Ъ ҙ ӒА

RG-S8600 "

Н Ь IPv6 Ҕ

RGOS 10.4(2)

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”Ą ¨ ѝ' RGOS®10.4(2) Â

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ą ' Courier New ˘ è ɛ˘ 5 Л˘
ą Âą è ÿ ώ ą ˘ ╗ ɛ Â

2. ћ ҷ

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ɛ' ћ ҷ ˜Ω ˆ ћ ҷ è ɖ a ɻ ǂ ˜ ╗ ɛ Â

Ɛ' ћ ҷ Ⴄ ˆ ћ ҷ è ḣ ҷ ǂ ˜ ɛ

[ ] ' [ ] ǂ ˘ ћ ҷ ɻ Â

{ x | y | ... }' ÿ ч э э è ɻ У э Â

[x | y | ...]' ÿ ч э э è ɻ У э a Â

//' ɻ ѝ Â

3. ʎ

ʎ ɟɔ è ⁞ ɯ ˘ ɸ ⱵⱾ
ⱭⱰ'

~ à ˆ à ɔ è Y Â

& à à à ɔ ⷈ ⷈI

	1.	ⷈẠ w R ʃ ʎ ɾ ɹ a ˘ ɔ è ʎ ɳ ɒ ʎ ɾ Â
~	**2.**	ⷈẠ ʃ w R ə è ɹ ⷈ è ɳ ɒ " ⷈ ˆ ɳ ɒ ɾ ʎ à ~ ˘ é ɛ ə Ⱦ G ə ʊ̀ ñ Â
	3.	ⷈẠ è ɻ Ⱡɻ Ⱡɳ ɒ ف ˘ ʒ ɷ У ⱵⱭⱰ Ⱡˇ Ⱦ ɻ ɷ ~ Ь Ꜧ Â

1 CLI

1.1

1.1.1 alias

У ђυ ҳ ⋮ ɹ˘ ⊣Лυ ѫ ѿ ЮG alias ђυ ҳ ÂG ђυ ҳ no ⊣Лῡ У ђυ ҳ⋮ ɹ ī У э Ю ѿ ђυ ҳ⋮ ɹ Â

alias *mode command-alias original-command*

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

¶	
mode	⋮ ɹ ҳ ђυ ҳ ђυ ҳ Â
command-alias	ђυ ҳ⋮ ɹ Â
original-command	⋮ ɹ ҳ ђυ ҳ Â

¶

ѫ EXEC Ю˘ ī ђυ ҳ ѫ ⋮ ɹ Â

ђυ ҳ ѿ

EXEC Ю ђυ ҳ⋮ ɹ ѝ **h** ѣ**p** ѣ**s** ѣ**u** ѣ**un** ђυ ɹī ⋮ ѝ **help** ѣ**ping** ѣ**show** ѣ **undebug** ѣ **undebug** Â

ђυ ҳ⋮ ɹ a **no alias exec** ђυ ҳī Â

ђυ ҳ⋮ ɹ˘ ⊣Лυ У э´ ҳ У ђυ ҳ Â R ђυ ш ҳī ђυ Ж ī

G

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

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

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

```
Ruijie(config-if)# ia ?
A.B.C.D  IP address
dhcp     IP Address via DHCP
Ruijie(config-if)# ip address
```

```
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
```

show aliases	

-

⁞ˇ ⅄ Л∪ ج ѿ Ю G **privilege** ħu ҁ Â G
ѝ ḣ Â

ommand-string

mand-string

ħu ҁ CLI ħu ҁ Â
ħu ҁ ħu ҁ ˇ ⅄ ѝ ⅄ ⁞ Â
ħu ҁ ħu ҁ ⁞ˇ ⁞ تن 0-15 Â
ħu ҁ ѝ ⁞ Â
ħu ҁ s Â

è ⅄ CLI ħu ҁ ℨΩ ˇ a ⅄ ˇ ⅄
ע ˇ ج ѿ Ю ⅄ Л∪ G **privilege ?** "

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0.0.2 294.68 -139.2 -19.1Hp

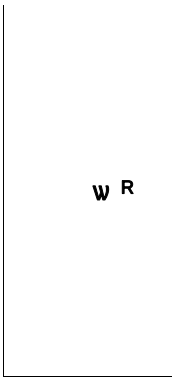
```
Ruijie(config)# enable secret level 1 0 test
Ruijie(config)# privilege exec level 1 reload
   ˘ G    ⁞ 1  ώ CLI   ˘ ↓  ↓Л Ц G  reload ħυ ҳ'
Ruijie> reload ?
<cr>
       reload  ѿ   ħυ ҳ        ⁞ 1     ˘ ‡ ↓Л Ц G  all ΈΩ   '
Ruijie(config)# privilege exec all level 1 reload
   ˘ G    ⁞ 1  ώ CLI   ˘ ↓  ↓Л Ц G  reload  ѿ   ħυ ҳ'
Ruijie> reload ?
at                  reload at a specific time/date
   cel              cancel pending reload scheme
                    reload after a time interval
```

ΈΩħυ ҳ	
enable secret	CLI ⁞ ∧ ҳ

∧

ЛυЮ R ˇ EXEC Ю ħυ ҳ ⁞ ɹ'

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



2

2.1

2.1.1 disable

ѧ ӇӦ˘ æ ɱ ѧ ⁞˘ Ђυ ҂ disable Â

disable [*privilege-level*]

٩	٩	
	privilege-level	

Ђυ ҂

G	G ђυ ҂ ÿ ⁱ Â ╗ Ɔ ˘ ‡ ɱ æⁱ Â
	& **disable** ђυ ҂ ⅄ ¥ ɱ Â

w R	ӇO R ɱ æⁱ ˊ ˈ Ruijie# **disable** *10*	
	enable	ÿ ώⁱ ˘ ⁱ ⁞ Â

˜Ωђυ ҂	Ђυ ҂	
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2.1.2 enable

ώ ˘ Ъυ ҳ enable Â

Ъυ ҳ ə ٧ ê ŏ Ъυ ҳ ٧ Ì Â

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	ə ٧ ê ŏ Ъυ ҳ ٧ Ì Â
Ъυ ҳ	ə ٧ ê ŏ Ъυ ҳ ٧ Ì Â
G	ə ٧ ê ŏ Ъυ ҳ ٧ Ì Â
w R	ə ٧ ê ŏ Ъυ ҳ ٧ Ì Â

˝ΩЪυ ҳ	Ъυ ҳ	
	-	-

٨	
ə ٧ ê ŏ Ъυ ҳ ٧ Ì Â	

Ъυ ҳ ˥ ٨	٨	
	-	-

2.1.3 enable password

a ٨ ⁞ ٧ ҳ˘ ŏ Ъυ ҳ **enable password** Â Ъυ ҳ **no**˥ ⁞ ٧ ҳ Â

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

٧		
	Password	ώ EXEC ٧ ҳ Â
	Level	⁞ Â
	0|7	٧ ҳ ╗ ص˘ 0 ╗ ˘ 7 ´ ╗ Â
	encrypted-password	٧ ҳ Â

Ъυ ϡ ώ

ώ ╗ ѓ Â У ά Ю ˝ ч ⁸ ╗ ч ϡ ˘
ώ ╗ ѓ Â
ч ϡ Ъ Ю
G
Â ↑ ŭ 1↑ 26 э ņ̃ Ո Â
Â ч ϡ ѧ ч Л Ո ѧ ˘ п Â è ч ‡ ɔ и ч ϡ У ↑ Â

~	ѭ ╗ ѓ ˇ Л ώ У ч ϡ ˇ ‡ a ώ EXEC Â a ╗ x ч ϡ Â ч ч ϡ Â

w R

Ю R ч ϡ и pw10ґ
Ruijie(config)# **enable password** *pw10*

ˇΩЪυ ϡ

Ъυ ϡ	
enable secret	ώ ч ϡ Â

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Ъυ ϡ ˥ Л

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2.1.4 enable secret

a Л ⁞ ώ ч ϡ ˇ ώ Ъυ ϡ **enable secret** Â Ъυ ϡ **no** ґ ⁞ ч ϡ Â

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

no enable secret

ч

ч	
Secret	ώ EXEC ч ϡ Â
Level	⁞ Â
0|5	ч ϡ ╗ ѓ ˇ 0 ╗ ˘ 5 ώ ╗ Â
encrypted-password	ч ϡ Â

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ћυ ҳ	ѽ
G	ћυ ҳ ¥ б ̃Ω Ь Â G **no enable service** ћυ ҳ ̃Ω Ь Â
w R	Ю R ћυ ҳ’ enable service ssh-sesrver, SSH Server ╖ ' Ruijie(Config˜ # **enable service ssh-sesrver**

ћυ ҳ B 2

Ј **Telnet** ╖ ˘ ˚ ą Ю'

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

	enable Â
ћυ ҳ	ѽ
G	ћυ ҳ ¥ Web Â G **no ip http authentication** ћυ ҳ ѝ ћ Â
w R	Ю R ћυ ҳ˘ Web local ' Ruijie(config)# **ip http authentication local**
ЎΩћυ ҳ	**ћυ ҳ** | **enable service**

