src-mac**	MAC فذ سم ∩ Â
	per-port	۸ ∩ Â
	rate-limit-pps	˘ ۱ تن 1↑ 9999 Â
	attack-threshold-pps	˘ ۱ تن 1↑ 9999 Â

{

67.5.1 dhcpv6-guard attack-threshold

˘ . ˘ й جم й Â

dhcpv6-guard attack-threshold { **per-src-mac** | **per-port**} *pps*

৭	
per-src-mac	MAC فخ سم Â
per-port	৭ Â
pps	˘ ´ Æ ˘ ৷ تن [1,9999] Â

MAC فخ سم 10 ˘ ৭ 300 Â

ƪ ३ NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcpv6-guard attack-threshold per-src-mac 15
Ruijie(config-nfpp)# dhcpv6-guard attack-threshold per-port 200
```

ƪ ३	
nfpp dhcpv6-guard policy	∩
show nfpp dhcpv6-guard summary	
show nfpp dhcpv6-guard hosts	৷ ў
clear nfpp dhcpv6-guard hosts	৷ ў

৷

ƪ ३ ৭ ৷	
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10.4	ƪ ३

67.5.2 dhcpv6-guard enable

ƪ ३ DHCPv6 ╗ Â

dhcpv6-guard enable

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ৎ DHCPv6 ˘ Â

ƪ ३ NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcpv6-guard enable
```

ƪ ३	
nffp dhcpv6-guard enable	ج ৎ Э DHCPv6 ॥
show nfpp dhcpv6-guard summary	

৶

ƪ ३ ৲ ৶	
10.4	ƪ ३

67.5.3 dhcpv6-guard isolate-period

ƪ ३ Â

dhcpv6-guard isolate-period {*seconds* | **permanent**}

৭	
seconds	˘ ´ Æ ˘ ৶ ته 0 [30, 86400]˘ 0 a Â
permanent	

0˘ . a Â

ƪ ३ NFPP

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ĥu ३	
show nfpp dhcpv6-guard summary	
show nfpp dhcpv6-guard hosts	৲ ŷ
clear nfpp dhcpv6-guard hosts	ŷ

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10.4	ĥu ३

67.5.5 dhcpv6-guard monitored-host-limit

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dhcpv6-guard monitored-host-limit *number*

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number	৲ ŷ ˘ ৲ ন ই 1ˆ 4294967295

৲ ŷ ই 1000

ĥu ३

NFPP

৲ ŷ ˆ 1000 ˘ ˜ ৲ ŷ 1000˜ a ৲ ŷ ˘ . ľ %ERROR' The value that you configured is smaller than current monitored hosts 1000˜ ৲ ŷ ˜ ˘ please clear a part of monitored hosts. Ł ˜ ˘ ˆ ŷ Â

৲ ŷ ˘ . ľ % NFPP_DHCP_GUARD-4-SESSION_LIMIT: Attempt to exceed limit of 1000˜ ৲ ŷ ˜ monitored hosts. Ł ˜ Â

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

ĥu ३

ĥu ३	
show nfpp dhcpv6-guard summary	

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10.4	ħυ ३

67.5.6 dhcpv6-guard rate-limit

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dhcpv6-guard rate-limit { **per-src-mac** | **per-port**} *pps*

৭

৭	
per-src-mac	MAC فذ سم
per-port	৭
pps	˘ ৷ تن [1,9999] Â

MAC فذ سم 5 ˘ ৭ 150 Â

ħυ ३ NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcpv6-guard rate-limit per-src-mac 8
Ruijie(config-nfpp)# dhcpv6-guard rate-limit per-port 100
```

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ħυ ३	
nfpp dhcpv6-guard policy	∩
show nfpp dhcpv6-guard summary	

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10.4	ħυ ३

67.5.7 clear nfpp dhcpv6-guard hosts

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clear nfpp dhcpv6-guard hosts [*vlan vid*] [**interface** *interface-id*] [*mac-address*]

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^ DHCPv6 ˜I DHCP Â

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp dhcpv6-guard enable
```

ƪ ३

ƪ ३	
dhcpv6-guard enable	DHCPv6 ˥
show nfpp dhcpv6-guard summary	

ƛ

ƪ ३ ˥ ƛ

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10.4	ƪ ३

67.5.9 nfpp dhcpv6-guard isolate-period

ƪ ३ ج ^ Ɔ Â

nfpp dhcpv6-guard isolate-period {*seconds* | **permanent**}

^

^	
seconds	˘ ´ Æ ˘ ƛ ش 0 [30, 86400]˘ 0 a Â
permanent	

˘ Â

ƪ ३ ^

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)#
```

dhcpv6-guard isolate-period	
show nfpp dhcpv6-guard summary	

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10.4	ƀu ʒ

67.6 ICMP

67.6.1 icmp-guard attack-threshold

ˇ . ˇ й جه й Â

icmp-guard attack-threshold { **per-src-ip** | **per-port**} *pps*

ʌ

ʌ	
per-src-ip	IP فذ سم Â
per-port	ʌ Â
pps	ˇ ´ Æ ˇ ƛ تن [1,9999] Â

IP فذ سم 1200 ˇ ʌ 1500 Â

ƀu ʒ 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
```

ƀu ʒ

ƀu ʒ	
nfpp icmp-guard policy	Ω
show nfpp icmp-guard summary	
show nfpp icmp-guard hosts	ƛ ў
clear nfpp icmp-guard hosts	ў

ƛ

ƚu ३ ٦ ⅄	⅄	
	-	-

67.6.2 icmp-guard enable

ƚu ३ ICMP ╗ Â

icmp-guard enable

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	-	-

ICMP ╗

ƚu ३ NFPP

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

ƚu ३	ƚu ३	
	nffp icmp-guard enable	ج ٨ Э ICMP ╗
	show nfpp icmp-guard summary	

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67.6.3 icmp-guard isolate-period

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icmp-guard isolate-period {*seconds* | **permanent**}

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seconds	˘ ´ Æ ˘ ৷ ন 0 [30, 86400]˘ 0 a Â
permanent	

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ƪ ३ NFPP

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```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard isolate-period 180
```

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nfpp icmp-guard isolate-period	৷ Э

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exceed limit of 1000 monitored hosts. Â

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

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ħυ ३	
show nfpp icmp-guard summary	

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67.6.6 icmp-guard rate-limit

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

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per-src-ip	IP फ़ख़
per-port	ग
pps	[1,9999] Â

IP फ़ख़ 900 1000 Â

ħυ ३ 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
```

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ħυ ३	
nfpp icmp-guard policy	Ω
show nfpp icmp-guard summary	

67.6.8 clear nfpp icmp-guard hosts

ৰ ў ˘ ў ˘ Â

clear nfpp icmp-guard hosts [*vlan vid*] [**interface** *interface-id*] [*ip-address*]

ৰ	
vid	ৰ ৰ
interface-id	ৰ ৰ

	^ ICMP ˘ Â
ħu ३	^
	^ ICMP ˝I ICMP Â

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp icmp-guard enable
```

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ħu ३	
icmp-guard enable	ICMP ˥
show nfpp icmp-guard summary	

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10.4	ħu ३

r,AQ[illegible]eUqAT[illegible]AeA9I[illegible]bD[illegible]BT[illegible]bfbDCfQ[illegible]E

ħu ३	
icmp-guard isolate-period	

NFPP ใบ ๓

show nfpp ip-guard hosts	৲ ў
clear nfpp ip-guard hosts	ў

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ħu ३ ৭ ৲

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10.4	ħu ३

67.7.2 ip-guard enable

ħu ३ IP ৷৷ Â

ip-guard enable

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IP ৷৷

ħu ३ NFPP

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ip-guard isolate-period {*seconds* | **permanent**}

৭	
seconds	˘ ´ Æ ˘ ৷ ন 0 [30, 86400] Â
permanent	

ʊ ˙ a Â

ƪ ३ NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard isolate-period 180
```

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nfpp ip-guard isolate-period	জ ৭ Ɔ
show nfpp ip-guard summary	

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10.4	ƪ ३

67.7.4 ip-guard monitor-period

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ip-guard monitor-period *seconds*

৭	
seconds	˘ ´ Æ ˘ ৷ ন [180, 86400] Â

600 Â

ƪ ३ NFPP

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Â ج ˚ ˘ й ˘ ╟ ˚
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Â ÿ ˘ ^ ˘ a
˚ Â

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard monitor-period 180
```

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ħυ ३	
show nfpp ip-guard summary	
show nfpp ip-guard hosts	ৰ ў
clear nfpp ip-guard hosts	ў

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67.7.5 ip-guard monitored-host-limit

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ip-guard monitored-host-limit *number*

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number	ৰ ў ˘ ৰ تن й 1ˆ 4294967295

ৰ ў й 1000 Â

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NFPP

ৰ ў ˆ 1000 ˘ ˜ ৰ ў
1000˝ a ৰ ў ˘ . “%ERROR” The value that you configured is smaller than current monitored hosts 1000˝ ৰ ў ˜ ˘

˅ ў ˘ . ľ % NFPP_IP_GUARD-4-SESSION_LIMIT: Attempt to exceed limit of 1000˜ ˅ ў ˜ monitored hosts. Ł ˘ Â

NFPP ใบ ๓

ip-guard trusted-host *ip mask*

no ip-guard trusted-host {**all** | *ip mask*}

৭	
ip	IP ফ্রস
mask	IP ফ্রস
all	Ω no ˘ ৲ ў

no

ƚυ ३

a ৲ ˘ ў Â

VLAN 1 ৲ g 0/1 ў Â

```
Ruijie# clear nfpp ip-guard hosts vlan 1 interface g0/1
```

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ƚυ ३	
ip-guard attack-threshold	
nfpp ip-guard policy	∩
show nfpp ip-guard hosts	৴ ў

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ƚυ ३ ৲ ৴

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10.4	ƚυ ३

67.7.10 nfpp ip-guard enable

ƚυ ३ ج ৲ Ɔ IP ╗ Â

nfpp ip-guard enable

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৲ IP ˘ Â

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৲ IP ˝l Â

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp ip-guard enable
```

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

৭	

	৲ /Ω̃ 30 ˘ ৸ 30 ˘ ৸ Ω̃ / ৶ 30 Â
ƪ ३	NFPP
	a Â

```
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
```

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ƪ ३	
nfpp nd-guard policy	∩
show nfpp nd-guard summary	

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67.8.2 nd-guard enable

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nd-guard enable

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	ND ৷৷
ƪ ३	NFPP

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

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ƻ ३	
nffp nd-guard enable	ج ٨ Э ND ll
show nfpp nd-guard summary	

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67.8.3 nd-guard rate-limit

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nd-guard rate-limit per-port {**ns-na** | **rs** | **ra-redirect**} *pps*

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ns-na	∩ Ὼ
rs	⊻
ra-redirect	⊻ Ὼ ∩ ⌋
pps	˘ ٨ تن [1,9999] Â

٩ /Ὼ 15 ˘ ⊻
15 ˘ ⊻ Ὼ / ⌋ 15 Â

ƻ ३ 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
```

ƻ ३	

nfpp nd-guard policy per-port {**ns-na** | **rs** | **ra-redirect**} *rate-limit-pps attack-thresh old-pps*

৭	
PP **ns-na**	∩ ‘Ω’

(oldgu)4(pa)]TJ/C2_0 1 Tc 147906 -0.006 Td1B0F07CF2208349316>62C809AA16>661038D70CC88F

number	ğ ʍ ˘ ´ Æ ˘ ৷ تن [0,1024]

ğ ʍ ѝ 256 Â

Ĥu ३ ٦

NFPP

NFPP ğ ʍ ѝ 50 Â

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# log-buffer entries 50
```

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Ĥu ३ ٦	
log-buffer logs number_of_message **interval** length_in_seconds	NFPP ÿ ğ ʍ ৷ Â
show nfpp log	NFPP ğ ʍ

number_of_message ˝ 1˜ *length_in_seconds* ˝ 30 Â

ƪ ʒ NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# log-buffer logs 2 interval 12
```

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ƪ ʒ	
log-buffer entries *number*	NFPP ˘ ʊ Â
show nfpp log summary	NFPP ˘ ʊ Â

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10.4	ƪ ʒ

67.9.4 logging

˘ ˅ VLAN 1 à VLAN 2 à VLAN 3 ∩ VLAN 5 ˘ Ю˙

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# logging vlan 1-3,5
```

˘ ˅ ˅ G 0/1 ˘ Ю˙

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# logging interface G 0/1
```

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ƪ ʒ	
show nfpp log summary	NFPP ă ʊ Â

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67.9.5 show nfpp log

NFPP Â

show nfpp log summary

NFPP ă ʊ Â

show nfpp log buffer [**statistics**]

˄

˄	
statistics	NFPP

NFPP Â

```
Ruijie#show nfpp log summary
Total log buffer size : 10
Syslog rate : 1 entry per 2 seconds
Logging:
  VLAN  1-3, 5
  interface Gi 0/1
  interface Gi 0/2
```

NFPP ă ʊ Â