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Ъυ ϗ ϒ ѧ

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2.1.9 ip telnet source-interface

ѧ Э IP ѫϔϕ ɔ ѝ Telnet ѫϔϕ˘ ϳ Ю˘ ϟ Л υ G **ip telnet source-interface** Ъυ ϗ'

ip telnet source-interface *interface-name*

ѧ

ѧ	
interface-name	ѧ Э IP ѫϔϕ ɔ ѝ Telnet ѫϔϕ Â

Ъυ ϗ ώ

G Ъυ ϗ ϒ ѧ Э IP ѫϔϕ ɔ ѝ ώ Telnet ѫϔϕ Âϳ G telnet Ъυ ϗ У ѧ Telnet Ь Ы Ą˘ ѝ ´ ѧ ѫϔϕ˘ G ώ Â G **no ip telnet source-interface** Ъυ ϗ ѝ ḣ Â

w R Ю R Ъυ ϗ˘ Loopback 1 ѧ Э IP ѫϔϕ ɔ ѝ ώ Telnet ѫϔϕ'

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

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Ъυ ϗ	
telnet	¦ У ѧ Telnet Ь Ы Â

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Ъυ ϗ ϒ ѧ

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10.4(2)	Ъυ ϗ

2.1.10 lock

æ Э У э ^ ъ EXEC Ъ ъ **lock** Â

lock

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-	-

Ъ ъ

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ЛЮ в '
Â У ' ώ **lock** Ъ ъ˘ ώ ^ ъ'
Â γ ' ώ ^ ъ˘ ˩Л ' s Â ώ ˇ ώ ^ ъ˘
ˇ ˘ l' Locked Ł ę '
Â ώ ˘ ώ ï ^ ъ Â
æ Э G в ˘ æ æ line Ю **lockable** Ъ ъ˘ æ
line Э в Â

w R

Ю R й в У э '

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

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lockable	æ Э в Â

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Ъ ъ ˥ ˇ

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2.1.11 lockable

ѧ Э G **lock** Ъυ ϡ˘ ϟ Лυѧline Ю **lockable** Ъυ ϡ˘ ѧ
ϙ Ю a **lock** Ъυ ϡ Â G **no** Ъυ ϡ ϟ Â

lockable

no lockable

ϟ	
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Ъυ ϡ line

G Ъυ ϡ ¥ ѧ Э в ˘ в ϟ Лυ ѧ EXEC Ю **lock** Ъυ ϡ Â

Ю R ѧ 8 ϡ ϟ Э в ╖ ˘ в 8 ϡ'

w R

```
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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Ъυ ϡ	
lock	в Â

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login

no login

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Ъυ ҳ line

G ŭ AAA ŏ Ĺ ˘ ‡ Ъυ ҳ ¥ ɔ ´ ٩ ҳ Â ٩ ҳ
VTY console ٩ è ٩ ҳ Â

Ю R ѧ VTY Э ٩ ҳ Â

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

ˇΩЪυ ҳ

Ъυ ҳ	
password	line

ꢂꢃ ꢄ line

G

username ћ ћ ћ

ћ R ћ VTY ћ ћ

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

ћ ћ	
username	ћ ћ

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ћ ћ	
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2.1.15 privilege mode

ћ ћ CLI ћ ћ

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ћ ћ CLI ћ ћ

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ћ R ћ ћ CLI ћ ћ

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2.1.16 password

line ˄ ˇ line ћ **password** ћ **no** line ˄ Â

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

no password

˄	
password	line ˄ Â

service password-encryption

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interface *interface-name*	Telnet G ٨
/vrf *vrf-name*	VRF

Ъυ ҂

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Ъυ ҂ ¥ ˆ У ٨ telnet Ł ٪ Â

~	**/ipv6** ˜Ω ˘ Θ ج IPV6 è

w R

R 1' Ю R ˘ telnet IPV4 ѫ ف س ى 192.168.1.1˘ ٨ G ḣ˘
٨ ى vlan 1˘ VRF ى vpn1'

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

R 2' Ю R ˘ telnet IPV6 ѫ ف س ى 2AAA:BBBB::CCCC'

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

˜ΩЪυ ҂

Ъυ ҂	
ip telnet source-interface	٨ Э IP ѫ ف س ى ɔ Telnet ѫ ف س ’
show session	ɱ TTY ˚ ’
exit	ɱ ’

٨

Ъυ ҂ ˥ ٨

/١	
-	-

2.1.19 username

password	ﻧ ϗ Â
0|7	ﻧ ϗ ╗ ﺻ 0 ╗ ˘ 7 ´ ╗ Â
encrypted-password	ﻧ ϗ Â
privilege-level	Â

message	ə ӧ

Ђ ҳ ӧ

G G Ђ ҳ ↓ Л ə ˘ ˘ Ҫ ə ˛ Â
ώ ǂ Ѓ Ÿ ώ ˘ ‡ Ҫ x Â

Ю R ə '

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

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Ђ ҳ ˥ ↓ Ѓ

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2.2.2 banner motd

ə ˘ ѯ ώ Ю Ђ ҳ **banner motd** Â ↓
ə ˘ G **no banner motd** Ђ ҳ Â

banner motd *c message c*

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Ѓ	
c	ə ǂ ˘ ə è a ї
message	ə ӧ

Ђ ҳ ӧ

G G Ђ ҳ ↓ Л ə ˘ ˘ Ҫ ə ˛ Â

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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 ╟ Ą˘ s5750_10_4.bin Â

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show boot system	ˇΩ ą Â

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2.2.4 clock set

˘ ⅄Лυ G ћυ ҳ **clock set** ч è У '

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

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hh:mm:ss	⁄ń ˘ ѝ ^ 24 ⁸ ~ : ⁋ :
day	^ 1-31˜ ˘ У э è Â
month	` ^ 1-12˜ ˘ У è `
year	Ω Ї ^ 1993-2035˜ ˘ a G ⁋ Â

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G ћυ ҳ ˘ ғ Â

G ¥ k ˚ ˘ G clock set Э Θ

˘ Ю ⁄˘ Â

ш R Ю R ɱń ий 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
```

ˇΩћυ ҳ

ћυ ҳ	
show clock	ɱń

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2.2.5 clock update-calendar

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clock update-calendar

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У Ҫ ⁄ ˚ é ˚ ^ calendar˜ Â ˚ ╟˘ . G ج

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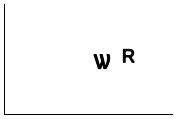
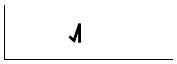
ҳ ˚ è ñ Ո 8† ˚ Ч Â

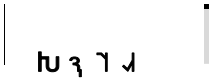


G ЮЪυ ҳ ↓ Л υ ⁄ń ˚ Ո ⁸ ˚ Â

Ruijie# clock update-calendar

Ъυ ҳ





/Ì	

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G G Ъυ ҳ ↓Л υ ѫ 2 ŭ ╟˘ ғ Â

Ю R 10† Л υ Л '

w R Ruijie# **reload in** *10*

Router will reload in 600 seconds.

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Ъυ ҳ ˥ ↓

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2.2.10 session-timeout

ɱ LINE Э † ˘ G **session-timeout** Ъυ ҳ Â
no session-timeout Ъυ ҳ˘ ↓ LINE Ю† ˘ a Â

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

no session-timeout

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Ч	
minutes	† ’
output	ĭ ≠ ↄ и ώ˘ ″ ĭ ’

и 0 min Â

Ъυ ҳ LINE

G ѫ ǫ˘ ÿ ɱ LINE Э † ˘ ˙ ¡ ώ
ə ˘ è ˘ LINE и ↓ Â

w R Ю R line vty 0 ˘ и 5† 30 '

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

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Ћ ҳ ˥ ˬ	
-	-

2.2.11 speed

˘ ѽ Ю Ћ ҳ **speed** *speed* Â
˘ G **no speed** Ћ ҳ Â

speed *speed*

ˬ	
Speed	. ˘ ´ Æ bps Â ¥ s ˬ˘ ˬ · ѝ 9600 ă19200 ă38400 ă57600 ă 115200 è У э˘ 9600 Â

9600

Ћ ҳ ѿ

G G Ћ ҳ Â

Ю R s ˬ ѝ 57600 bps'

w R Ruijie(config)# **line console** *0*
Ruijie(config-line)# **speed** *57600*

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-	-

Ћ ҳ ˥ ˬ	

[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	ΰ ╟ ˚ ˩
copy	˚ 8
show running-config	