```
Ruijie#show nfpp log buffer statistics
There are 6 logs in buffer.
```

NFPP ă ʊ 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 ЛЫО ˅ '

Â ARP˜ ARP ˜

Â IP˜ IP ˜

Â ICMP˜ ICMP ˜

Â DHCP˜ DHCP ˜

Â DHCPv6˜ DHCPv6 ˜

Â NS-NA˜ ND Ω Ω˜ ˜

Â RS ND ~
Â RA-REDIRECT ND ~

Reason 5 '
Â DoS
Â ISOLATED
Â ISOLATE_FAILED
Â SCAN
Â PORT_ATTACKED

clear nfpp log	NFPP

10.4	

67.10 ARP

67.10.1 show nfpp arp-guard hosts

show nfpp arp-guard hosts [**statistics** | [[*vlan vid*] [**interface** *interface-id*] [*ip-address* | *mac-address*]]]

statistics	
vid	
interface-id	
ip-address	IP
mac-address	MAC

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1' ৷ ŷ Â

```
Ruijie# show nfpp arp-guard hosts statistics
success   fail   total
-------   ----   -----
100       20      120
```

ḿ 120 ৷ ŷ ˘ ὲ 100 ৷ ŷ ˚ ╗ ˘ 20 ৷ ŷ ˚
ˆ ৷ ج a ˘ ˚ a ~ Â

2' ৷ ŷ ˘ ني l' remain-time(seconds) Ł ⅓ 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
```

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clear nfpp arp-guard hosts	৷ ŷ

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67.10.2 show nfpp arp-guard scan

ARP Â

show nfpp arp-guard scan [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*ip-addres s*] [*mac-address*]]]

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৷	
statistics	ARP

vid	۸/ ھ
interface-id	

	ใช้งาน	
ใช้งาน	**arp-guard scan-threshold**	
	nfpp arp-guard scan-threshold	
	clear nfpp arp-guard scan	ARP

ˆ 3˜ Rate-limit ЙˆIP ֆ ֆ / MAC ֆ ֆ
/ ՀՀ ˜ ˘ Attack-threshold Â Ի - Ա
Â

ԻԱ ՀՀ

ԻԱ ՀՀ	
arp-guard attack-threshold	
arp-guard enable	ARP Ռ
arp-guard isolate-period	
arp-guard monitor-period	
arp-guard monitored-host-limit	Ն ў
arp-guard rate-limit	
arp-guard scan-threshold	
able	ՀՀ Ն ARP Ռ
late-period	
licy	Ո

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Ruijie# **show nfpp dhcp-guard hosts statistics**

success fail total

--- --- ---

100 20 120

ৠ 120

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```
Ruijie# show nfpp dhcp-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            -/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 ঋ Global Â

ˆ 2˜ Status ĭ ˥ Â

ˆ 3˜ Rate-limit ঋ IP ফ্র / MAC ফ্র / ৭ ˜ ˘ Attack-threshold Â ĭ - Ł Â

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Ĥ ३	
dhcp-guard attack-threshold	
dhcp-guard enable	DHCP ˥
dhcp-guard isolate-period	
dhcp-guard monitor-period	
dhcp-guard monitored-host-limit	৲ ŷ
dhcp-guard rate-limit	
nfpp dhcp-guard enable	জ ৭ Э DHCP ˥
nfpp dhcp-guard isolate-period	
nfpp dhcp-guard policy	Ω

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67.12 DHCPv6

67.12.1 show nfpp dhcpv6-guard hosts

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show nfpp dhcpv6-guard hosts [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*mac -address*]]]

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statistics	ƛ ǔ
vid	ƛ
interface-id	ƙ ƛ
mac-address	MAC

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Ruijie# **show nfpp dhcpv6-guard hosts statistics**

success fail total

------- ---- -----

100 20 120

ƛ ǔ ˘ è 100 ƛ ǔ ˘ 20 ƛ ǔ

ƛ a ˘ a ~ Â

ƛ ǔ ˘ ني l remain-time(seconds) ⅓ Â

Ruijie# **show nfpp dhcpv6-guard hosts**

If column 1 shows '*', it means "hardware failed to isolate host".

```
VLAN   interface    MAC address       remain-time(seconds)
----    ---------   -----------       -------------------
 1      gi0/2       0000.0000.0001    10
 *2     gi0/1       0000.0000.0002    20
Total: 2 host(s)
```

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clear nfpp dhcpv6-guard hosts	৲ ঁ

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67.12.2 show nfpp dhcpv6-guard summary

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show nfpp dhcpv6-guard summary

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```
Ruijie# show nfpp dhcpv6-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            -/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 й Global Â

ˆ 2˜ Status ĭ ╗ Â

ˆ 3˜ Rate-limit й IP فخ سم / MAC فخ سم

/ ٨ ˜ ˘ Attack-threshold Â ľ - Ĺ

Â

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Ĥu ३	
dhcpv6-guard attack-threshold	
dhcpv6-guard enable	DHCPv6 ╗
dhcpv6-guard isolate-period	
dhcpv6-guard monitor-period	
dhcpv6-guard monitored-host-limit	৲ ў
dhcpv6-guard rate-limit	
nfpp dhcpv6-guard enable	جم ٨ Э DHCPv6 ╗
nfpp dhcpv6-guard isolate-period	
nfpp dhcpv6-guard policy	Ω

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10.4	Ĥu ३

67.13 ICMP

67.13.1 show nfpp icmp-guard hosts

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show nfpp icmp-guard hosts [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*ip-addr ess*]]]

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statistics	৲ ў
vid	عمم ٨

interface-id	٨ ر
ip-address	IP فخ سم

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Ruijie#**show nfpp icmp-guard hosts statistics**

success fail total

------- ---- -----

100 20 120

' ľ 120 ٨ ў ˘ ε 100 ٨ ў ╗˘ 20 ٨ ў Ł Â

Ruijie# **show nfpp icmp-guard hosts**

If column 1 shows '*', it means "hardware failed to isolate host".

VLAN interface IP address remain-time(s)

---- -------- --------- ----------

1 Gi0/1 1.1.1.1 110

2 Gi0/2 1.1.2.1 61

Total: 2 host(s)

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clear nfpp icmp-guard hosts	٨ ў

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67.13.2 show nfpp icmp-guard summary

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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 ˝ Global Â

ˆ 2˜ Status ĭ ˥ Â

ˆ 3˜ Rate-limit ˝ˆ IP ˝ˆ / MAC ˝ˆ /

˄ ˜ ˘ Attack-threshold Â ľ - Ł Â

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Ĥ ʒ	
icmp-guard attack-threshold	
icmp-guard enable	ICMP ˥
icmp-guard isolate-period	
icmp-guard monitor-period	
icmp-guard monitored-host-limit	˩ ˘
icmp-guard rate-limit	
nfpp icmp-guard enable	ˆ˄ Ɔ ICMP ˥
nfpp icmp-guard isolate-period	
nfpp icmp-guard policy	Ω

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67.13.3 show nfpp icmp-guard trusted-host

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show nfpp icmp-guard trusted-host

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```
    ৲ 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)
```

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icmp-guard trusted-host	a ৲ ў

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67.14 IP

67.14.1 show nfpp ip-guard hosts

ل ŷ Â

show nfpp ip-guard hosts [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*ip-addres s*]]]

۹		
	statistics	ل ŷ
۹	*vid*	ھھ ۸
	interface-id	۹ ل
	ip-address	IP فخ سھ

ھو ۶

Ruijie#**show nfpp ip-guard hosts statistics**

success fail total

------- ---- -----

100 20 120

' ۱' 120 ۸ ŷ ˘ ε 100 ۸ ŷ ˘ 20 ۸ ŷ 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 ho.000<02D6>2/T8Rea1 Tf1B02Ot 1 15F10 02 AB5!%52 Tc 3.605 0 Td[<0101>-6<19A3

ھو ۶ ھو ۶

NFPP ใบ ๓

	ƪ ३	
	ip-guard attack-threshold	
	ip-guard enable	IP ๗
	ip-guard isolate-period	
ॅΩ	**ip-guard monitor-period**	
	ip-guard monitored-host-limit	৲ ॅ
	ip-guard rate-limit	
	nfpp ip-guard enable	ह ৲ Э IP ๗
	nfpp ip-guard isolate-period	

```
1.1.2.0        255.255.255.0
Total' 2 record(s)
```

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ip-guard trusted-host	a ৲ ў

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10.4	ħu ३

67.15 ND

67.15.1 show nfpp nd-guard summary

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show nfpp nd-guard summary

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```
Ruijie# show nfpp nd-guard summary
ˆ Format of column Rate-limit and  Attack-threshold is NS-NA/RS/R
A-REDIRECT.˜
Interface  Status  Rate-limit Attack-threshold
Global     Enable  20/5/10    40/10/20
Gi 0/1      Enable  15/15/15   30/30/30
Gi 0/2      Disable -/5/30      -/10/50
```

'

ˆ 1˜ Interface ঋ Global Â

ˆ 2˜ Status ÏÏ ╗ Â

ˆ 3˜ Rate-limit ÏÏ /ˆΩ˜ / ⌊

/ ⌊ˆΩ˜ / ⌋ ˜˜ Attack-threshold Â

Ï - Ł Â

' Ï -/5/30 Ł ج ⌃ G 0/2 Э /ˆΩ˜ ˘ ⌊

5˜ ⌊ˆΩ˜ / ⌋ 30 Â

ԽՍ ՀՇ

ԽՍ ՀՇ	
nd-guard attack-threshold	
nd-guard enable	ND ╗
nd-guard rate-limit	
nfpp nd-guard enable	ج ⌃ Э ND ╗
nfpp nd-guard policy	∩

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ԽՍ ՀՇ ՀՄ

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10.4	ԽՍ ՀՇ

68 ACL

ج ЛЫЮЪu ३ ˆ ˩ ˥ ЛЫЮЪu ३

	Ů ЪЖ
id	˥ Â ˩ تن IP ACL' 1-99˜ 1300-1999 IP ACL' 100-199˜ 2000-2699 MAC ACL' 700–799 ж ACL' 2700–2899
name	ACL ˩
sn	ACL ˥ (˝l p)
start-sn	˥
inc-sn	˥
deny	˥ ˘ ‡
permit	˥ ˘ ‡
prot	˜ ˥˘ IPv6 ˩ й ipv6˜ icmp˘ tcp˘ udp ˥ 0-255˜ IPv4˜ ˩ Лu eigrp˘ gre˘ ipinip˘ igmp˘ nos˘ ospf˘ icmp˘ udp˘ tcp˘ ip ˘ ≠ ˩ Лu ३ IP ˜ 0-255 ˥˘ ˜ icmp/tcp/udp ´
interface idx	˥ ˥
src	فخ سم ˆ ў فخ سم فخ سم ˜
src-wildcard	فخ سم Â ˩ Лu a ˘ 0.255.0.32
src-ipv6-pfix	IPv6 فخ سم صر
dst-ipv6-pfix	IPv6 فخ سم صر
pfix-len	Æ Æ
src-ipv6-addr	IPv6 فخ سم
dst-ipv6-addr	IPv6 فخ سم
dscp dscp	˩ , ˘ تن 0-63
flow-label flow-label	˘ تن 0-1048575
dst	فخ سم ˆ ў فخ سم فخ سم ˜
dst-wildcard	فخ سم Â ˩ Лu a ˘ 0.255.0.32

precedence precedence	”I ⁝ˆ 0-7˜
range	نعي ٨ /١ نتن
time-range tm-rng-name	ШˇJ й tm-rng-name
tos tos	⅟ صرˆ 0-15˜
cos cos	cos (0-7)
cos inner cos	tag cos
icmp-type	ICMP صرˆ 0-255˜
icmp-code	ICMP صر ३ ˆ 0-255˜
icmp-message	ICMP صر J
operator port[port]	Operator й ˆ lt- ˇ eq- ˇ gt- ˇ neq- a ˇ range- نتن˜ port ٨ /١ˇ γ ч ٨ /١ ˇ ع ٨ ٨ /١

B	MAC	6	P	˜ ⁄	35
C		12	Q	IP Ω	36
D	VLAN tag	14	R	ip فخ سم	38
E	DSAP( ) ⅃	18	S	ip فخ سم	42
F	SSAP( ) ⅃	19	T	TCP ∧	46
G	Ctrl	20	U	TCP ∧	48
H	Org Code	21	V	⁄	50
I	صر	24	W		54
J	IP ⁄	26	XY	IP Ω Æ	58
K	TOS	27	Z	Æ Ω flags Æ	59
L	IP ↑	28	a	Windows size	60
M	ID ⁄	30	b	ὲ	62
N	Flags	32			

Э ⁄ جھ SNAP¯ tag 802.3 Â

68.1

68.1.1 access-list

ƪυ ३… ‡˘ Â ƪυ ३ **no** Â

1) IP ˆ 1 - 99˘ 1300 - 1999˜

access-list *id* {**deny** | **permit**} {*source source-wildcard* | **host** *host* | **any**} [**log** | **log-input**] [**time-range** *time-range-name*] [**fragments**]

4) Expert ˆ 2700 - 2899˜

access-list *id* {**deny** | **permit**} [**protocol** | [*ethernet-type*][**cos** [*out*][**inner** *in*]]] [**VID** [*out*][**inner** *in*]] {*source source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any**} {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**}][**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*]

Â ↑ ŭ Ʌu صر 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* | **any**} {**host** *source-mac-address* | **any** } {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)'

access-list *id* {**deny** | **permit**} **tcp** [**VID** [*out*][**inner** *in*]]{*source source-wildcard* | **host** *Source* | **any**} {**host** *source-mac-address* | **any** } [**operator** port [*port*]] {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**operator port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag*]

User Datagram Protocol (UDP)'

access-list *id* {**deny** | **permit**} **udp**[**VID** [*out*][**inner** *in*]] {*source source –wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any** } [**operator port** [*port*]] {*destination destination-wildcard* | **host** *destination* | **any**}{**host** *destination-mac-address* | **any**} [**operator port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*]

5)

access-list *list-remark text*

৭

৭	
id	৸ Â ৲ ˆتن 1-99˜ 100-199˜ 1300-1999˜ 2000-2699˜ 2700 – 2899˜ 700 - 799˜ Â
Deny	৭ ˘ ‡ Â
Permit	৭ ˘ ‡ Â
Source	ˆفخ سم ˘ ŷ فخ سم ˜فخ سم
source-wildcard	فخ سم Â ৲ Ɲ a ˘ 0.255.0.32
protocol	IP ˜ ৸˘ ৲ Ɲ EIGRP àGRE àIPINIP àIGMP à NOS à OSPF à ICMP à UDP à TCP à IP ˘ ≠ ৲ Ɲ ३ IP ˜ 0-255 ৸ Â ˜ ICMP/TCP/UDP ´ Â
Destination	ˆفخ سم ˘ ŷ فخ سم ˜فخ سم
destination-wildcard	فخ سم Â ৲ Ɲ a ˘ 0.255.0.32
fragments	ˆ
precedence	˝ı ⁝
precedence	˝ı ⁝ ˆ 0-7˜
range	ني ৸ ৸ تن
lower	ني ৸ ৸ تن Ю
upper	ني ৸ ৸ تن Э
time-range	ϟ
time-range-name	ϟ ৶
tos	⅃ صر
tos	⅃ صر ˆ 0-15˜
icmp-type	ICMP ˆصر 0-255˜
icmp-code	ICMP صر ३ ˆ 0-255˜
icmp-message	ICMP صر ৶
operator	ˆ lt- ˘ eq- ˘ gt- ˘ neq- a ˘ range- ˜تن
port [*port*]	৸ ৸˘ *range* ч ৸ ৸ ˘ ɛ ৲ ৸ ৸ Â
host *source-mac-address*	ŷ فخ سم Â
host *destination-mac-address*	ŷ فخ سم Â
VID *vid*	vid ৭
ethernet-type	Ɲ ˜ صر

match-all	৭ *tcp flag* Æ
tcp-flag	tcp flag

ACL

ħυ ३ৃ

ঙ ˘ ˝I ħυ ३ৃ **access-list** ħ৶

‡ ৷ Â ৲ Л υ έ R a ৲ R ' ȯ B

Â dod-host-prohibited

Â dod-net-prohibited

Â echo

Â echo-reply

Â fragment-timcho

Â

Âs(hi)solch

Âsprecede-pun-p

Âs6e-p

Âstpro

Âst-ho

Âsun-pn1( )856( )]TJ/C2_1 1 Tf0 Tc 0 Tw -0.742 -1.755 Td<0084>Tj/TT

Â-reply

Â-que-5

Â-reply 6256( )]TJ/C2_1 1 Tf0 Tc 0 Tw -0.742 -1.761 Td<0084>Tj/TT0 1 Tf0.0205

Â 6256( )]TJ/C2_1 1 Tf0 Tc 0 Tw -0.742 -1.761 Td<0084>Tj/TT0 1 Tf0.0

Âha-p

Âo

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Â

Â

Âstpro

Âo

Âsunrea-p

Â ৳ ৳ ৳

Ârech

Âhi

Â

Â ttl-exceeded

Â unreachable

Ю TCP ٧ ۶ ˘ TCP ۲ Л υ ٧ ۶ ٧ Л ٤ ٧'

Â bgp

Â chargen

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 ٧ ۶ ˘ UDP ۲ Л υ ٧ ۶ ٧ Л ٤ ٧'

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
Лu ˜ صر 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 ﷺ فخ سم 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 Ω 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 й 00d0f8000c0c ў ч ص й 100 Лu

ъ ^

68.1.2 deny

(deny) ̈ Ꭷ ᾱ ˩ Â

1˜ IP

[*sn*] **deny** {*source source-wildcard* 1

[*sn*] **d**{] [(s)-8m[(3)-8)[ource2]5-J/T0001 **T7**3.0060 **Td** (1)0571T28(IP)f4/C2_6-31.7860Tj341 Tf0e0.246[

destination-wildcard | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**time-range** *time-range-name*]

b) ˜ protocol

[*sn*] **deny protocol** [[**VID** [*out*][**inner** *in*]]] {*source source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any** } {*destinationdestination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*]

c) ˜ expert '

Â **Internet Control Message Protocol** (ICMP)

[*sn*] **deny icmp** [[**VID** [*out*][**inner** *in*]]] {*source source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any**} {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**precedence** *precedence*] [**tos** *tos*] [**frag-6( )]931 Tf0(upper)c 0 Tw 2.571 0 Td[(icmp-)-65 Tf2B3E3C02D6>Tj/TT0 1 T**

[[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragments**] [**time-range** *time-range-name*]

Â **Transmission Control Protocol** (TCP)

[*sn*] **deny tcp** {*source-ipv6-prefix / prefix-length* | **host***source-ipv6-address* | **any**}[*operator* **port**[*port*]] {*destination-ipv6-prefix /prefix-length* | **host** *destination-ipv6-address* | **any**} [*operator* **port** [*port*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag*]

Â **User Datagram Protocol** (UDP)

[sn] **deny udp** {*source-ipv6-prefix/prefix-length* | **host** *source-ipv6-address* | **any**} [*operator* **port** [*port*]] {*destination-ipv6-prefix /prefix-length* | **host** *destination-ipv6-address* | **any**}[*operator* **port** [*port*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*]

৭	
Sn	ACL ৸
source-ipv6-prefix	IPv6 ফ স ص.
destination-ipv6-prefix	IPv6 ফ স ص
prefix-length	Æ Æ
source-ipv6-address	IPv6 ফ স
destination-ipv6-address	IPv6 ফ স
dscp	৷
dscp	˘ ত 0-63.
flow-label	
flow-label	˘ ত 0-1048575
protocol	IPV6 ৲ ৸ IPV6 | icmp | tcp | udp ৭ <0-255>

ㄱ ㄅ 1Â '

```
Ruijie(config)# ipv6 access-list extended v6-acl
Ruijie(config-ipv6-nacl)# 11 deny ipv6 host 192.168.4.12 any
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
11 deny ipv6 host 192.168.4.12 any
Ruijie(config-ipv6-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ipv6 traffic-filter v6-acl in
```

ㄷ ㄋ

ㄷ ㄋ	
show access-lists	
ipv6 traffic-filter	ㄅ ㄅ Э IPV6
ip access-group	IP ACL ㄅ
mac access-group	MAC ACL ㄅ
ip access-list	IP ACL ㄅ
mac access-list	MAC ACL ㄅ
expert access-list	ㄨ ACL ㄅ
ipv6 access-list	IPV6 ACL ㄅ
permit	ㄅㄷ ㄋ

ㄅ

ㄷ ㄋ ㄱ ㄅ

ㄅ	
V10.0	˚ V10.0 ㄩ Э˜ arp ㄅ ˚ V10.2(3) ㄅ ㄩ Э Â

68.1.3 expert access-group

EXPERT ACL ㄅ ㄅ Â ㄷ ㄋ **no** ㄅ Â

expert access-group {*id* | *name*} {**in** | **out**}

no expert access-group {*id* | *name*} {**in** | **out**}

ㄅ

ㄅ	
id	Expert ㄅˆ 2700-2899˜
name	Expert ㄅ

ħυ ३ ৲ ᎠᏬ **show expert access-lists** ħυ ३ Â

1' … ж

Ъu ३ ^

ip access-group Ъu ३ ^˘ . ŭ Â

Ю ج fastEthernet0/0 Э 120 '

```
Ruijie(config)# interface fastEthernet
```

1' … ACL'

```
Ruijie(config)# ip access-list standard std-acl
Ruijie(config-std-nacl)# show ip access-lists
ip access-list standard std-acl
Ruijie(config-std-nacl)#
```

2 ' … ACL'

```
Ruijie(config)# ip access-list extended 123
Ruijie(config-ext-nacl)# show ip access-lists
ip access-list extended 123
```

ħu ३

ħu ३	
show ip access-lists	IP

ৰ

ħu ३ ৲ ৰ

ৰ	
V10.0	˚ V10.0 ᒐ Э

68.1.7 ip access-list resequence

ħu ३ ip ص ACL ˘ … IPV6 ACL˘ Â ħu ३ **no**

ip access-list resequence {*id* | *name*} **start-sn inc-sn**

no ip access-list resequence {*id* | *name*}

৭

৭	
Id	ACL ৰ
name	ACL ৯
start-sn	ৰ
inc-sn	ৰ

start-sn' 10

inc-sn' 10

ħu ३

ħu ३ ৲ Л show access-lists ħu ३ Â

ACL '

```
Ruijie# show access-lists
ip access-list standard 1
10 permit host 192.168.4.12
20 deny any any
Ruijie# config
Ruijie(config)# ip access-list resequence 1 21 43
Ruijie(config)# exit
Ruijie# show access-lists
ip access-list standard 1
21 permit host 192.168.4.12
64 deny any any
```

ħu ३

ħu ३	
show access-lists	

৲

ħu ३ ৲ ৲

৲	
V10.0	˚ V10.0 Л Э

68.1.8 ipv6 traffic-filter

IPV6 ACL ˆ ৲ Â ħu ३ no ৲ Â

ipv6 traffic-filter *name* {**in** | **out**}

no ipv6 traffic-filter *name* {**in** | **out**}

৲

৲	
name	IPV6 ˩
in	৲
out	ÿ ৲

৲ IPV6 ACL

Ъu ३ ^

ACL ^ Э˘ ^ ⁸ Â **show ipv6 traffic-filter** Ъu ३

Ю access-list v6-acl Gigabit ^ 1 Э'

```
Ruijie(config)# interface GigaEthernet 0/1
Ruijie(config-if)# ipv6 traffic-filter v6-acl in
```

Ъu ३

Ъu ३	
show access-group	^ Э ACL Â

^

Ъu ३ ˥ ^

^	
V10.0	˚ V10.0 Л Э

68.1.9 ipv6 access-list

Ъu ३ … IPV6 ACL˘ Â Ъu ३ **no** ACL

ipv6 access-list *name*

no ipv6 access-list *name*

^

^	
name	ACL ^

Ъu ३

Ъu ३ ^ Л **show access-lists** Ъu ३ Â

… IPV6 ACL'

```
Ruijie(config)# ipv6 access-list v6-acl
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
Ruijie(config-ipv6-nacl)#
```

	show ipv6 access-lists	IPV6

	V10.0	V10.0

68.1.10 list-remark text

ACL **no**

list-remark *text*

	Text	

ACL

ACL

```
Ruijie# ip access-list extended 102
Ruijie(config-ext-nacl)# list-remark this acl is to filter the host
192.168.4.12
Ruijie(config-ext-nacl)# show access-lists
ip access-list extended 102
deny ip host 192.168.4.12 any
1000 hits
this acl is to filter the host 192.168.4.12
Ruijie(config-ext-nacl)#
```

	show access-lists	
	ip access-list	IP

Л

Ъu ъ ˥ Л	Л	
	V10.0	˚ V10.0 Лu Э Â

68.1.11 MAC access-group

MAC ACL ˆ Л Â Ъu ъ **no** Л Â

mac access-group {*id* | *name*}{**in** | **out**}

no mac access-group {*id* | *name*} {**in** | **out**}

Л	Л	
	id	MAC Лˆ 700-799˜
	name	MAC Л
	in	Л
	out	ÿ Л A“O/[illegible]r AD¾

ƪu ३ৃ … MAC ACL˘ Â ƪu ३ৃ **no** ACL

mac access-list extended {*id* | *name*}

no mac access-list extended {*id* | *name*}

৭	
Id	MAC /৭ˆ 700-799˜
name	MAC ৶

MAC ACL

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* | [illegible]

[*sn*] **permit protocol** [**VID** [*out]*[**inner** *in*]] {*source source-wildcard* | **host** *Source* | **any**} {**host** *source-mac-address* | **any** } {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*]

˜ Expert '

Â **Internet Control Message Protocol** (ICMP)

[*sn*] **permit icmp** [**VID** [*out*][**inner** *in*]] {*source source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any** } {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**}[*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**time-range** *time-range-name*]

Â **Transmission Control Protocol** (TCP)