/ſ	
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2.3

2.3.1 show clock

ˇ ћυ ϗ **show clock** Â

show clock

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-	-

ћυ ϗ

G G ћυ ϗ ˩ Л υ ɱ ˇ detail Â

Ю R **show clock** ћυ ϗ У э R'
Ruijie# **show clock**
clock: 2003-3-17 10:27:21

¯ØÞu ¾	Þu ¾	
	clock set	

¼	

Þu ¾ ¯ ¼	¼	
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2.3.2 show line

ª¸ ˘ æ² ÞÕ˘ Þu ¾ **show line** Â

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

¼	¼	
	console	⁸ ¼ ª¸
	aux	aux ª¸
	vty	vty ª¸
	line-num	line

Þu ¾

G	G Þu ¾˘ ª¸ Â

ÞÕ ᴿ console ¼ ª¸ '

```
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.
```

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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

ŭ ╟ ˘ ѫ Ю Ю ҳ **show reload** Â

show reload

ℳ

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Ю ҳ

G G Ю ҳ ℐ Л ŭ ╟ Â

ѡ R Ю R ŭ ╟ '

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

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2.3.4 show running-config

ђґ ѫ ѳ Ю ч **show running-config** Â

show running-config

ї	ї	
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Ю ч

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w R

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	-	-

ї

```
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
```

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3 LINE

3.1 LINE

3.1.1 access-class

Line ĦO ACLˆ ⁸ ‟ ˜ Â ᴳ **access-class** *acl-no* { **in | out** } ħυ ३
Line ĦO ⁸ ‟ Âᴳ no **access-class** *access-list-number* {**in | out**} ħυ ३ ৸
LINE ĦO ACL Â

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

ћu ҳ ˥ ↓	↑	
	-	-

3.1.2 line

ώ↑ LINE ˘ G ЛuЮћu ҳ'

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

↑	↑	
	aux	↑˘ У Θ ₥ Ы " ң ҏ Э
	console	8 ↑
	tty	↑˘ У Θ ₥ Ы " ң ҏ Э
	vty	˘ ұ telnet/ssh
	First-line	ώ first-line ↑
	Last-line	ώ last-line ↑

ћu ҳ	ŏ
G	ώ LINE Â
w R	ώ↑ LINE VTY 1↑ 3 LINE ' Ruijie(config)# **line vty** *1 3*

ћu ҳ		
	-	-

↓

ћu ҳ ˥ ↓	↑	
	-	-

3.1.3 line vty

Ю ђ ђ Ю ╗ ⅈ ђ Ю G VTY Â Ю ђ **no** ч ђ Ю ˝ ⅈ ђ Ю G
VTY Â

line vty *line-number*

no line vty *line-number*

ч

ч	
-	-

ą Ю˝ ђ VTY и 5˜ Л и 0--4 Â

Ю ђ

ő

G

╗ ˝ ђ VTY ˇ ђ Ю G Э Ю ђ Â

w R

R 1' ђ VTY ╗ĵ 20˝ ђ VTY Л ت и 0--19 Â
`Ruijie(config)# line vty 19`
R 2' ђ VTY ˝ ĵ 10˝ ђ VTY Л ت и 0—9 Â
`Ruijie(config)# line vty 10`

˝Ω Ю ђ

Ю ђ	
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Ю ђ ˥ ђ

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3.1.4 transport input

Line Ю ђ Ю ˜ ˇ G **transport input** Ю ђ Line Ю ђ Ю ˜ Â
G **default transport input** и LINE Ю ї ˜ и h Â

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

default transport input

ч

ч	
all	Line Ю˝ ї ˜ Â
ssh	Line Ю˝ ђ ї SSH ˜ Â

telnet	Line Ю˝ ↓ ї Telnet ˜ Â
none	Line Ю˝ a ї ˙ ¦ ˜ Â

˘ VTY ї ˜ Â è ص TTY ћ ѝ NONE˝ a ї ˙ ¦ ˜ Â ¢ ˜ ↓Л ∧˘ ↓Л G **default transport input** ћu ҳ ѝ ћ Â

ћu ҳ Line

ћu ҳ Line Ю ї ˜ ÂVTY ѧ ą Ю˝ ї ˜ ą Â ¢ ї ˜ ∧˘ ↓ ˜ ↓Лѧ VTY Э ╖ Â G **show running** ћu ҳ Line Ю ą Â

&	G d**efault transport inpu**t ћu ҳ Â **no transport input** ћu ҳ˘ LINE Ю ą ˜ Â б **transport input none** ↓ Â

ѧ line vty 0 4 Ю˝ ↓ ї telnet ˜ '

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

ћu ҳ	
show running	ą Â

˚ RGOS10.1 ЛЭ

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4 ISSU

4.1

4.1.1 issu abortversion

ħυ ϗ ɔ ىھ

issu abortversion [**{M2|M1}** *image*]

	٩	
	{**M1|M2**}	ў ٨

4.1.2 issu acceptversion

ƫυ ɜɻ ɔ ˜ ˚ ˬ˘ ˬȷ ɱ ISSU ȴ Â

issu acceptversion {**M2**|**M1**} *image*

˥	
{**M2**|**M1**}	

4.1.3 issu commitversion

ћu ҳ ɔ ў ӱ ѯ ˚ Э

issu commitversion {M2|M1} *image*

^I	
{M1|M2}	⁋ ɅI ӱ ^I
image	⁋ ɅI ӱ Э ˚

ћu ҳ

G ~ ћu ҳ ʖ Ʌˇ ISSU ɔ ˇ a ѡ

w R ᴿ 1' ⅂ ў ˇ ѯ ӱ

```
Ruijie# issu commitversion M1 flash:install-s86-new.bin_
```

ћu ҳ	
show issu state [detail]	issu ҽ
show redundancy states	⁋ м ҽ

ɅI ћu ҳ ɱ Θ ѯ S8600 " Ӈ Э

^I	
10.4	у ώ ћu ҳ

4.1.4 issu loadversion

ћu ҳ ɔ G ӱ G ˚ Æ ╗

issu loadversion {M1|M2} *active-image* **{M2|M1}** *standby-image [force]*

4.1.5 issu runversion

ћυ ҳ ɔ ў ſ ſ ˚ Ѵ ÿ Э˘ G ſ ˚ Э

issu runversion {M2|M1} *image*

ˬ

4.1.6 issu set rollback-timer

ԽՍ Հՠ Ɔ ԹԹ Ⴍ

issu set rollback-timer {*seconds*| *hh:mm:ss}*

no issu set rollback-timer

4.2

4.2.1 show issu rollback-timer

ѡ Ы ҽ

Show issu rollback-timer

¶	¶	

ѝ 45ї

ћu ҳ

G

ѡ R

```
R 1' Ю R ISSU ѡ Ы ҽ '
Ruijie# show issu rollback-timer
Rollback Process State = IN progress
Configured Rollback Time = 45:00
Automatic Rollback Time = 39:00
```

ЇΩћu ҳ		
	ћu ҳ	
	Issu set rollback-timer	ѡ Ы

ѵ ћu ҳ ѭѳ ѥ S8600 " Ђ Э

ћu ҳ ˥ ѵ	ѵ	
	10.4	У ώ ћu ҳ

4.2.2 show issu state

5

5.1

5.1.1 ping

Ъ ҳ ˘ ⅃ Л ╠ à Æ è Â Ъ ҳ
Ю'

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

٩	
vrf-name	VRF ⅄
ip-address	IPv4 فخ سم Â
length	⅃ ↑
times	⅃ ↑ ə
seconds	

é E ٧ DNS ĵ Â

R 1' ping R'

```
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
```

R 2' ping R'

w R

```
Ruijie# ping 192.168.5.197 length 1500 ntimes 100 timeout 3 data ffff
source 192.168.4.10
 Sending 100, 1000-b
```

length	↓ ↑
times	↓ ↑ э
seconds	
data	ĺ
source	IPv6 فخ سم ↑ Â è ˘ ى ↑ فخ سم R ::1˜ a ï ɔ ѝ سم فخ Â

جم ^ ѝ 2 ˜ ˘ 5 э ѝ 100Byte ↑ ĺ IP سم فخ Â

Ъυ ҳ

Ping ipv6 Ъυ ҳ جم Ռ Ю˘ جم Ю˘ ↓ ﷺ
ping ipv6 ╗ ˘ جم Ю˘ ‡ ↓ Л∪ ping ipv6 ╗ Â
ping ipv6 ╗ ˘ ↓ Л∪ جم Ռ Ю ˘ جم ^
ѝ 2 ˜ ˘ 5 э ѝ 100Byte ↑ ĺ IP سم فخ˘ ˘ ‡
G У э '!ᵡ ˘ ‡ У э '.ᵡ ˘ б ˘ а ˥ ˘
‡ а У э 'Cᵡ Л У э ą Â ping ipv6 ╗ ˘ ↓ جم Ю
˘ جم ping è˘ ↓ Л∪ ↓ ↑ э à ˘ ˘ Ռ
ping ipv6 ╗ У ˘ Л ≠ У э ą Â ╗

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ᴊ	Ъυ ҳ ج ipv6 Э ᴋ Â

Ъυ ҳ ٦ ᴊ	ᴎ	
	-	-

5.1.3 traceroute

traceroute Ъυ ҳ˘ ᆡ ᴎυ ɣ ↑ ÿ ѕѫ ڤفخ ѕѫ فخ ѕѫ ˜Ω.