[*sn*] **permit tcp** [**VID** [*out*][**inner** *in*]]{*source source-wildcard* | **host** *Source* | **any**} {**host** *source-mac-address* | **any** } [*operator* **port** [*port*]] {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [*operator* **port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag*]

Â **User Datagram Protocol** (UDP)

[*sn*] **permit udp** [**VID** [*out*][**inner** *in*]]{*source source –wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any** } [*operator* **port** [*port*]] {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [*operator* **port** [*port*]] [**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**}

5) IPV6

[*sn*] **permit protocol** {*source-ipv6-prefix / prefix-length* | **any** | **host** *source-ipv6-address*} {*destination-ipv6-prefix / prefix-length* | **any**| *hostdestination-ipv6-address*} [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*]

˜ IPV6 8 '

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*]

۹

```
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 ч صر й 100 Лu ˘ ĵ ч 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 ˘ ĵ ч 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 ˘ ĵ ч 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    interface gigabitethernet
```

ip access-group	IP ACL
mac access-group	MAC ACL
ip access-list	IP ACL
mac access-list	MAC ACL
expert access-list	ж ACL
ipv6 access-list	IPV6 ACL
deny	ACL

V10.0	V10.0 arp V10.2(3)

68.2

68.2.1 show access-group

ACL

show access-group [**interface** <*interface*>]

<*interface*>	

ACL a 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.
```

配置

配置	
ip access-group	ip 接口
mac access-group	MAC 接口
expert access-group	Expert 接口
ipv6 traffic-filter	IPV6 接口

说明

配置引擎

版本	
V10.0	支持 V10.0 版本

68.2.2 show access-lists

ACL 规则 ACL

show access-lists [*id* | *name*]

参数

参数	
id	规则
name	规则

缺省

配置

acl 规则 *id* *name* 支持 ACL

```
Ruijie# show access-lists n_acl
ip access-list standard n_acl
Ruijie# show access-lists 102
ip access-list extended 102
Ruijie# show access-lists
ip access-list standard n_acl
```

ACL ใบ ๓

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<interface>	ৰ

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ৰ IPv6 ACL˘ ৰ˘ ‡ ৰ IPv6 ACL

```
Ruijie# show ipv6 traffic-filter interface gigabitethernet 0/4
ipv6 traffic-filter v6 in
Applied On interface GigabitEthernet 0/4.
```

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ħu ३	
ipv6 access-list	IPV6 ص ACL ħ

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[redacted]

```
group mm in
interface GigabitEthernet 0/3.
```

ħu ३	
st	MAC ACL ħ

配置限制	版本	
	V10.2	V10.2 版本

68.3.2 security global access-group

security global access-group {*id*|*name*}

no security global access-group

视图	

```
Fa0/6     uplink    --
```

配置

配置	
security global access-group	必选
security access-group	可选 必选
security uplink enable	可选

说明

配置举例

版本	
V10.2	支持 V10.2 及以上

69 VACL

69.1

Vlan access map ч ˘ ѐ *map_name* ў a ˩ ˘ *map_sn*
˘ ˩Л Ю Â ˩ ˩ map ̂ ˜ ˩ ˩ ў map Â

1˜ … **vlan access map** Э … map ˘ a *map_sn* ˘
ج map ń з ˩ ў map map *map_sn* ﷺ Э ╗ *10*

2˜ a *map_sn* ˘ **vlan access map** ˘ ‡ ˩ *map_name*
Map_name ˘ . ў map ’

3˜ map_sn ˘ **vlan access map** ˘ ‡ map’
map ў map a ŭ map ˘ ў map ╟ ˘ ї ‡ a
’

4˜ ў map ˩Л Ю ŭ 6553 map Â

ЛЮ й VACL Ъu ъ'

Â action forward/drop/redirect

Â Match ip/mac address

Â vlan access map

Â vlan filter

69.1.1 action forward/drop/redirect

map actions ╟ ˘ ج vacl Ю ЮЪu ъ Â Ъu ъ no ˩ map
actions ╟ ˘ ╟ forward Â

action forward

no action forward

map actions ╟ ˘ ج vacl Ю ЮЪu ъ Â Ъu ъ no ˩ map
actions ╟ ˘ ╟ forward Â

action drop

no action drop

map actions ╟ ˘ ج vacl Ю ЮЪu ъ Â Ъu ъ no ˩ map
actions ╟ ˘ ╟ forward Â

no action redirect{**GigabitEthernet** | **Aggregateport** | **FastEthernet** } {***port_id*** }

acl_id	numbered acl;

Ъu ३

Config-access-map ˘ . vacl

~	+	acl,	8	acl Â

&	Â map ŋń ৲ ip acl map acl˘ ч ৲ ὲ ˘ a ʌ '
	Â map ৲ 8 acl'
	Â map a a ج acl'
	Â map a ace acl˘ . acl'
	Â map ৷ ip acl (mac acl)˘ ˝Ą ip acl (mac acl)˘ ʌ ip acl (mac acl) ج ৷ ip acl (mac acl) ʌ '
	Â map ৷ ip acl (mac acl)˘ ˝Ą mac acl (ip acl)˘ ‡ ˝I ╟ ৷ ip acl (mac acl)˘ ʌ 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)#
```

VACL ใบ ๓

map_name	ў map Â
vlan_id	vlan id Â

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vlan access map ह vlan Э ˘ ʌ ˘ vlan ىن ˘ ' vlan filter aa vlan-list 1-33 ˙ map ह 1-33 vlan Э Â

Ю ў map ѝ ff vlan access map ह vlan 5 Э Â

```
Ruijie(config)# vlan filter ff vlan-list 5
```

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69.2

69.2.1 show vlan access map

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show vlan access map

ў map ˘ ह ħυ ३ Â

show vlan access map *map_name*

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map_name	ў map '

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1' Ю **show vlan access map** '

```
Ruijie(config)# show vlan access-map
Vlan access-map aa  10
match mac address:  700, 710, m1, 720,
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' Ю **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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69.2.2 show vlan filter

ў map ह vlan Э ˘ ह Ю ħu ३ Â

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Ю **Show vlan filter access-map** *aa*

```
Ruijie(config)# show vlan filter
VLAN Map aa
Configured on VLANs: 1,  5,  6,
Ruijie(config)#
```

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ƪu ३	
show vlan filter *access-map map_name*	ў map ج vlan Э
show vlan filter vlan *vlan_id*	vlan Э ف ў map

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-	-

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
7	56

DSCP to CoS

DSCP to CoS

DSCP	CoS
0	0
8	1
16	2
24	3
32	4
40	5
48	6
56	7

-

70.2

70.2.1 class maps

… ACL'

ip access-list {**extended** | **standard**} { *acl-id* | *acl-name* }

mac access-list extended {*acl-id* | *acl-name*}

expert access-list extended {*acl-id* | *acl-name*}

ipv6 access-list extended *acl-name*

4' … class-map,ħu ⸝ cm

```
Ruijie(config)# class-map cm
```

5' ACL

```
Ruijie(config-cmap)# match access-group me
```

6' class-map

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

ħu ३	
show mac access-lists	-

show mls qos queueing	-

平台

平台	说明
-	-

	-	-

70.2.4 mls qos cos

ʌ CoS

mls qos cos *default-cos*

no mls qos cos

ʌ	

dscp	配置 DSCP 值。
no	

配置

```
Ruijie(config)# mls qos map cos-dscp 8 10 16 18 24 26 32 34
```

```
Ruijie(config)# 802.1q 16 18_Eo2-0os
```

70.2.8 mls qos scheduler

mls qos scheduler [**sp** | **rr** | **wrr** | **drr**]

no mls qos scheduler

๑	

cos	৲ Qos	ȶ CoS
dscp	৲ Qos	ȶ DSCP
ip-precedence	৲ Qos	ȶ IP-PRE
no		

๑	

70.2.11 priority-queue

[**no**] **priority-queue**

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ۋ	
priority-queue	ۋ SP
no priority-queue	ۋ WRR

ۋ WRR

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Ruijie(config)# **no priority-queue**

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show mls qos queueing	-

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-	-

70.2.12 priority-queue cos-map

CoS

priority-queue cos-map *qid cos0* [*cos1* [*cos2* [*cos3* [*cos4* [*cos5* [*cos6* [*cos7*]]]]]]]

no priority-queue cos-map

ۋ

ۋ	
qid	ۋ id
cos7	*cos0 ...* ' CoS
no	

ھو ۋ

```
Ruijie(config)# priority-queue cos-map 1 0 1
```

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ھو ۋ	
show mls qos queueing	-

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70.2.13 service-policy

policy map ۆ ۋ ئ

service-policy {**input** | **output**} *policy-map-name*

no service-policy {**input** | **output**}

ۋ

ۋ	
policy-map-name	… policymap ۇ
no	policy map چ ۋ ئ

ھو ۋ ۋ

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# service-policy input po
```

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show mls qos interface	-

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70.2.14 wrr-queue bandwidth

WRR

wrr-queue bandwidth *weight1 ... weightn*

no wrr-queue bandwidth

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weight1...weightn	ঋ n ˘ n ৭ ৰ ন
no	

weight1: ...: weightn = 1:...:1

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70.3.1 show class-map

class map

show class-map [*class-name*]

参数	
class-name	class map 名

class map

命令模式

Ruijie# **show class-map**

命令输出	
-	-

-

消息内容	
-	-

70.3.2 show policy-map

QoS policy map [class class-name]

show policy-map [*policy-name* [**class** *class-name*]]

参数	
policy-name	policy name 名
class-name	class map 名

policy name

命令模式

```
Ruijie# show policy-map
```

配置	
-	-

平台	
-	-

70.3.3 show mls qos interface

显示接口上的 QoS 信息。

show mls qos interface *interface-id* [**policers**]

参数	
interface-id	接口
policers	接口上的 police

显示接口上的 QOS 信息。

```
Ruijie# show mls qos interface fastEthernet 0/1
```

配置	
-	-

平台	
-	-

70.3.4 show mls qos maps

dscp-cos maps,dscp-cos maps ꞉꞉ ip-prec-dscp maps

show mls qos maps [**cos-dscp** | **dscp-cos** | **ip-prec-dscp**]

꞉꞉	
cos-dscp	cos-dscp maps
dscp-cos	dscp-cos maps
ip-prec-dscp	ip-prec-dscp maps

dscp-cos maps ꞉꞉ dscp

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Ruijie# **show mls qos queueing**

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70.3.6 show mls qos rate-limit

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show mls qos rate-limit [**interface** *interface-id*]

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interface	interface-id rate-limit ھو ۋ ۋا

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Ruijie# **show mls qos rate-limit**

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	-	-

70.3.7 show mls qos scheduler

命令格式

show mls qos scheduler

参数	参数	
	-	-

命令模式

配置指南

使用举例

```
Ruijie# show mls qos scheduler
```

配置举例	配置举例	
	-	-

显示信息

-

配置举例	显示	
	-	-

71 Voice VLAN

71.1

71.1.1 voice vlan

Voice VLAN˘ VLAN ѝ Voice VLAN Â ⅃ Л ħυ ३ **no** Voice VLAN ╗ Â

voice vlan *vlan-id*

no voice vlan

৭	
vlan-id	Voice VLAN ID Â

Â

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ħυ ३ Voice VLAN ╗ ˘ ⅃ Voice VLAN ID Â

1˜ Voice VLAN

~

show voice vlan	Voice VLAN б ŋń Â

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10.4	ħυ ३

71.1.2 voice vlan aging

Voice VLAN ɣ Â ɹ ʎυ ħυ ३ **no (wSfXT[illegible]**

71.1.3 voice vlan cos

Voice VLAN CoS Â ⌟ Л ħυ ३ **no** ⌃ Â

voice vlan cos *cos-value*

no voice vlan cos

৭	
cos-value	Voice VLAN CoS Â

cos-value ৭ й 6 Â

ħυ ३

Voice VLAN CoS б DSCP ˝I ˘ Â

1' Voice VLAN ˝I ˘ CoS й 5

```
Ruijie(config)# voice vlan cos 5
```

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show voice vlan	Voice VLAN б ⌚ Â

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	10.4	ħυ ३

71.1.4 voice vlan dscp

Voice VLAN DSCP Â ⌟ Л ħυ ३ **no** ⌃ Â

voice vlan dscp *dscp-value*

no voice vlan dscp

৭	৭	

dscp-value	Voice VLAN DSCP Â

dscp-value ৲ ѝ 46 Â

ħu ३

Voice VLAN CoS б DSCP ˝I ˘ Â

1' Voice VLAN ˝I ˘ DSCP ѝ 40 Â

```
Ruijie(config)# voice vlan dscp 40
```

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show voice vlan	Voice VLAN

1' OUI فخسم 0012.3400.0000 й Voice VLAN Л فخسم ˘ ˝ ك й Company A Â

```
Ruijie(config)# voice vlan mac-address 0012.3400.0000 mask
ffff.ff00.0000 description Company A
```

ЪU ३

ЪU ३	
show voice vlan oui	⁽⁄ OUI فخسم à OUI فخسم Ω Â

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ЪU ३ ˥ Л

Л	
10.4	ЪU ३

71.1.7 voice vlan mode auto

جم Л Ю Л Voice VLAN й ╟ Â ˩ Л Ъ ЪU ३ **no** Л Voice VLAN й ╟ Â

voice vlan mode auto

no voice vlan mode auto

Л

Л	

Л Voice VLAN й ╟ Â

ЪU ३ Л

Voice VLAN ǂ й ╟ б ╟ ˘ ھ Л Âл Л Voice VLAN ˘ a ˩ Л ˩ Л Ъ й a ˩ Â جم a ˩ Ю Л ╗ Voice VLAN a ˩˘ ˩ Л Ю IP صر à Л صر Л Voice VLAN Â

VLAN

1˜ ৲ Voice VLAN ह ˘ ৲ ╗ Voice VLAN˝ Voice VLAN ╗ Â

2˜ ৲ ╟ ˘ ѝ ╗ VLAN˘·,X a ৲ native VLAN ѝ Voice VLAN Â

~

3˜ ᵽ Trunk Port/Hybrid Port ৷ Л VLAN ˘ ˝I Voice VLAN ÿ ৲ VLAN ৷ ˘ ˝Ą Voice VLAN ╗ ˘ Л ৲ a ╗ Voice VLAN˝ a ৲ ह Ve VLAN

ħu ३

Â ⊓ ⊨ ⅃ Voice VLAN ⌠ a Â Voice VLAN ˘ Voice VLAN ,X] < õ ã Ä	
⋮ ⅃ MAC ⌡⌡⌡ ˘ MAC ⌡⌡⌡ ' Ô] < õ ã âA' Û î Í y [,X$d	
Â ‡ ⌠ Voice VLAN tag ˘ Voice VLAN ⌠ untagged ⌡ Ю˘ MAC ⌡⌡⌡ Voice VLAN OUI	
˘ Voice VLAN tag ⌠ ⌡ ⊓ ⅃ ‡ VLAN MAC ⌡⌡⌡	

1 Ö ' Ô Voice VLAN Â

```
Ruijie(config)# voice vlan security enable
```

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,XySA'7QHyQD/EE@]<1Td<278>6<09TT0 1 Tf-0.88AC4>5.988 Tc 1.252 0 T3 458.9 0.24 1.5 ref137146

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ƪ ʒ˘ ˩ Voice VLAN б ɱ ˘ ↑ Voice VLAN ╗ ˥ Â

1' ɱ Voice VLAN

```
Ruijie(config)# show voice vlan
Voice VLAN status: ENABLE            //Voice VLAN
Voice VLAN ID: 2                     //Voice VLAN ID
Voice VLAN security mode: Security   //         ї
Voice VLAN aging time: 5 minutes     //  ɤ
Voice VLAN cos: 6                    //      CoS
Voice VLAN dscp: 46                  //      DSCP
Current voice vlan enabled port mode: //    Voice VLAN    ˥ б
PORT                    MODE
-----------------------------------------------------
Fa0/1                   Auto
```

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voice vlan *vlan-id*	Voice VLAN˘ VLAN ѝ Voice VLAN Â
voice vlan aging *minutes*	Voice VLAN ɤ Â
voice vlan cos *cos-value*	Voice VLAN CoS Â
voice vlan dscp *dscp-value*	Voice VLAN DSCP Â
voice vlan enable	˥ Voice VLAN ╗ Â
voice vlan mode auto	˥ Voice VLAN Â
voice vlan security enable	Voice VLAN Â

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10.4	ƪ ʒ

71.2.2 show voice vlan oui

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show voice vlan oui

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ใบ ๓ ˘ ๔ ๗

72

72.1

72.1.1 rgos-security compatible

Ю˘ ╗ й RGOS ˘ ╩υ ╕ **rgos-security compatible** ' RGOS ˘ no ╩υ ╕ '

rgos-security compatible

no rgos-security compatible

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Ю˘ ╗ й RGOS

╩υ ╕

~ ╩υ ╕ ╛˘ ╝˚

1' ╗ й RGOS '

```
Ruijie(config)#no gos-security compatible
```

╩υ ╕	

73 VRRP

73.1

73.1.1 vrrp authentication

Ĥu ३ ŭ VRRP ↑ ╗ ˘ ὲ **no** ╗ Â

vrrp group authentication *string*

no vrrp *group* **authentication**

৭		
৭	*group*	VRRP ৸
	string	VRRP (a 8 ˘ ৭ ३ ৭ ३)

Ю˘ ج ৭ Э ŭ VRRP ╗ Â ŭ VRRP ╗ ˘ ৭ ३ Â

Ĥu ३ ৭

ج ৶ VRRP ৶ ৭ ३ Â ৭ ३ a ˘ ৭ / VRRP Â

~	IPv6 VRRP ╗ ˘ ج IPv6 ৸ Э Ĥu ३˘ a Â

Ю ঋ VRRP 1 ৭ ३ Â

```
vrrp 1 authentication x30dn78k
```

Ĥu ३	
Ĥu ३	Ruijie(config-if)# **vrrp** *group ip ipaddress* ŭ VRRP ╗ IP [**secondary**]

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73.1.2 vrrp description

Ĥu ३ ŷ VRRP ˘ ɛ **no** Â

vrrp *group* **description** *text*

no vrrp group description

৭	
group	VRRP ৭
text	VRRP

Ю˘ ج ৭ Э ŭ VRRP ╗ Â. ŭ VRRP ╗ ˘ ≠ VRRP Â

Ĥu ३ ৭

ŷ VRRP ˘ ৲ Л Ш ШĨ VRRP Â

Ю ج Л Ш ৭ E0 Э VRRP 1 ŷ Building A – Marketing and Administration Â

```
interface FastEthernet 0/0
ip address 10.0.1.1 255.255.255.0
vrrp 1 ip 10.0.1.20
vrrp 1 description “Building A - Marketing and Administration”
```

Ĥu ३	
Ruijie(config-if)# **vrrp** *group* ip *ipaddress* [**secondary**]	ŭ VRRP ╗ IP فخ سم

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Ĥu ३ ৲	৭	
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73.1.3 vrrp ip

ƪ ३ ج ৲ Э ŭ VRRP IP ফ ˘ ȅ **no** ৲ Э VRRP ╗ ৴ IP ফ Â

vrrp *group* **ip** *ipaddress* [**secondary**]

no vrrp *group* **ip** *ipaddress* [**secondary**]

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৲	
group	VRRP ৸
ipaddress	IP ফ
secondary	IP ফ

Ю ج ৲ Э ŭ VRRP ╗ Â

ƪ ३

৲

a secondary ৲ ˘ ঋ IP ফ ŭ IP ফ Â ˘ VRRP Л ৲ IP ফ ˘ ج no ƪ ३ ৴ VRRP IP ফ ŭ ˘ ج ŭ ج ঋ Э ج ч ৶ IP ফ Â

ج Ю ˘ ج Л ৲ 0 Э ŭ VRRP ╗ Â VRRP ৸ ŭ 1˘ ŭ IP ফ ŭ 10.0.1.20˘ IP ফ ŭ 10.0.2.20 Â

```
interface FastEthernet 0/0
no switchport
ip address 10.0.1.1 255.255.255.0
ip address 10.0.2.1 255.255.255.0 secondary
vrrp 1 ip 10.0.1.20
vrrp 1 ip 10.0.2.20 secondary
```

ƪ ३

ƪ ३	
Ruijie# **show vrrp** [**brief	group**]	৸ VRRP

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ƪ ३ ৶ ৴

৸	
-	-

73.1.4 vrrp ipv6

Ъu ъ جم ^ Э ŭ IPv6 VRRP IPv6 سم فخ ˘ è **no** ^
Э VRRP ╥ ˅ IPv6 سم فخ Â

vrrp *group* **ipv6** *ipv6-address*

no vrrp *group* **ipv6** *ipv6-address*

^	
group	VRRP ^
ipv6-address	IPv6 سم فخ

Ю˘ جم ^ Э ŭ IPv6 VRRP ╥ Â

Ъu ъ ^

IPv6 VRRP б IPv4 VRRP 1˙ 255 ^ Â VRRP ˘ IPv4 سم فخ Ω IPv6
a ˘ IPv6 سم فخ ˘ a IPv4 سم فخ ˘ ˝I IPv6 سم فخ
˘ ˄ IPv4 سم فخ Â

سم فخ سم فخ ˘ سم فخ سم فخ جم è سم فخ ˄
Â

جم Ю ˘ جم Лu ^ FastEthernet 0/0 Э ŭ IPv6 VRRP ╥ Â
VRRP ^ й 1˘ IPv6 سم فخ й FE80::1 Ω 2001::1 Â

```
interface FastEthernet 0/0
no switchport
ipv6 enable
ip6 address 2001::2/64
vrrp 1 ipv6 FE80::1
vrrp 1 ipv6 2001::1
```

Ъu ъ

Ъu ъ	
Ruijie# **show vrrp** [**brief** | **group**]	ńń VRRP

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˄ Â

Ъu ъ ˥ ˄

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RGOS10.4	Ъu ъ ÿ RGOS10.4 Â

73.1.5 vrrp preempt

vrrp *group* **priority** *level*

no vrrp *group* **priority**

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group	VRRP ৸
level	VRRP ˝I

Ю˘ ج ৰ Э ŭ VRRP ╗ Â ŭ VRRP ╗ ˘ VRRP è ˝I ŭ 100 Â

Ĥu ३ ৰ

Ĥu ३ ╟ VRRP ˝I Â

Ю VRRP 1 ˝I ŭ 254 Â

```
vrrp 1 priority 254
```

Ĥu ३

Ĥu ३	
Ruijie(config-if)# **vrrp** *group* **ip** *ipaddress* [**secondary**]	ŭ VRRP ╗ IP فخ سم
Ruijie(config-if)# **vrrp** *group* **preempt** [**delay** *seconds*]	VRRP ´

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73.1.7 vrrp timers advertise

Ĥu ३ ŷ ৻ VRRP ˜ ˘ è no Â

vrrp *group* **timers advertise** *interval*

no vrrp *group* **timers advertise**

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group	VRRP ৸
interval	VRRP ˜ ৻ (Л ŭ´ Æ)

Ю˘ ج ٨ Э ŭ VRRP ╗ Â ŭ VRRP ╗ ˘ ў ˆ ч ŕ 1 Â

Ĥu ३ ٨

ŋń VRRP ў ˘ Лu ч VRRP ˆ ˆ VRRP à ˝I Лu ٤ è Â

Ю ˘ VRRP ˆ ч ŕ 4 Â

```
vrrp 1 timers advertise 4
```

Ĥu ३

Ĥu ३	
Ruijie(config-if)# **vrrp** *group* **ip** *ipaddress* [**secondary**]	ŭ VRRP ╗ IP فخ سم
Ruijie(config-if)# **vrrp group timers learn**	ŭ ⅄ ˉ ╗

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Ĥu ३ ٦ ٨

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73.1.8 vrrp timers learn

Ĥu ३ ŭ ⅄ ˉ ╗ ˘ è no ╗ Â

vrrp *group* **timers learn**

no vrrp *group* **timers learn**

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group	VRRP ٨

Ю˘ ج ٨ Э ŭ VRRP ╗ Â ŭ VRRP ╗ ˘ Ю ⅄ ˉ ╗ Â

Ĥu ३ ٨

ŭ ⅄ ˉ ╗ ˘ ŋń VRRP ˘ ج ⅄ ˉ ╗

Л˘ ÿ ў VRRP ˆ ˜ VRRP ˆ ˅ ˘ Master
˘ a ˽ VRRP ˆ ˅ Â Ъu ʒ ˅ Л
б Master VRRP ˆ ˅ Ы ˅ Â

Ю ج VRRP 1 Э ŭ Ы ˜ ╗ Â

```
vrrp 1 timers learn
```

Ъu ʒ	
Ruijie(config-if)# **vrrp** *group* **ip** *ipaddress* [**secondary**]	ŭ VRRP ╗ IP ˽ فخ
Ruijie(config-if)# **vrrp** *group* **timers advertise** [**msec**] *interval*	VRRP ˆ ˅

˅

ipv4-addres	IPv4 فخ سم ˘ bfd Â
ipv6-global-addres	IPv6 ´ فخ سم
ipv6-linklocal-addree	IPv6 فخ سم فخ سم سم
interval-value	˩ Â´ Æ ŭ Â a ˘ ŭ 3 Â
timeout-value	˩ ˥ Â ˚ ˘ ˚ ˘ ‡ ŭ a ˩ Â´ Æ ŭ Â a ˘ ŭ 1 Â
priority	˦ ˩ è VRRP ˝I ˩ Â a ˘ ŭ 10 Â

Ю˘ جم ˦ Э ŭ VRRP ˥ Â ŭ VRRP ˥ ˘
˦ ã IPv4 فخ سم IPv6 فخ سم Â

Ъu ę ˦

˩ ˥u Ъu ę ˦ ˘ ˦ ˩ Ь ˩
˦ (Routed Port ˘ SVI ˘ Loopback˘ Tunnel) Â
ŭ ˘ IPv4 ˩˘ ŭ IPv4 فخ سم' IPv6 ˩˘
ŭ IPv6 فخ سم Â
ŭ فخ سم فخ سم سم˘ ˦ Â