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

ᴨ	
vrf-name	VRF
Ip-address	IPv4 Â

```
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∪   ѕм  ¦ ˘ ÿ  ƒхѕм      IP ƒхѕм й 61.154.22.36   ў ˘
    ↑      ѡ ƒ ҷ  ℨΩ̂  1·  6˜ ˘  ⊣      ѡ¦      ℨΩ       ˘      ų
¦  ˘           Â
```

R 2' è ҷ ℨΩ a traceroute R '

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∪   ѕм  ¦ ˘ ÿ  ƒхѕм      IP ƒхѕм й 202.108.37.42   ў ˘
    ↑      ѡ ƒ ҷ  ℨΩ̂  1·  17˜ ˘   з  ℨΩ 4    ѡ     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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Ъυ ҂ ٦ ۸	۸	
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5.1.4 traceroute ipv6

traceroute ipv6 Ъυ ҂˘ ۷ Л∪ ɣ ↑ ÿ ѫ ѫ ѫ ЎΩ Â

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

٩	٩	
	Ip-address	IPv6 ѫ ѫ ۷ Â
	number	۷
	seconds	
	minimum maximum	Ո TTL ḣ

ћυ ҳ

G

Traceroute ipv6 ћυ ҳ ў ¥ ˘ ѣ ч ˘ ñ Æ
ч Æ Â G ѫ ѕ ╖ ˘ ‡ ″I ѫ ѕ ┺ Ы˘ é е ч DNS
ґ Â

ЛυЮ й traceroute ipv6 ч э R ˘ У э й ˘ У э й ѣ
Ҿ ˝Ω a ą Â

R 1' 5`,€=@54 •” ñ Œ ax f_Ruijie#0 1 Tf 13.0008 m (9)Tj /TT5(f .139(6

W R

ƕ ɜ ˥ ˩	-

6

6.1

6.1.1 carrier-delay

ٰ ٰ ٰ ٰ ٰ **carrier-delay** ٰ ٰ ٰ ٰ ٰ **no** ٰ ٰ ٰ

carrier-delay [*seconds*]

no carrier-delay

ٰ	ٰ	
	seconds	ٰ ٰ ٰ ٰ ٰ ٰ 1 60 ٰ

ٰ ٰ 2 ٰ

ٰ ٰ ٰ

ٰ ٰ DCD ٰ Down ٰ Up ٰ
DCD ٰ ٰ ٰ ٰ ٰ ٰ a ٰ
ٰ ٰ
DCD ٰ ٰ ٰ ٰ ٰ ٰ ٰ
ٰ ٰ ٰ DCD ٰ ٰ ٰ
ٰ ٰ ٰ ٰ

ٰ ٰ ٰ 5 '

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

ٰ	ٰ	
	-	-

ٰ	

	-	-

6.1.2 clear counters

ﻥ ﻝ

clear counters [*interface-id*]

ﻥ	ﻥ	
	interface-id	ﻥ ﺭ ﻥ ﻑ Â
ﻩ ﻍ	Â	
G	ﻥ ﻫ ﻝ ﻝ ﻩ ﻍ **show interfaces** ﻭ ﺟ ﻮ G **clear counters** ﻩ ﻍ ﻭ ﻝ ﻝ ﻥ ﻫ Â a ﻥ ﻭ ‡ ﻥ ﻝ Â	
ﯡ R	Ruijie# **clear counters gigabitethernet** *1/1*	

ﷺ ﻩ ﻍ	ﻩ ﻍ	
	show interfaces	ﻥ ﻥ ﻉ Â
ﻑ		
ﻩ ﻍ ﺁ ﻑ	ﻑ	
	-	-

6.1.3 clear interface

ﻥ ﻭ Æ

clear interface *interface-id*

ﻥ	ﻥ	
	interface-id	ﻥ ﺭ ﻥ ﻑ Â

hu ʒ	
G	hu ʒ ʎ Switch Port,L2 Aggregrate port ˜ ʎ ,Routed port,L3 Aggregate port ˜ ʎ Â hu ʒ ¥ ʎ **shutdown** Ո **no shutdown** hu ʒ Â
w R	Ruijie# **clear interface gigabitethernet** 1/1

ﻝ

ﻩ ﻍ ﻝ ﻝ

ﻥ	
-	-

6.1.5 duplex

ﻩ ﻥ ﻫ ﻭ ﻩ ﻍ ﻥ ﻝ Â ﻩ ﻍ **no** ﻭ ﻫ Â

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

no duplex

ﻥ

ﻥ	
auto	ﻕ ﻝ ﻦ ` ﻝ Â
full	ﻕ ﻝ Â
half	` ﻝ Â

ﻕ ﻝ ﻦ ` ﻝ Â

ﻩ ﻍ ﻥ

ﻩ

ﻥ ﻝ ﻫ ﻥ ﺹ ﺡ Â ﻝ ﻝ ﻩ **show interfaces** ﻩ ﻍ ﻥ ﻝ Â

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

ﻩ ﻍ	

ƅu ʒ ˜Ω ⁸ Â G ƅu ʒ no ỳ ḣ Â

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

no flowcontrol

ʎ

ʎ	
auto	˜ ڑ ⁸ Â
off	˜Ω ⁸ Â
on	⁸ Â

˜Ω ⁸ Â

ƅu ʒ ʎ

G G **show interfaces** ʎ ⁸ Ո ⁸ Â

‾ ¨l Ո ʎ 1/1 ⁸ '

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

˜Ωƅu ʒ

ƅu ʒ	
show interfaces	ʎ Ո ə Â

ʃ

ƅu ʒ ˥ ʃ

ʃ	
-	-

6.1.7 interface aggregateport

ƅu ʒ ƅu ʒ˘ … У э ʌ ʎ˘ ώ ʎ Â G ƅu ʒ no ī ʎ Â

interface aggregateport *port-number*

ʎ

ʎ	
port-number	Aggregate port ʃʎ˘ ت Ո ج ā Â

Ƕ ɂ	ŏ
G	ɻ Ʌ υ У ‡˘ è ы ʎ ╗ ώ˺ У э aggregate port è Âaggregate port ˜ ʎ ỳ У э ɛ˘ ˜ ʎ aggregate port ā Â ᴳ **show interfaces** **show interfaces aggregateport** Ƕ ɂ ʎ Â
w ᴿ	Ruijie(config)# **interface aggregateport** *3* Ruijie(config-if)#

ʗΩƵ ɂ		
	Ƕ ɂ	
	show interfaces	ʎ Ո ə Â

ɻ	S8600 " Â ˜ ʎ э 8 э Â ŏ … 128 э AP

Ƕ ɂ ʅ ɻ		
	ʎ	
	-	-

6.1.8 interface fastEthernet

Ƕ ɂ Ƕ ɂ˘ Ʌ υ ʎ˘ ώ ʎ Â

interface fastEthernet *mod-num*/*port-num*

ʎ		
	mod-num/port-num	ж ʎ / ж Э ʎ ʎ˘ ىن Ո ж ā Â

Ƕ ɂ	ŏ
G	Ƕ ɂ no ˘ ص ʎ a ˺ Â ᴳ **show interfaces** **show interfaces fastEthernet** Ƕ ɂ ʎ Â
w ᴿ	Ruijie(config)# **interface fastEthernet** *1/2*

Ruijie(config-if)#

ƅu ɂ	
show interfaces	ʎ Ո· ə Â

ʎ ƅu ɂ ˥ ʎ	
-	-

6.1.9 interface giagbitEthernet

ƅu ɂ ƅu ɂ˘ ¯ ¨ł Ʌu ʎ˘ ώ ʎ Â

interface gigabitEthernet *mod-num/port-num*

ʎ	
mod-num/port-num	ж ʎ / ж Э ʎ ʎ˘ ت Ո· ж ᾱ Â

ƅu ɂ ŏ

G ƅu ɂ **no** ˘ ص ʎ a ĩ Â G **show interfaces** **show interfaces gigabitEthernet** ƅu ɂ ʎ Â

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

ƅu ɂ	
show interfaces	ʎ Ո· ə Â

ʎ ƅu ɂ ˥ ʎ	
-	-

6.1.10 interface tenGigabitEthernet

ㅾ ㅋ　　ㅾ ㅋˇ　　10G ㅅ　　ㅓˇ　　ώ　ㅓ　　Â

interface tenGigabitEthernet *mod-num/port-num*

hu ɂ ŏ

G G **show interfaces** **show interfaces vlan** hu ɂ ʎ Â

w R
```
Ruijie(config)# interface vlan 2
Ruijie(config-if)#
```

	hu ɂ	
	show interfaces	ʎ Ո ə Â

S8600 " '