1' جم Ю ˘ VRRP 1 Routed Port Fa1/1 Â Fa1/1
˘ VRRP ˝I 30' جم Fa1/1 ˥˘ VRRP 1 ˝I Â

```
vrrp 1 track FastEthernet 1/1 30
```

2' Ю ŭ 1000::1 ĭ ˩˚ Â

```
vrrp 1 track 1000::1
```

3' Ю ˦ VLAN 1 Э ŭ FE80::1 ĭ ˩˚ ˘
˦ Â

```
vrrp 1 track FE80::1 vlan 1
```

```
# VRRP BFD 192.168.1.3
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#interface FastEthernet 0/1
Ruijie(config-if)#no switchport
Ruijie(config-if)#ip address 192.168.1.1 255.255.255.0
Ruijie(config-if)#bfd interval 50 min_rx 50 multiplier 3
Ruijie(config)#interface FastEthernet 0/2
```

```
Ruijie(config-if)#no switchport
Ruijie(config-if)#ip address 192.168.201.17 255.255.255.0
Ruijie(config-if)#vrrp 1 priority 120
Ruijie(config-if)#vrrp 1 ip 192.168.201.1
Ruijie(config-if)#vrrp 1 track bfd FastEthernet 0/1  1f8 0 Td(rA 3Tj/TT1 1 Tf0
```

```
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
address 192.168.1.1
%VRRP-6-STATECHANGE: FastEthernet 0/0 Grp 1 state Backup -> Master
Ruijie#
```

Ĥu ३

Ĥu ३	
Ruijie# **debug vrrp errors**	VRRP
Ruijie# **debug vrrp events**	VRRP Y˘
Ruijie# **debug vrrp state**	VRRP

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Ĥu ३ ৲ ৰ

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73.2.2 debug vrrp errors

Ĥu ३ VRRP ˘ è no Â

debug vrrp errors

no debug vrrp errors

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ЮŎ VRRP Â

Ĥu ३

ह Ю ˘ VRRP Â

```
Ruijie# debug vrrp errors
```

```
Ruijie#
VRRP: Grp 1 Advertisement from 192.168.201.213 has invalid virtual
address 192.168.1.1
VRRP: Grp 1 Advertisement from 192.168.201.213 has invalid virtual
address 192.168.1.1
VRRP: Grp 1 Advertisement from 192.168.201.213 has invalid virtual
address 192.168.1.1
```

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73.2.3 debug vrrp events

ƬU ३ VRRP Y˘ ˘ ɛ̀ no Â

debug vrrp events

no debug vrrp events

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ƤO˝ VRRP Y˘ Â

ƬU ३

ƤO ˘ VRRP Y˘ Â

```
Ruijie# debug vrrp events
Ruijie#
VRRP: Grp 1 Event - Advert higher or equal priority
VRRP: Grp 1 Event - Advert higher or equal priority
VRRP: Grp 1 Event - Advert higher or equal priority
```

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73.2.4 debug vrrp packets

Ĥu ३ VRRP ↑ ˘ è **no** Â

debug vrrp packets

no debug vrrp packets

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Ю˘ VRRP ↑ Â

Ĥu ३

1' ج Ю ˘ VRRP ↑ ˘ ج è VRRP 1 ↑ Ω Â

```
Ruijie# debug vrrp packets
Ruijie#
VRRP: Grp 2 sending Advertisement checksum DD4D
VRRP: Grp 2 sending Advertisement checksum DD4D
VRRP: Grp 2 sending Advertisement checksum DD4D
```

2' ج Ю , VRRP ↑ ˘ ج è VRRP 1 ↑ IP سم فذ ∫Ω ৰ VRRP 1 ˝I Â

```
Ruijie# debug vrrp packets
Ruijie#
VRRP: Grp 1 Advertisement priority 120, ipaddr 192.168.201.213
VRRP: Grp 1 Advertisement priority 120, ipaddr 192.168.201.213
```

```
VRRP: Grp 1 Advertisement priority 120, ipaddr 192.168.201.213
```

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73.2.5 debug vrrp state

ħu ३ VRRP ˘ è no Â

debug vrrp state

no debug vrrp state

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Ruijie#

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ƚυ ३ ৭ ৰ

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73.3

73.3.1 show vrrp

ƚυ ३ VRRP Â

show vrrp [**brief** | *grou*p]

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৭	
brief	৲ ৭ ˘ VRRP
group	VRRP ৰ

ƚυ ३

a ৲ ৭ ˘ VRRP Â

1' VRRP

```
Ruijie# show vrrp
FastEthernet 0/0 - Group 1
State is Backup
Virtual IP address is 192.168.201.1 configured
Virtual MAC address is 0000.5e00.0101
Advertisement interval is 3 sec
Preemption is enabled
min delay is 0 sec
```

```
Priority is 100
Master Router is 192.168.201.213 , 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
```

2' VRRP

```
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
```

ھو ۶	
Ruijie(config-if)# **vrrp** *group ip ipaddress* [**secondary**]	۲ VRRP ۶ IP فخ سم

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type	٨ ص
number	٨ ٨
brief	⌋ ٨ Â

Ъ ३

Ю Л ٨ E1/0

Ruijie(config-if)# **vrrp** *group* **ip** *ip address* [**secondary**]	ŷ VRRP ╗ IP فخ سم

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74 BFD

74.1

74.1.1 bfd

ह ৲ Ю **bfd** Ъu ३ BFD ৲ ˘ ৷ Л **no** Ъu ३ BFD ৲ Â

bfd interval *milliseconds* **min_rx** *milliseconds* **multiplier** *multiplier-value*

no bfd interval *milliseconds* **min_rx** *milliseconds* **multiplier** *multiplier-value*

clear bfd	BFD Â
ip ospf bfd	OSPF б BFD ╟ Â
ip rip bfd	RIP б BFD ╟

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Ъu ३ ٦ ᴊ

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10.3(4b3)	Ъu ३

74.1.2 bfd all-interfaces

ج router (RIP,OSPF)Ю **bfd all-interfaces** Ъu ३ ᴎ ˜ б BFD ╟˘ **no** Ъu ३ ╥ Â

bfd all-interfaces

no bfd all-interfaces

ᴎ	

a ᴎ ˜ б BFD ╟

Ъu ३

ч ᴊ ᴎ ˜ б BFD ╟'

' ج OSPF ∩ RIP Ю [**no**] **bfd all-interfaces** Ъu ३ ᴎ ˜ б BFD ╟'

γ ' ᴊ ᴎ **ip ospf bfd** [**disable**] **ip rip bfd** [**disable**] Ъu ३ ᴎ OSPF RIP ˜ б BFD ╟'

```
#ج Ю ᴎ OSPF ˜ б BFD ╟ Â
Ruijie(config)# router ospf 123
Ruijie(config-router)# bfd all-interface
```

Ю ३

Ю ३	
bfd	BFD ৭ Â
ip ospf bfd	OSPF б BFD ╟ Â
ip rip bfd	RIP б BFD ╟

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Ю ३ ৭ ৭

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10.3(4b3)	Ю ३

74.1.3 bfd cpp

ج Ю **bfd cpp** Ю ३ ŭ BFD ˘ **no** Ю ३ BFD Â

bfd cpp

no bfd cpp

৭

৭	

Ю BFD ŭ

Ю ३

BFD ˜ ˜ ˘ ŭ BFD ╥ ৭ ৭ ৭ ŭ BFD
Â ŭ BFD ╥ ৭ ˘ Э
৭ BFD ˘ BFD ˘ ÿ ! Э
б è BFD

```
Ruijie(config)# bfd cpp
```

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10.3(4b3)	ƪ ३

74.1.4 bfd echo

ج ٨ Ю **bfd echo** ƪ ३ echo ˘ **no** ƪ ३ echo Â

bfd echo

no bfd echo

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Ю BFD echo

ƪ ३ ٨

Ю BFD ٨ ƛ ╟ echo ˘ echo ٤
∩ ٨ **Interval**

ƪ ३ a ج L3 AP ٨ Ю
ج BFD ŭ ECHO ŋ, ج BFD Э **no ip redirects** ٤ ICMP ƛ ╗ ˘ **no ip deny land** ƪ ३ DDOS ╗ (Land-based)
Echo BFD ч
p S5760 a Echo

BFD ใบ ๓

slow-timer й 14000 Â

```
Ruijie(config)# bfd slow-timer 14000
```

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Ъu ३	
bfd echo	BFD Echo ╗

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Ъu ३ ˥ ᴊ

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10.3(4b3)	Ъu ३

74.1.6 ip ospf bfd

ج ᴊ Ю **ip ospf bfd** Ъu ३ ᴊ OSPF ˜ б BFD ╟˘ **disable** ˘ **no** Ъu ३ Â

ip ospf bfd [**disable**]

no ip ospf bfd

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disable	(˩) ᴊ Э OSPF ˜ б BFD ╟ Â

disable˘ й ᴊ OSPF ˜ б BFD ╟

Ъu ३ ᴊ

ч ˩ Л ᴊ OSPF ˜ б BFD ╟'

' ج OSPF Ю [**no**] **bfd all-interfaces** Ъu ३ ᴊ ˜ б BFD ╟'

γ ' ⌡ Л υ ^ **ip ospf bfd [disable]**Ъu ३
^ OSPF ˜ б BFD ╟'

#ج Routed Port ^ FastEthernet 0/2 Э OSPF ˜ б BFD ╟.

```
Ruijie(config)# interface FastEthernet 0/2
Ruijie(config-if)# no switchport
Ruijie(config-if)# ip ospf bfd disable
```

Ъu ३

Ъu ३	
bfd	BFD ^ Â
bfd all-interfaces	^ ˜ б BFD ╟

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Ъu ३ ⌉ ⌡

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10.3(4b3)	Ъu ३

74.1.7 ip rip bfd

ج ^ Ю **ip rip bfd** Ъu ३ ^ RIP ˜ б BFD ╟˘ **disable**
˘ **no** Ъu ३ Â

ip rip bfd [**disable**]

no ip rip bfd

^

^	
disable	(⌡) ^ Э RIP ˜ б BFD ╟ Â

disable˘ й ^ RIP ˜ б BFD ╟

Ъu ३ ^

ч ⌡Л ⌃ RIP ˜ б BFD ╟'
' ج RIP Ю [**no**] **bfd all-interfaces** Ъu ३
⌃ ˜ б BFD ╟'
γ ' ⌡Л ⌃ **ip rip bfd [disable]**Ъu ३ ⌃
RIP ˜ б BFD ╟'

#ج Routed Port ⌃ FastEthernet 0/2 Э RIP ˜ б BFD ╟ Â

```
Ruijie(config)# interface FastEthernet 0/2
Ruijie(config-if)# no switchport
Ruijie(config-if)# ip rip bfd disable
```

Ъu ३

Ъu ३	
bfd	BFD ⌃ Â
bfd all-interfaces	⌃ ˜ б BFD ╟

⌃

Ъu ३ ˥ ⌡

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10.3(4b3)	Ъu ३

74.1.8 ip route static bfd

ج Ю **ip route static bfd** Ъu ३ б BFD ╟˘ **no** Ъu ३ Â

ip route static bfd [**vrf** *vrf-name*] *interface-type interface-number gateway* [**source** *ip-address*]

no ip route static bfd [**vrf** *vrf-name*] *interface-type interface-number gateway* [**source** *ip-address*]

⌃

⌃	
vrf *vrf-name*	(⌡) ⌦ VRF ⌡ Â

interface-type interface-number	٧ صر Ω٦ ٧ ٨ Â
gateway	IP˘ . й BFD IP Â Ю й BFD ٧ ٧ Â
source *ip-address*	(٧) BFD IP فذسم , IP й Ю˘ ٧ Â

б BFD ╟

ЪU ३

~ ˝I ٧ BFD ٧

```
# BFD ˘ BFD б 172.16.0.2 ٧ Â
Ruijie(config)# interface FastEthernet 0/1
Ruijie(config-if)# no switchport
Ruijie(config-if)# ip address 172.16.0.1 255.255.255.0
Ruijie(config-if)# bfd interval 50 min_rx 50 multiplier 3
Ruijie(config-if)# ip route static bfd FastEthernet 0/1 172.16.0.2
Ruijie(config-if)# ip route 10.0.0.0 255.0.0.0 FastEthernet 0/1
172.16.0.2
```

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ЪU ३	
bfd	BFD ٧ Â

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ЪU ३ ٦ ٧

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10.3(4b3)	ЪU ३

74.1.9 ipv6 route static bfd

ج Ю **ipv6 route static bfd** ƪ ३ б BFD ╟˘ **no** ƪ ३ Â

Ipv6 route static bfd [**vrf** *vrf-name*] *interface-type interface-number gateway* [**source** *ipv6-address*]

no ipv6 route static bfd [**vrf** *vrf-name*] *interface-type interface-number gateway* [**source** *ipv6-address*]