Â … 2K ə SVI ʎ

Â 2K ə IP

```
pair state     length(meters)
---- ---------- --------------
B    Ok        2
pair state     length(meters)
---- ---------- --------------
C    Short     1
pair state     length(meters)
---- ---------- --------------
D    Short     1
```

pairs	↑ ΰ ˘ ٴ نې ٨ Â
state	ɱ ˘ ″Ω Ь ə ḣ' OK˜ ~ ˘ Short˜ ~ ˘ Open ˆ ~ Â ɑ Ю˜ ″I ٴ A à B ч й OK˜ C à D ч й Short Â˜ ″I ٴ A à B à C à D نې ⅋ й OK Â
length	˘ ´ Æ й Âٴ state й OK Â٨ ˘ ¥ ə ٨ · ˘ Лυ ٴ ج У Â й Short Open length ٴ Â

Ωٶ ٶ	Ъυ ٶ	
	-	-

٨	¥ 86/96 " ң ϱ˘ ℸ ٴ ج Ю ´ è '
	M8600_48GT_4SFP_POE_II M9600_48GT_4SFP_POE_II
	M8600_48GT_4SFP_E M9600_48GT_4SFP_E
	M8600_48GT_4SFP_E_II M9600_48GT_4SFP_E_II

6.1.13 medium-type

ٴ ص Â G Ъυ ٶ **no** ḣ Â

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

no medium-type

٩		
٩	**fiber**	″I ٴ
	copper	ٴ

ٴ Â

Ɬu ʒ	ʎ ˆ ʎ˘ a ↑ Ap Ո SVI˜
G	⊿ У ʎ ⊿Л ¨I ʎ Ո ʎ ч Ӯ ص˘ ʎ G è è Ӡ У Â У Ӯ ص Ӡ ⊿˘ ج ʎ ˘ R ầ ⊿ ầ ⁸ Ո ˘ ʎ ɱ ص Â ⊿ ʎ ص ⊿˘ ص ʎ ὶ è ˘ ⊿Л Â
w R	Ruijie(config)# **interface gigabitethernet** *1/1* Ruijie(config-if)# **medium-type copper**

Ῐ Ωɬu ʒ	Ɬu ʒ	
	show interfaces	ʎ Ո ə Â

⊿	24SFP/12GT ´ 12 ə SFP ʎ Ո 12 ə 10/100/1000M BASE-T ʎ ï ╟ ⁋ Â a ʎ ╟ ″ ɱ ɔ ج SFP ʎ 10/100/1000M BASE-T ʎ Â

Ɬu ʒ ˥ ⊿	⊿	
	-	-

6.1.14 mtu

ʎ mtu

Mtu *num*

ʎ	ʎ	
	num	64˙ 9216(

ชื่อใช้ คำ	ใช้ คำ	
	show interfaces	ฯ ∩ ลุ Â

ㅓ

ħu ɮ ˥ ㅓ

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-	-

6.1.16 snmp trap link-status

æ è ㅓ Ʌu ㎜ ɣ ㅓ ĭ ㅓ ㅓ LinkTrapˇ ╖ ˇ ㅓ ㅓ Link ㅓ ㅛˇ SNMP ㅓ LinkTrap, ㅓ ʒ ‡ a ㅓ Â ᴳ ħu ɮ **no** SNMP a ㅓ LinkTrap Â

snmp trap link-status

no snmp trap link-status

ㅓ

ㅓ	

ɑ ĦŐˇ ╖ ˇ ㅓ ㅓ Link ㅓ ㅛˇ SNMP ㅓ LinkTrap Â

ħu ɮ ㅓ Â

G ɣ ㅓˆ Ʌu ㅓ àAp ㅓ àSVI ㅓ˜ ˇ ħu ɮ ĭ ㅓ ㅓ LinkTrapˇ ╖ ˇ ㅓ ㅓ Link ㅓ ㅛˇ SNMP ㅓ LinkTrap, ㅓ ʒ ‡ a ㅓ Â

w R

R 1' Ю ㅓ ŭ a ㅓ Link trapˈ

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

R 2' Ю ㅓ ŭ ㅓ Link trapˈ

```
Ruijie(config)# interface gigabitEthernet 1/1
Ruijie(config-if)# snmp trap link-status
```

ˇΩħu ɮ

ħu ɮ	
Ruijie(config-if)# **snmp trap link-status**	ㅓ ㅓ link trap ╖ Â
Ruijie(config-if)# **no snmp trap link-status**	ˇΩ ㅓ ㅓ link trap ╖ Â

ㅓ

ج ʎ Ю G a ˙ ¡ ʎ **switchport** ƕ ɂ˘ У э ʎ й 2 Â G
a ˙ ¡ ʎ **no switchport** ƕ ɂ ʎ й 3 Â

switchport

no switchport

	switch port й access˘ VLAN й VLAN 1
Ъυ ҳ	ʌ
G	ώ У э VLAN ID Â ώ У э VLAN ID˘ ‡ ¸ … У э VLAN˘ ʌ й VLAN ˜ Â ώ ҷ VLAN ID˘ ‡ ╗ VLAN ˜ ʌ Â ʌ У э

У ə switch port access ‡ ㅓ ㅓ ㅒ У ə VLAN Â ㄴ Л ᴳ

switchport access vlan ㅏ ㅋ ㅓ ف У ə VLAN Â

G

У ə switch port trunk ‡ ㅓ ㄴ Л ə VLAN Â ㅓ ㄴ Л

ㅣ ف ㅎ VLAN ㅓ ㄴ VLAN " ā trunk port ㄴ VLAN " è

VLAN Â ㄴ Л ᴳ **switchport trunk** ㅏ ㅋ ㅐ ㅓ ㄴ

ᴡ ᴿ Ruijie(config-if)# **[illegible]**

allowed vlan *vlan-list*	ə Trunk ㅓ ㅓ VLAN " Â ㅓ vlan-list ㅓ Л υ У ə VLAN˘ ≠ ㅓ Л υ У " VLAN˘ Л υ VLAN ID ˘ Л υ VLAN ID ˘ è ˆ -˜ ㅕ Â ' 10-20 Â ƺ ㅓ Л υ ˆ ,˜ ㅕ ˘ ' 1-10,20-25,30,33 all ŭ ħ ㅓ VLAN " ↑ ŭ VLAN˙ add VLAN " ╗ ώ ㅓ VLAN " ' remove VLAN " ÿ ㅓ VLAN " è ╕ ' except " VLAN " VLAN ╗ ώ ㅓ VLAN " '
native vlan *vlan-id*	Native VLAN Â

ㅓ VLAN " all˘ Native VLAN ‡ VLAN 1

ħυ ҳ ㅓ

Native VLAN˙

ɔ ŕ Trunk˘ ə ㅓ ų У ə native VLAN Â native VLAN˘ ə ㅓ Э ㅓ UNTAG ˘ ŕ ų ə VLAN Â ˘ ə ㅓ VLAN ID ˆ . IEEE 802.1Q è PVID˜ native VLAN VLAN ID Â ㅗ ˘ ə Trunk Э ㅓ ų native VLAN ˘ ‡ UNTAG Â

ㅓ VLAN " '

У ə Trunk ㅓ ㅓ Л υ VLAN˙ 1˙ 4094˜ Â л ˘ ≠ ㅓ Л υ Trunk ㅓ ㅓ VLAN " ⁸ ⊖ VLAN a ə Trunk ㅓ Â

ᴳ **show interfaces switchport** ħυ ҳ Â

Ю У ə VLAN 2 ÿ ㅓ 1/15 è ᴿ '

```
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
```

Ъυ ҳ	
show interfaces	ʌ ə Â
switchport access	У э ʌ ѝ statics accessportˇ ѝ У э VLAN ˜ ʌ Â

ʌ

Ъυ ҳ ˥ ʌ	ʌ	
	-	-

6.2

6.2.1 show interfaces

ʌ Ո ə ˘ Ѕυ ˧ ˝I ⁖ə Â

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

G a ╗ ㄟ ˇ ‡ ㄟ ㎜ ə Â

w R

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

ℨㄩ ㄎ

ㄏㄩ ㄎ	
duplex	ㄟ ㄣ Â
flowcontrol	ℨΩ ⁸ Â
interface gigabitEthernet	ㄢ ㄟ^ ↑ ⁻ ¨l ㄢ ㄟ~ ˇ ώ ㄟ Â
interface aggregateport	… У э ㄌ ㄟˇ ώ ㄟ Â
interface vlan	… У э ╟ Ꮋ ㄟ ^ switch virtual interfaceˇ SVI~ ˇ ώ ㄟ Â
shutdown	ㅊ ㄟ è˘ G ㄏㄩ ㄎ ℨΩ ㄟ Â
speed	ㄟ Â
switchport priority	802.1q ㄟ ¨l Â
switchport protected	ㄟ ㄕ ɖ ㄟ Â

ㄌ

ㄏㄩ ㄎ ㄱ ㄌ

ㄲ	
-	-

7 Aggregate Port

7.1

7.1.1 aggregateport load-balance

У э AP Â G Ъu ҙ no ий ћ Â

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

no aggregateport load-balance

¶	
dst-mac	ώ MAC ѫ Ў Âэ AP ѓ è˘ MAC ѫ ѓ Ў ѓ ¶˘ MAC a ѓ Ў Ў a ѓ ¶ Â
src-mac	ώ MAC ѫ Ў Â э AP ѓ è˘ a ѓ MAC ѫ Ў Ў a ѓ ¶˘ ѓ MAC ѫ G ѓ ¶ Â
src-dst-ip	IP б IP Ў Â a ѓ IP—— IP a ѓ ¶ ч˘ ѓ У IP—— IP ѓ ч Â э Ь ˚ Ю˘ Â
dst-ip	ώ IP ѫ Ў Âэ AP ѓ è˘ IP ѫ ѓ Ў ѓ ¶˘ IP a ѓ Ў Ў a ѓ ¶ Â
src-ip	ώ IP ѫ Ў Âэ AP ѓ è˘ a ѓ IP ѫ Ў Ў a ѓ ¶˘ ѓ IP ѫ G ѓ ¶ Â
src-dst-mac	MAC б MAC Ў Â a ѓ MAC—— MAC a ѓ ¶ ч˘ ѓ У MAC—— MAC ѓ ч Â

ώ Ո MAC ѫ Ў Â

Ъu ҙ ŏ Â

G	G **show aggregateport load-balance** ħu ҳ Â

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

˜Ωħu ҳ	ħu ҳ	
	show aggregateport load-balance	aggregateport ə Â

˄	S8600 " '

ħu ҳ ˥ ˄	˄	
	-	-

7.1.2 port-group

У э ˄ ˥ Aggregate Port ˘ ˄ Â G ħu ҳ no ˉ ˄ Aggregate Port ˘ Â

port-group *port-group-number*

no port-group

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

	˄ a ɣ˙ ¦ Aggregate Port Â

ħu ҳ	˄ Â

G	AP ˘ ˄ ج ˩ У э VLAN è˘ trunk port Â ɣ a ˩ native VLAN ˄ a AP

w R	Ю R Л∪ ˄ 1/3 AP 3 ˘ ' Ruijie(config)# **interface gigabitethernet** *1/3* Ruijie(config-if)# **port-group** *3*

˜Ωħu ҳ	ħu ҳ	
	-	-

S8600 " '
Â ˜ ∧ ə 8 ə'
Â ŏ … 128 ə AP Â

ħυ ϡ ˥ ⅄	/ſ	
	-	-

7.2

7.2.1 show aggregateport

aggregateport ą Â

ſ		
	aggregate-port-number	Aggregate Port ∧ /ſ Â
	load-balance	aggregaye port Â
	summary	aggregate port è ą Â

ħυ ϡ

	-	-

8 VLAN

8.1

8.1.1 name

VLAN ɹ Â G ħυ ३ **no** ḣ Â

name *vlan-name*

no name

٩		
٩	*vlan-name*	VLAN ɹ
	VLAN ɹ ὶ VLAN¯ VLAN ID˘ VLAN 2 ɹ ὶ ”VLAN0002”	
ħυ ३	VLAN	
G	G **show vlan** ħυ ३ vlan	
ẇ R	`Ruijie(config)# vlan 10` `Ruijie(config-vlan)# name vlan10`	

˘Ωħυ ३	ħυ ३	
	show vlan	

switchport access vlan *vlan-id*

no switchport access vlan

५	
access	У э switch port ὶй access port Â
trunk	У э switch port ὶй trunk port Â
hybrid	У э switch port ὶй hybrid port Â

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

٩	
٩	**allowed vlan** *vlan-list*	ə Trunk ٩ ٫ VLAN " Â ٩ vlan-list ٫Л Ч ə VLAN˘ ≠ ٫Л Ч " VLAN˘ Л VLAN ID ˘ Л VLAN ID ˘ è ^ -˜ /٩ Â ' 10-20 Â ƺ ٫Л ^ ,˜ /٩ ˘ ' 1-10,20-25,30,33 all ŭ ђ٣ ٫ VLAN " ↑ ŭ VLAN˝ add VLAN " ╗ ώ ٫ VLAN " ' remove VLAN " ÿ ٫ VLAN " è ╕ ' except " VLAN " VLAN ╗ ώ ٫ VLAN " '
	native vlan *vlan-id*	Native VLAN Â

٫ VLAN " all˝ Native VLAN ‡ VLAN 1

ђu ҳ ٩

G

Native VLAN˝

ɔ й Trunk˘ ə ٩ ų Ч ə native VLAN Â native VLAN˘ ھ ə ٩ Э ٫ UNTAG ˘ й ų ə VLAN Â ˘ ə ٩ VLAN ID ^ . IEEE 802.1Q è PVID˜ native VLAN VLAN ID Â ٫ ˘ ھ Trunk Э ٫ ų native VLAN ˘ ‡ UNTAG Â

٫ VLAN " '

Ч ə Trunk ٩ ٫Л VLAN˘ 1 4094˜ Â п ˘ ≠ ٫Л Trunk ٩ ٫ VLAN " 8 ҉ VLAN a ə Trunk ٩ Â

G **show interfaces switchport** ђu ҳ Â

w R

Ю Ч ə VLAN 2 ÿ ٩ 1/15 è R '

```
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
```

ħυ ३	

-	-

8.2

8.2.1 show vlan

VLAN ˜ ˄ ə Â

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

˄	
vlan-id	VLAN ID ˄ Â

ώ ə

ħu ɂ

G ⃞ ˇ ώ **end** ħu ɂ˘ ώ **Ctrl+C** ˄ Â
⃞ ώ ˇ ώ **exit** ħu ɂ

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

ħu ɂ

9 Super-vlan

9.1

9.1.1 subvlan

ᴳ ƫu ३ super vlan subvlan ╕ subvlan Â

subvlan *vlan-id-list*

no subvlan [*vlan-id-list*]

৭	
Vlan-id-list	VLAN subvlan ID, ⅃ ə vlan

ƫu ३	VLAN
ᴳ	ᴳ **no subvlan** ╕ supevlan subvlan

ᴡ ᴿ

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

ƫu ३	
show supervlan	supervlan ə৲ Â

⅄

৭	
-	-

9.1.2 subvlan-address-range

G ħu ɜ subvlan ip ف خ سم تن Â

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

no subvlan-address-range

٩		
٩	*start-ip*	SubVLAN IP ف خ سم
	end-ip	SubVLAN IP ف خ سم

-

ħu ɜ VLAN

G ه ا ˘ ώ **end** ħu ɜ˘ ώ **Ctrl+C** ٨ Â
ه ا ŏ ˘ ώ **exit** ħu ɜ

w R

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

ΏħuɜΩ

ħu ɜ	
show supervlan	supervlan ə Â

٨

ħu ɜ ٦ ٨

٨	
-	-

9.1.3 supervlan

G ħu ɜ VLAN ي **supervlan** Â

supervlan

no supervlan

٩		
٩	-	-

ħu ɜ VLAN

G ھ ˇ ώ **end** ħu ɜˇ ώ **Ctrl+C** ʌ Â
ھ ŏ ˇ ώ **exit** ħu ɜ

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

ŴħuɜΩ

ħu ɜ	
show supervlan	supervlan ə Â

ʌ

ħu ɜ ˥ ʌ

ʌ	
-	-

9.1.4 proxy-arp

G ħu ɜ VLAN ARP ɜ ╖ Â

proxy-arp

no proxy-arp

ʎ

ʎ	
-	-

ħu ɜ VLAN

G ھ ˇ ώ **end** ħu ɜˇ ώ **Ctrl+C** ʌ Â
ھ ŏ ˇ ώ **exit** ħu ɜ

w R

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

ˇΩħu ɜ

ħu ɜ	
show supervlan	supervlan ə Â

ɻ

ħu ɜ ˥ ɻ

ɻ	
-	-

9.2

9.2.1 show supervlan

G ħu ɜ SuperVLAN ˧ ɛ SubVLAN Â ñ1wçPĞavgjTm¸Vjæ%vÂrcBWbNŸ1TtBWbNRe

ħυ ३	
ँΩħυ ३	

10 Protocol VLAN

10.1

10.1.1 protocol-vlan ipv4 addr mask addr vlan id

IP ѫ فخ سم à Л υ ٦ VLAN†

٩		
٩	*addr*	IP سم فخ ˘ Л υ x.x.x.x ώ
	id	VLAN ID˘ 1- ң ҏ VLAN

ħυ ϡ ώ

G

w R

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

ˇΩħυ ϡ	ħυ ϡ	
	show protocol-vlan ipv4	-
	no protocol-vlan ipv4 *addr* **mask** *addr*	-
	no protocol-vlan ipv4	-