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Ю ३ ৲

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RGOS10.4E	Ю ३

74.1.10 neighbor fall-over bfd

router address-family Ю, **neighbor fall-over** Ю ३ BGP б BFD BGP , **no** Ю ३

neighbor *ip-address* **fall-over bfd**

no neighbor *ip-address* **fall-over bfd**

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ip-address	BGP Â

BGP a BFD

Ю ३

~	˝I IP ৲ BFD ৲

BGP BFD ˘ BFD

10.3(4b3)	

74.1.11 set ip next-hop verify-availability

Route-map **set ip next-hop verify-availability** BFD TRACK IP **no**

set ip next-hop verify-availability [*next-hop-address* [**track** number|**bfd** [**vrf** *vrf-name*] *interface-type interface-number gateway*]]

no set ip next-hop verify-availability [*next-hop-address* [**track** *number*|**bfd** [**vrf** *vrf-name*] *interface-type interface-number gateway*]]

vrf *vrf-name*	( ) VRF
next-hop-address	( )IP
track	( ) Track
number	( )track
bfd	( ) BFD
interface-type interface-number	( )
gateway	( ) IP BFD IP BFD

a BFD

~	IP BFD

G!5B _ #

show bfd neighbors [**vrf** *vrf-name*] [**ipv4** *ip-addess* [**details**]| **ipv6** *ip-addess* [**details**] | **client** {**bgp|ospf|rip|vrrp|static-route|**} [**ipv4** *ip-addess* [**details**] | **ipv6** *ip-addess* [**details**]| **details**]]

```
Received MinRxInt: 50000, Received Multiplier: 3
Holdown (hits): 600(22), Hello (hits): 200(84453)
Rx Count: 49824, Rx Interval (ms) min/max/avg: 208/440/332
Tx Count: 84488, Tx Interval (ms) min/max/avg: 152/248/196
Registered protocols: BGP
Uptime: 02:18:49
Last packet:  Version: 1              - Diagnostic: 0
              I Hear You bit: 1       - Demand bit: 0
              Poll bit: 0             - Final bit: 0
```

Rx Count

75 RERP

75.1

75.1.1 rerp enable

ƪ ३ ⁸ RERP ॥ Â

rerp enable

no rerp enable

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৭		

rerp fail- interval *num*

no rerp fail- interval

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num

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```
Ruijie(config)# rerp hello-interval 2
```

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rerp fail- interval	

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75.1.4 rerp region

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rerp region *num*

no rerp region *num*

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num	ھھ , تن 1-64

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```
Ruijie# rerp region 1
```

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rerp enable	RERP ھو ३

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75.1.5 ring

ج RERP à ⁸ vlan Л৳ ৲ ў ÿ ৲ Â

ring *num* **role** [**master** | **backup** | **transit**] **ctrl-vlan** *vid* **primary-port interface** *interface-id* **secondary-port interface** *interface-id*

no ring *num*

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৲	
num	id
master | backup | transit	ў ⁸ à ў ÿ
vid	⁸ vlan
interface-id	৲

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Ĥu ३

RERP ৯ Â

৴ ج RERP ৲ , ৩ RERP ৲ ৴ Master Ω ৴ Backup ╗ RERP ৲ ╟ ঙ trunk ৲ native vlan ╟ ঙ ⁸ vlan Â

Ю Ĥu ३ '

```
Ruijie# rerp region 1
Ruijie(rerp)# ring 1 role master ctrl-vlan 100 primary-port interface GigabitEthernet 0/1 secondary-port interface GigabitEthernet 0/2
```

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rerp region	… RERP ৯

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75.1.6 edge-ring

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edge-ring *num* **role** [**primary-edge|secondary-edge**] **ctrl-vlan** *vid* **shared-port interface** *interface-id* **sub-port interface** *interface-id*

no ring *num*

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৭	**num**	id
	primary-edge|secondary-edge	ў ÿ
	vid	⁸ vlan
	interface-id	৭

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	৭ ŋ́ ৯ RERP ˘ ≠ ĥu ३ ŋ́ˇ ˝l RERP ring Â

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```
Ruijie# rerp region 1
Ruijie(rerp)# edge-ring 2 role primary-edge ctrl-vlan 200 shared-port interface GigabitEthernet 0/1 sub-port interface GigabitEthernet 0/3
```

ĥu ३	

Tf04-6(i)-1(ng)]TJ/C2_0 1 Tf0 T21 Tf-1.677 0.72 EF14CEd<01C4>Tj/TT( )Tj0.02]TJ0 -0.006 Td(RER

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major-ring *num* **edge-ring-vlan** *vid*

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num	ў
vid	8 vlan

vlan Â

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majory-ring ج Â

Ю Ъυ ३ :

```
Ruijie# rerp region 1
Ruijie(rerp)# major-ring 1 edge-ring-vlan 100
```

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ใช้งาน EXEC

ใช้คำสั่งนี้เพื่อแสดงสถิติของ ใช้งาน :

```
Ruijie# sh rerp statistics regiong 1 ring 1
The statistics for region 1 ring 1 GigabitEthernet 0/4
TX hello packets       23, RX hello packets         0
TX edge-hello packets   0, RX edge-hello packets    0
TX flush packets        0, RX flush packets         0
TX down packets      0, RX down packets             0
TX up packets            0, RX up packets           0
TX major fail packets   0, RX major fail packets    0
TX major resume packets  0, RX major resume packets  0
TX sub complete packets  0, RX sub complete packets  0
The statistics for region 1 ring 1 GigabitEthernet 0/5
TX hello packets       23, RX hello packets          0
TX edge-hello packets   0, RX edge-hello packets      0
TX flush packets        0, RX flush packets           0
TX down packets      0, RX down packets               0
TX up packets            0, RX up packets             0
TX major fail packets   0, RX major fail packets       0
TX major resume packets  0, RX major resume packets    0
TX sub complete packets  0, RX sub complete packets    0
```

75.2.3 clear rerp statistics

RERP Â

clear rerp statistics

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76 REUP

76.1

76.1.1 link state track

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link state track [*num*]

no link state track [*num*]

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num	৸ ID

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```
Ruijie(config)# link state track 1
```

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link state group	৭ ╗

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76.1.2 link state group

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link state group *num* {**upstream | downstream**}

no link state group

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Ю MAC ফহ '

```
Ruijie(config)# mac-address-table move update receive
```

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mac-address-table move update transit	ৰ MAC ফহ Â

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Ruijie(config)# **mac-address-table move update transit**

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ЮЗ	
mac-address-table move update transit	ЛЬ MAC ЖЖЖЖ Â

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76.1.5 mac-address-table update group

MAC ЖЖЖЖ Â

mac-address-table update group [*group-num*]

no mac-address-table update group

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group-num	MAC ЖЖЖЖ ID

ID Й 1Â

MAC ЖЖЖЖ Â

ЮЗ ЛЛ Â

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MAC ЖЖЖЖ Â Л ˆ Э Л ╝ ˆ Л MAC ЖЖЖЖ

˘ ˆ Ю ╝ Â

Ю Л ╝ ˆ MAC ЖЖЖЖ '

Ruijie(config-if)# **mac-address-table update group** *2*

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ЮЗ	
show mac-address-table update group	Э MAC ЖЖЖЖ Â

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76.1.6 switchport backup interface *interface-id*

REUP ٩ Â

switchport backup interface *interface-id*

no switchport backup

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	interface-id	٩ ID Â

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ج ٩ й ў ٩˘ ٩ interface-id ٩ й ٩ Â ╟
٩ ٨˘ Â

Ю ٩ ˘ fa 0/1 й ў ٩˘ fa 0/2 й ٩ '

```
Ruijie(config)# interface fa 0/1
Ruijie(config-if)# switchport backup interface fa 0/2
```

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	show interface switchport backup	Э ٩ Â

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76.1.7 switchport backup interface *interface-id* preemption

REUP ´ ╖ Â

switchport backup interface *interface-id* **preemption mode** { **forced** | **bandwidth** | **off** }

switchport backup interface *interface-id* **preemption delay** *delay-time*

no switchport backup interface *interface-id* **preemption delay**

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৭	*interface-id*	৭ ID Â
	delay-time	´ Â

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switchport backup interface *interface-id* **prefer vlan** *vlanrange1* **active prefer vlan** *vlanrange2*

no switchport backup interface *interface-id* **prefer**

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interface-id	৭ ID Â
vlanrange1	৭ VLAN ته Â
vlanrange1	ў ৭ VLAN ته Â

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ў ў ৭ ৶ vlan ته Â

ЮO ৭ vlan ک '

```
Ruijie(config)# interface gigabitEthernet 0/1
Ruijie(config-if)# switchport backup interface gigabitEthernet 0/2
prefer vlan 101-200 active prefer vlan 201-300
```

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show interface switchport backup	Э ৭ Â

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76.2

76.2.1 show link state group

show link state group *num*

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num	ID

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ƕυ ʢ EXEC

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```
Ruijie # show link state group
Link State Group:1  Status: Enabled, UP
Upstream Interfaces :Gi0/1(Up)
Downstream Interfaces :Gi0/3(Dwn), Gi0/4(Dwn)
Link State Group:2  Status: Disabled, Down
Upstream Interfaces :
Downstream Interfaces :
(Up):Interface up (Dwn):Interface Down (Dis):Interface disabled
```

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76.2.2 show mac-address-table update group detail

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detail	فخ سم

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ƕυ ʢ EXEC

```
Ruijie # configure terminal
Ruijie (config)# mac-address-table move update receive
Ruijie (config)# interface range gigabitEthernet 0/3-4
Ruijie (config-if-range)# mac-address-table update group
Ruijie (config-if-range)# end
Ruijie # show mac-address-table update group detail
Mac-address-table Update Group:1
Received mac-address-table update message count:7
Group member  Receive Count  Last Receive Switch-ID  Receive Time
-------------------------------------------------------------
GigabitEthernet 0/3  0             0000.0000.0000
GigabitEthernet 0/4  0             0000.0000.0000
```

配置	
-	-

IO

```
Ruijie # show interfaces switchport backup detail
Switch Backup Interface Pairs:
Active Interface     Backup Interface      State
-------------------------------------------------------
Gi0/23     Gi0/24      Active Up/Backup Standby
Interface Pair : Gi0/23, Gi0/24
Preemption Mode : Off
Preemption Delay : 35 seconds
Bandwidth : Gi0/23(1000 Mbits), Gi0/24(1000 Mbits)
```

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77 RLDP

77.1

77.1.1 rldp detect-interval

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rldp detect-interval *interval*

no rldp detect-interval

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interval	˘ ৲ تن ঈ 2-15

3 Â

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rldp detect-max *num*

no rldp detect-max

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num	, ৶ ন ই 2-10

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```
Ruijie(config)# rldp detect-max 5
```

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rldp detect-interval	

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77.1.3 rldp enable

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rldp enable

no rldp enable

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ৰ RLDP ˘ ৰ RLDP Â

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```
Ruijie(config)# rldp enable
```

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rldp port	ৰ RLDP ╗

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77.1.4 rldp port

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rldp port {**unidirection-detect | bidirection-detect | loop-detect** } {**warning | shutdown-svi | shutdown-port | block**}

no rldp port { **unidirection-detect | bidirection-detect | loop-detect** }

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unidirection-detect	´ ৰ صر
bidirection-detect	৅ ৰ صر
loop-detect	صر
warning	ˆ
shutdown-svi	shutdown ৰ جه svi
shutdown-port	shutdown ৰ
block	ৰ ˜ ৅

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ৰ RLDP Ю˘ ৰ RLDP Â

Ю جه fas 0/1 Э rldp ˘ صر ى ˘ ى

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```
Ruijie(config)# interface fas 0/1
Ruijie(config-if)# rldp port loop-detect block
```

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ħu ३	
rldp enable	rldp ħu ३

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77.2

77.2.1 show rldp

rldp ᐣ Â

show rldp [**interface** *interface-id*]

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Interface-id	ᐣ

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77.2.2 debug rldp

rldp ᒪ Â ᒥᑌ ᖇ no Â

debug rldp [**packet | event | error**]

undebug rldp [**packet | event | error**]

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packet	ᐧ rldp Â
event	ᐣ ᐧ ᐯ Â
error	ᐧ Â

指令 EXEC

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78 TPP

78.1

78.1.1 topology guard

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[**no**] **topology guard**

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╖ ˘ ৲ ᏡᏁ ˘ ᏡᏁ ᵉ ৲ Â б Ԧ ৄ **cpu topology-limit** ৲ Â

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`Ruijie(config)#` **`topology guard`**
`Ruijie(config)#` **`no topology guard`**

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tp-guard port enable	৻ ╖ Â
cpu topology-limit	CPU ¯ Â

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78.1.2 tp-guard port enable

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[**no**] **tp-guard port enable**

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```
Ruijie# show tpp
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topology guard	ℸ

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79.1.2 copy

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copy *source-url destination-url*

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source-url	˚ URL Â ˚ Э Ю ╟ ˘ ⌠ ⌡ ⌐ ⌠ ⌡ ⌐ Â
destination-url	˚ URL Â ˚ Э Ю ╟ ˘ ⌠ ⌡ ⌐ ⌠ ⌡ ⌐ Â