ﻝ ˚ RGOS10.1 Л υ Э

ħυ ϡ ٦ ﻝ	ﻝ	
	-	-

10.1.2 protocol vlan ipv4

ﻩ ٨ Э G IP سم فخ à Л υ ٦ VLAN†

Protocol VLAN ħυ ҙ

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

no private-vlan mapping

٧		
٧	*svlist*	secondary VLAN list
	no	╕

ħu ҳ	Primary VLAN ٧
G	

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

ˇΩħu ҳ	ħu ҳ	
	show vlan private-vlan	-

٨	˚ RGOS10.1 ЛъЭ

ħu ҳ ˥ ٨	/١	
	-	-

11.1.3 private-vlan type

VLAN ѝ VLAN

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

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

٧		
٧	*community*	ѝ community VLAN
	isolated	ѝ isolated VLAN
	primary	ѝ primary VLAN
	no	╕ VLAN

ˇΩħu ɜ	ħu ɜ	
	show vlan private-vlan	-

ʌ	˅ RGOS10.1 ЛυЭ

ħu ɜ ˥ ʌ	ʌ	
	-	-

11.1.5 switchport private-vlan host-association

ˇΩ private VLAN ў ʌ ˇΩ primary VLAN ˧ ج secondary VLAN

switchport private-vlan host-association *p_vid s_vid*

no switchport private-vlan host-association

	ʌ	
	p_vid	… primary VID

	-	-

11.1.6 switchport private-vlan mapping

private VLAN ٧ secondary VLAN

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

no switchport private-vlan mapping

٧	٧	
	p_vid	… primary VID
	svlist	… secondary VLAN list
	no	٧ secondaryVLAN

secondary VLAN

ħυ ३ VLAN ٧

G

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

Ωħυ ३

ħυ ३	
show vlan private-vlan	-

٧ ˅ RGOS10.1 ЛυЭ

ħυ ३ ٦ ٧

٨	
-	-

11.2

11.2.1 show vlan private-vlan

private VLAN

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

۸	
primary	primary VLAN ə
community	community VLAN ə
isolated	isolated VLAN ə

private VLAN

ħυ ३

G

w R Ruijie# **show vlan private-vlan**

˜Ωħυ ३	
-	-

˙ RGOS10.1 Л Э

/۸	
-	-

11.3 Hybrid

11.3.1 switchport hybrid allowed vlan

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

no switchport hybrid allowed vlan

hybrid ۸ ‡

۸	
no	hybrid ‡

ħu ३ ^l

G

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

12 QinQ

12.1

ح tunnel ٨ Ɔ˘ ﷺ ɣ ˜ vid ╕

dot1q outer-vid *vid* *v_list*

vid **register inner-vid** *v_list*

٨	
	⁄ "
vid	vlan id
no	

٨

tag è vid и tag è vid и 3

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

ħu ɮ	
[*intf-id*]	-

ЛυЭ

	-	-

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

æ access˘ trunk˘ hybrid˘ uplink ʌ Э˘ ææ ɣ ˜ vid g

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

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

	ʌ	
ʌ	*v_list*	ώ è vid "
	vid	g Λ tag è vid
	no	↓

ħu ҳ ʌ

G

w R

Ю R ώ tag vid и 10-20 ˘ g vid и 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
```

ΩħuҳΩ

ħu ҳ	
show translation-table [**interface** *intf-id*]	-

↓ ˚ RGOS10.3 ЛυЭ

ħu ҳ ˥ ↓

Λ	
-	-

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

æ access˘ trunk˘ hybrid˘ uplink ʌ Э˘ ææ ɣ ˜ vid g

ħu ҳ ʌ

G

ш R

Ю R tag è . ˝l ą̈ tag

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

ˇΩħu ҳ

ħu ҳ	
show interface intf-name remark	-

ʌ -

ħu ҳ ˥ ʌ

ʌ	
-	-

12.1.5 frame-tag tpid tpid

˝ ك tpid

frame-tag tpid <*tpid*>

no frame-tag tpid

ʌ

ʌ	
no	ʌ tpid

ħu ҳ ʌ (5760 ң ҏ ʌ ج ѽ Ю)

G

ш R

Ю R ˝ ك tpid и 0x9100

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

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

	show inner-priority-trust	-

⁄	-

ħu ҳ ˥ ⁄	⁄	
	-	-

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

vlan è ˉ ˛ ╟ mac ﻓﺬ ﺳﻪ ⁸˛ vlan è

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

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

⁄	⁄	
⁄	**no**	⁄ ⁄ Э ÿ vlan˛ vlan ﻓﺬ ﺳﻪ ⁸

ħu ҳ	⁄

G

w R	Ю R tag è . ˝I ą̈ tag ruijie#**configure** ruijie(config)# **interface gigabitEthernet** *0/2* ruijie(config-if)# **mac-address-mapping 1 destination-vlan** *5* **source-vlan** *1-3* ruijie(config-if)#**end**

˝Ωħu ҳ	ħu ҳ	
	show interface mac-address-mapping x	-

⁄	-

५	
no	५ uplink ५

uplink ५

ħu ३ ५

G

ЮR ५ ѝ uplink ५

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

ˇΩħu ३

ħu	
show vlan	-

ص Ỳ # uplink

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

ʼΩħu ३

ħu ३	
show interface dot1q-tunnel	-

ƚu ɜ	

show traffic-redirect	-

ѵ ˚ RGOS10.3 ЛυЭ

ћu ҳ ˥ ѵ	
ѵ	
-	-

12.1.14 traffic-redirect access-group acl nested-vlan

dot1q-tunnel ʌ ώ ˘ ѫ ɣ vid ╗

traffic-redirect access-group *acl* **nested-vlan** *vid* **in**

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

ʌ	
acl	ɣ ך acl
vid	╗ vid
no	ѵ ѫ ɣ vid ╗

ћu ҳ ʌ

G

Ю R ʌ ѫ ф й 1.1.1.3 ώ ╗ vid й 9

```
ruijie# configure
ruijie(config)# ip access-list standard 20
ruijie(config-acl-std)# permit host 1.1.1.3
ruijie(config-acl-std)# exit
ruijie(config)# interface gigabitEthernet 0/1
ruijie(config-if)# switchport mode dot1q-tunnel
ruijie(config-if)# traffic-redirect access-group 20 nested-vlan 10
in
ruijie(config-if)# end
```

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12.1.15 l2protocol-tunnel

dot1q-tunnel ᴎ γ ~

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

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

ᴎ	ᴎ	
	stp	stp
	gvrp	gvrp
	no	ᴊ

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12.1.16 l2protocol-tunnel *proto-type* enable

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

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

ʌ

ʌ	
stp	· stp
gvrp	· gvrp
no	↓ ·

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

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

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

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

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

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stp	stp · فخ سم

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

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12.2.2 show frame-tag tpid

ϡ tpid

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

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intf-id	ϡ

a g tpid

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

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◢	˚	RGOS10.1 ЛυЭ

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

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intf-id	५

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```
ruijie# show interface dot1q-tunnel
Interface: Gi0/3
Native vlan: 10
Allowed vlan list: 4-6˜ 10˜ 30-60
Tagged vlan list: 4˜ 6˜ 30-60
```

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12.2.5 show interface intf-name remark

show interface intf-name remark

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

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12.2.6 show interface mac-address-mapping x

MAC ƒƨ سف 8

show mac-address-mapping *x*

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

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12.2.7 show registration-table

ѫ ¥ ˜ dot1q-tunnel ا vid ╗

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

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	intf-id	ا

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

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12.2.8 show traffic-redirect

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

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	intf-id	५

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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
```

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L2protocol-tunnel : gvrp Disable

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13 Share VLAN

13.1

13.1.1 share

G ħυ ϗ share vlan Â

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ħυ ϗ	vlan
G	ϫ share vlan **no share** ħυ ϗ Â ϧϩ ˇ ώ **end** ħυ ϗˇ ώ Ctrl+C ϩ Â ϧϩ ώ ˇ ώ **exit** ħυ ϗ Â
ϣ R	`Ruijie(config)#vlan 2` `Ruijie(config-vlan)#share`

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ħυ ϗ ϶ ϫ	

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13.2

13.2.1 show mac-address-table share

G ħυ ϛ ﻓﺦ ﺳﻢ ˘ ﻓﺦ ﺳﻢ Status original˝ ‡ ﻓﺦ ﺳﻢ \l ﻓﺦ ﺳﻢ’
ﻓﺦ ﺳﻢ Status duplicated˝ ‡ ﻓﺦ ﺳﻢ 8 ﻓﺦ ﺳﻢ’ ﻓﺦ ﺳﻢ Status
ὶι ˘ ‡ share vlan Â

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14

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address-bind install

no address-bind install

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G	R ﻝˇ ﻟﺆ ﻉ ﻝ Â
ψ R	Ю R fa 0/1 ﻝ ﻱ ﻑﺨ ﺱﻣ Ruijie(config)# **address-bind uplink** *fa0/1* Ruijie(config)# **address-bind install**

Ώﻟﺆ ﻉ		
	show address-bind uplink	ﺱﻣ ﻑﺨ R ﻝ

ﻡ	RGOS10.1 Лυ Э

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14.1.3 address-bind ip-address

У э ip ﻑﺨ ﺱﻣ Ո- mac ﻑﺨ ﺱﻣ .

address-bind *ip-address mac-address*

no address-bind *ip-address*

ﻝ		
	ip-address	IP ﻑﺨ ﺱﻣ Â
	mac-address	mac ﻑﺨ ﺱﻣ Â

ћ ҳ ѽ

G æ У э IP ѫ ћ Ґ У э MAC ѫ ћ ˘ ‡ Ц ĺ IP ѫ ћ й э IP ѫ ћ ˘ MAC ѫ ћ а й э IP ѫ ћ MAC ˘ э ˛ Ц x Â

ѡ R Ю R ip ѫ ћ й 3.3.3.3 Ґ mac ѫ ћ 00d0.f811.1112

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

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show address-bind	ѫ ћ

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14.1.4 address-bind ipv6-mode

ip ѫ ћ IP

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address-bind ipv6-mode compatible

address-bind ipv6-mode loose

ш

address-bind ipv6-mode strict

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	Ipv4 ѵ ‡
ш	ѵ ї Ѓ IPV4+MAC ˚ ѵ Â
	ѵ ї Ѓ IPV4+MAC ˚ ѵ Â
ò	ѵ ї Ѓ IPV4+MAC ˚ ѵ Â

	IPV6 ѵ ‡	
ш	a ї ˙ ¦ ipv6 ѵ^ ~ Â	
	ї IPV6 ѵ Â	
ò	ѵ ї MAC й ѳ ѳ MAC ѳ ѳ IPV6 ѵ Â	

R ˘ IP ѳ ѳ й 192.168.5.2 ѳ ѳ й 00d0.f822.33aa˜ ї IPV6 ѵ Â