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

2. 从 tftp 服务器上

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

3. 通过 xmodem 协议

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

4. 从 U 盘

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

5. 从 slave 板

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

6. 从 flash 到 sd 卡

```
Ruijie#copy flash:/rgos.bin sd0:/rgos.bin
```

7. 从 U 盘到 sd 卡

```
Ruijie#copy usb0:/config.text sd0:/config.text
```

8. 从 sd 卡到 U 盘

```
Ruijie#copy sd0:/config.text usb0:/config.text
```

[illegible]

[illegible]	[illegible]
del	[illegible]
rename	[illegible]
dir	[illegible]

[illegible]

[illegible]

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```
Ruijie# dir slave0:/
Directory of slave:/
   Mode Link     Size             MTime Name
-------- ---- --------- ------------------- ------------------
          1  10838016 2008-01-01 00:01:53 rgos.bin
          1      399 2008-01-01 00:01:37 config.text
          1      399 2008-01-01 00:17:58 cfg.txt
-----------------------------------------------------------------
3 Files (Total size 11210782 Bytes), 0 Directories.
Total 33030144 bytes (31MB) in this device, 20463616 bytes (19MB)
available.
```

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```
Ruijie# dir
Directory of temp:/
   Mode Link     Size             MTime Name
-------- ---- --------- ------------------- ------------------
          1      399 2008-01-01 00:17:58 a.dat
-----------------------------------------------------------------
1 Files (Total size 399 Bytes), 0 Directories.
Total 33030144 bytes (31MB) in this device, 20463616 bytes (19MB)
available.
```

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pwd	ŋ́
cd	ˇ ŋ́

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79.1.6 rename

[illegible]

rename *url1 url2*

[redacted]

79.1.7 rmdir

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rmdir *directory*

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directory	⁄ , ѝ

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```
Ruijie# rmdir tmp
```

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mkdir	…

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79.2

79.2.1 pwd

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Ruijie#**show file systems**

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80

80.1 CPU

80.1.1 cpu-log

CPU ¯ ⅃ , ⅃ ⎍ **cpu-log** Â

cpu-*log* *log-limit low_num high_num*

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80.1.2 show cpu

CPU show cpu

show cpu

-	-

Ruijie# **show cpu**

```
Ruijie# show cpu
========================================
    CPU Using Rate Information
CPU utilization in five seconds: 25%
CPU utilization in one minute  : 20%
CPU utilization in five minutes: 10%
  NO   5Sec   1Min   5Min   Process
  0     0%     0%     0%    LISR INT
  1     7%     2%     1%    HISR INT
  2     0%     0%     0%    ktimer
  3     0%     0%     0%    atimer
  4     0%     0%     0%    printk_task
```

5	0%	0%	0%	waitqueue_process
6	0%	0%	0%	tasklet_task
7	0%	0%	0%	kevents
8	0%	0%	0%	snmpd
9	0%	0%	0%	snmp_trapd
10	0%	0%	0%	mtdblock
11	0%	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
```

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CPU ¯ ˝O ↑ ШISR à HISR Ω ' Ñ ' é CPU ¯ ˝O ¶
è ' Ü ⌧˜H

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5Sec	**Ü ' ⌙ 5 è CPU ¯**
1Min	**Ü ' ⌙ 1¶ è CPU ¯**
5Min	**Ü ' ⌙ 5¶ è CPU ¯**

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й bgp Â

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```
Ruijie(config)# memory-lack exit-policy bgp
```

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show memory	

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80.2.2 show memory

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show memory

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Ю **show memory** Â

```
Ruijie#show memory
System Memory Statistic:
```

```
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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min	a ˘ ˘ ↑ ˘ Э a ⅃ Â
lower	ш a ˘ ↑ ˘ Э ~ ╟ ˘ Â ~ ⁸ ⅄ **memory-lack exit-policy** ɦu ʒ Â
low	a ˘ ↑ ˘ Э ~ OVERFLOW ˘ Ю˘ a ˘Ą ˘ Â a ˘ ⁸ ⅄ a ɦu ʒ Â
high	˙l ˘ ЛЭ˘ ˙l ˘ ⅄ ~ ÿ OVERFLOW ↑ Â

3. ˘ ɱ ⅃ ˘ Лu ⅄ Â

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80.2.3 show memory protocols

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show memory protocols

81

81.1

81.1.1 clear logging

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clear logging

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```
Ruijie# clear logging
```

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logging on	
show logging	ă ш
logging buffered	ˆ ă ш

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81.1.2 more flash

ج FLASH ˚ ˘ ج Ю Ю ३'

more flash:filename

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Filename '	˘ ⅄

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æ FLASH ˘ ˘ ⅄ ⅿ ”//f2/˘ ”//f3/’ ˘ Â Ĥ ¾ ¶
˘ ˘ a Ĥ ¾ ¶ 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
```

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ă ϖ й 4k Bytes Â

ш й 7 Â

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ă ϖ ˘ ϖ ˘ ‡ Â ă ϖ ˘ Ъυ ϟ **show logging Â**

ă ϖ ˘ ů Ъυ ϟ clear logging˘ ă ϖ Â ˘ ↑ FLASH ⌟ Syslog Server Â

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81.1.4 logging console

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logging console *level*

no logging console

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level	ш ˘ ن ÿ 0 ˺ 7 Â Л Ц ⁝ Л ˘ ≠ Л Ц Â ш ˘ Л 1 Â

Debugging (7)

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show logging Ъ ъ Л Ц Л Ω Â

Ю جھ 8 Л ⁝ й 6˝

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

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logging on	
show logging	ă Ш ˘ Ц Л Л

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81.1.5 logging count

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Ю ˘ Ю ३ no Â

logging count

no logging count

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Ю ˘ 3 Â

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```
Ruijie(config)# logging count
```

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show logging count	Ю
show logging	Ю Ю б ă Ш

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81.1.6 logging facility

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й (23) Â

logging facility *facility-type*

no logging facility

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facility-type	Syslog ˘ ἑ ৭ ´ Â

Local7(23)

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Ю ˆ 2˜ Syslog ৲ '

Numerical Code	Facility
0	kernel messages
1	user-level messages
2	mail system
3	system daemons
4	security/authorization messages
5	messages generated internally by syslogd
6	line printer subsystem
7	network news subsystem
8	UUCP subsystem
9	clock daemon
10	security/authorization messages
11	FTP daemon
12	NTP subsystem
13	log audit
14	log alert
15	clock daemon
16	local use 0 (local0)
17	local use 1 (local1)
18	local use 2 (local2)
19	local use 3 (local3)
20	local use 4 (local4)
21	local use 5 (local5)
22	local use 6 (local6)
23	local use 7 (local7)

й (local7) 23 Â

Ю Syslog й kernel

```
Ruijie(config)# logging facility kern
```

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logging console	ج 8 ⅄ Э

~	↑ FLASH˘ ⅄ FLASH˘
	FLASH˘ logging file flash ╟ ˘ a Â

Ю ػ VTY ᛋ Э . ⁝ ѝ 6'

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

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logging on	
show logging	ᾰ ש ˘ Ꮑ ⅃ ᛋ

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logging	↓ Syslog Server
logging file flash:	جه FLASH Э
logging console	جه ⁸ ↓ Э ⁝
logging monitor	جه VTY ↑ (telnet ↑) Э ⁝
logging trap	↓ Syslog Server ⁝

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Ъ ъ ↑ ↓

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81.1.10 logging rate-limit

⁸ ˘ ⁸ ˘ جه Ю Ъ ъ Â ⁸ ˘ Ъ ъ no Â

logging rate-limit {*number* | *all number* | *console* {*number* | *all number*}} [*except severity*]

no logging rate-limit

↑	
number	˘ تن й 1—10000
all	⁸˘ ↑ 0—7 ,
console	جه ⁸ ↓ Э '
except	ш ⁝ ˘ a ⁸' ⁝ й error(3)˘ error ⁝ a ⁸'
severity	ш ⁝˘ ⁝ ˘ ш ˘ تن й 0—7

Ю˘ a ⁸ Â

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Ъ ъ ⁸ Â Ъ ъ˘ ↓ Л Â

ˆ ↑ debug˜ ѝ 10 ˇ warning ˊl ш

⁞ a ⁸'

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

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show logging count

2' Ю IPV6 ممسد فذ ىلإ AAAA:BBBB::FFFF

```
Ruijie(config)# logging server ipv6 AAAA:BBBB::FFFF
```

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ƚƸ ǯ	
logging on	
show logging	ǎ Ɯ ˘ ɅƸ ˥ ˥
logging trap	˥ syslog server ⋮

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81.1.14 logging synchronous

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Ю Ъu ३ Â б ⅃ ╗ ˘ Ъu ३ no Â

logging synchronous

no logging synchronous

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Ъu ३

Ъu ३ б ⅃ ╗ ˘ ⅃ ⅄ ⌐ Â

```
Ruijie(config)#line console 0
Ruijie(config-line)#logging synchronous
⌐ Ъu ३ ˘ . ⅃ UP-DOWN ˘ ‡ Ъu ३ '
Ruijie#configue terminal
Oct  9 23:40:55 %LINK-5-CHANGED: Interface GigabitEthernet 0/1,
changed state to down
Oct  9 23:40:55 %LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet 0/1, changed state to DOWN
Ruijie# configue terminal        //        Ъu ३        ˘    a
```

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Ъu ३	
show running-config	

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81.1.15 logging trap

ᏗᏂ Syslog Server

service sequence-numbers

no service sequence-numbers

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Ю ج ╗ Э ˩'

```
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
```

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show logging	ج ش б ă Ш

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81.1.18 service timestamps

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service timestamps *message-type* [*uptime* | *datetime* [*msec* | *year*]]

no service timestamps *message-type*

default service timestamps *message-type*

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message-type	ص˘ ч log Ω debug Â log ج ш ⁞ ج 0 6 ˘ debug ш ⁞ й 7 Â

uptime

msec	ɱ ˘ ' ;ʃ : . ' Jul 27 16:53:07.299

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Ю **show logging** '

```
Ruijie# show logging
Syslog logging: enabled
Console logging: level debugging, 4 messages logged
Monitor logging: level informational, 0 messages logged
Buffer logging: level debugging, 6 messages logged
Timestamp debug messages: datetime
Timestamp log messages: disabled
Sequence log messages: enable
Trap logging: level debugging, 2 message lines logged,0 reserved,0 fail
logging to  202.101.11.22
logging to  192.168.200.112
Log Buffer (Total 4096 Bytes) : have written 680
00001 2004-11-17 10:20:59  Ruijie: %7:%LINK CHANGED: Interface FastEthernet 0/0, changed state to up
00002 2004-11-17 10:20:59  Ruijie: %7:%LINE PROTOCOL CHANGE: Interface FastEthernet 0/0, changed state to UP
00003 2004-11-17 10:57:18  Ruijie: %7:%LINK CHANGED: Interface FastEthernet 0/1, changed state to administratively down
00004 2004-11-17 10:57:21  Ruijie: %7:%LINK CHANGED: Interface FastEthernet 0/1, changed state to down
00005 2004-11-17 10:57:41  Ruijie: %7:%LINK CHANGED: Interface FastEthernet 0/1, changed state to administratively down
00006 2004-11-17 10:57:43  Ruijie: %7:%LINK CHANGED: Interface FastEthernet 0/1, changed state to down
```

'

Syslog logging	' **enabled**, **disabled**
Console logging	. ⌂ ⁸ ⅄ Э ⁝˘ ⎍ ⅃
Monitor logging	. ⌂ VTY ⅄ Э ⁝˘ ⎍ ⅃
Buffer logging	⌂ ǎ ʍ ⁝˘ ⎍ ⅃
Timestamp debug messages	Debug
Timestamp log messages	Log
Sequence log messages	⅄

Trap logging	˧ Syslog Server ⁞˘ Ꮑ˦
Log Buffer	ݘ ă ש

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logging on	
clear logging	ă ש

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81.2.2 show logging count

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show logging count

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logging count	๒
show logging	๙ ๘ ๗ ๖ ๕ ๔ ๓ ๒ ๑
clear logging	๓ ๒

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82

82.1

82.1.1 device-priority

device-priority [*member*] *priority*

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member	˘ ID Â ۸ Л۵ ˘ ‡ member 1
priority	˘ ˝I ˘ ۷ تىن ۍ [1, 10]

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ھۇ ۋ ˘ ىچى ۸ ˝I ˘ ˝I ۷ تىن ۍ 1↑ 10˘ ȅ 10 ˝I
˘ ˘ ۍ 1 Â
۸ write Â

˘ 2 ˝I ۍ 8

```
Ruijie(config)# device-priority 2 8
```

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۹	
member *member*	˘ ID Â ۶ Ո ˘ ‡ member 1 Â
description	˘ ˘ ۸ 31 Â

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ھں ३ ˘ ⁞ ۶˘ ۸ write Â

˘ 2 ⁞ ۶ ۸ red-giant

```
Ruijie(config)# device-description member 2 red-giant
```

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show member	ججى ۸ ˘ Â

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82.2

82.2.1 show member

show member [*member*]

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member	˘ ID˘ ‡ ˘ Â

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