```
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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14.1.5 address-bind uplink

У э ip ѳ ѳ Ո mac ѳ ѳ .

address-bind uplink *intf-id*

no address-bind uplink *intf-id*

ѵ	
intf-id	й R ѵ ѵ

ѭ ѧ ѽ

æo У э IP ѫ Ѧ У э MAC ѫ ˘ ‡ Ѭ ˆ IP ѫ й э IP

G ѫ ˘ MAC ѫ а й э IP ѫ MAC ˘ э ˛ Ѭ x

˘ Л й R Л˘ з ѿ (address-bind install)

w R

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

show mac-address-table dynamic	Â

-

-

14.1.7 clear mac-address-table filtering

Â

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

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

G **show mac-address-table filtering** Â

w R

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

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

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14.1.8 clear mac-address-table static

Â

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

	static	Â
	address *mac-addr*	Â
	interface *interface-id*	Â
	vlan *vlan-id*	VLAN Â

show mac-address-table static Â

Ю MAC 00d0.f800.073c

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

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

-	-

no mac-address-table aging-time

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٩	*seconds*	╟ ىسفخ لا ˘ ЛU ѝ´ Æ Â ḣ تن ᾱ Â

ḣ 300 Â

ىU ٦ ѿ

G **show mac-address-table aging-time** ىU ٦ Â

G **show mac-address-table dynami**c ىU ٦ ╟ ىسفخ Â

G	فخ سم a ỳ فخ سم Â G **show mac-address-table filtering** ħu ʒ فخ سم Â

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

˜Ωħu ʒ	**ħu ʒ**	
	clear mac-address-table filtering	فخ سم Â
	show mac-address-table filtering	فخ سم ə Â

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14.1.11 mac-address-table notification

MAC فخ سم ╖ Â G ħu ʒ **no** ˜Ω ╖ Â

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

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snmp-server enable traps	trap Â
show mac-address-table notification	MAC

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14.1.14 mac-manage-learning uniform learning-synchronization

uniform MAC .

no mac-manage-learning uniform learning-sychronization

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G	uniform G MAC no
R	

show mac-address-table mac-manage-learning	MAC

	-

	-	-

14.1.15 mac-manage-learning dispersive

MAC dispersive .

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G ╠ MAC ... dispersive ... MAC ... Â

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...	...
show mac-address-table mac-manage-learning	MAC ...

-

...	...
-	-

14.1.16 snmp trap mac-notification

... MAC ... ╖ Â G ... **no** ... ╖ Â

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

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

...	...
added	... ╕ Â
removed	... ╛ Â

... ╖ Â

...

G G **show mac-address-table notification** *interface* ... Â

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```
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

	-	

	-	

14.1.17 mac-address-learning

mac-address-learning

a MAC

Ruijie(config-if)# no mac-address-learning

14.2

14.2.1 show address-bind

show address-bind

G

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

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address-bind uplink	R ﻥ

ﻥ

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14.2.3 show mac-address-table address

ﺹﺭ MAC ﺱﻣ ﻑﺫ ﻉﻟ ^ ↑ ╟ ﺱﻣ ﻑﺫ˜ ﺱﻣ ﻑﺫ ∩ ﺱﻣ ﻑﺫ˜ Â

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

ﻥ	
address *mac-addr*	MAC ﺱﻣ ﻑﺫ Â
interface *interface-id*	ﻥ ﻥ
vlan *vlan-id*	VLAN ﻥ

ﻩU ﺓ

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

ﻩ ﻱ	
show mac-address-table static	ﻩ ﻑ Â
show mac-address-table filtering	ﻩ ﻑ Â
show mac-address-table dynamic	╟ ﻩ ﻑ Â
show mac-address-table interface	ﻝ ﻩ ﻑ ﻩ ﺹ ﻝ Â
show mac-address-table vlan	VLAN ﻩ ﻑ ﻩ ﺹ ﻝ
show mac-address-table count	ﻩ ﻑ ﻩ è ﻩ ﻑ ﻩ ﻉ Â
show mac-address-table static	ﻩ ﻑ Â
show mac-address-table filtering	ﻩ ﻑ Â

ﻝ

ﻩ ﻱ ﻵ ﻝ	ﻝ	
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14.2.4 show mac-address-table aging-time

╟ ﻩ ﻑ ﻭ Â

show mac-address-table aging-time

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ﻩ ﻱ	
show mac-address-table aging-time	

ﻩ ﻱ	
G	

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

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	show mac-address-table aging-time	

mac-address-table aging-time	╟ سم فخ لا Â

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14.2.5 show mac-address-table count

سم فخ è سم فخ ٥ Â

show mac-address-table count

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```
Ruijie# show mac-address-table count
Dynamic Address Count  : 51
Static  Address Count  : 0
Filter  Address Count  : 0
Total Mac Addresses    : 51
Total Mac Address Space Available: 8139
```

ħu ٦	
show mac-address-table static	سم فخ Â
show mac-address-table filtering	سم فخ Â
show mac-address-table dynamic	╟ سم فخ Â
show mac-address-table address	سم فخ صر سم فخ ٩
show mac-address-table interface	١ صر سم فخ ٩
show mac-address-table vlan	VLAN صر سم فخ ٩ Â

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14.2.7 show mac-address-table filtering

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

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mac-addr	MAC سم فخ Â
vlan-id	VLAN Â

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

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ħU ٦	
clear mac-address-table filtering	سم فخ Â
mac-address-table filtering	سم فخ Â

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MAC ﻡﺱ ﻑﺥ ﻥ ﺡ ﻍ Â

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

ﻝ	
interface *interface-id*	ﻝ ﻝ Â ﻝ Ɔ MAC ﻥ Â
history	MAC ﺉ ﻝ ﻍ Â

MAC ﻡﺱ ﻑﺥ ﻥ ﻍ Â

ﻩU ﻉ

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```
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
```

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mac-address-table notification	MAC ﻡﺱ ﻑﺥ ﻥ Â
snmp trap mac-notification	ﻝ MAC ﻡﺱ ﻑﺥ ﻥ Â

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ﻝ

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14.2.10 show mac-address-table static

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

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vlan-id	VLAN ID Â

```
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
```

ħu ३	
show mac-address-table static	فخ سم Â
show mac-address-table filtering	فخ سم Â
show mac-address-table dynamic	╟ فخ سم Â
show mac-address-table address	فخ سم صر فخ سم ə¸ Â
show mac-address-table interface	۸ صر فخ سم ə¸ Â
show mac-address-table count	فخ سم è فخ سم ə Â

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14.2.12 show mac-address-table mac-manage-learning

╟ MAC

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Ruijie# show mac-address-learning

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15 DHCP Snooping

15.1 DHCP snooping

15.1.1 ip dhcp snooping

DHCP Snooping ώ ╖ ˘ ѫ ώ ЮО ћυ ϗ Â ћυ ϗ no ˘ ώ ˜Ω DHCP Snooping ╖ Â

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

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	╖ ˜Ω
ћυ ϗ	ώ

DHCP Snooping ώ ╖ ʌ˘ ɔ Л υ G **show ip dhcp snooping**

G

	show ip dhcp snooping	DHCP snooping ə ϥ Â

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15.1.2 ip dhcp snooping bootp-bind

DHCP Snooping Bootp ╗ ˘ ѫ ѿ ЮО ħυ ϡ Â
ħυ ϡ no ˘ ˝Ω DHCP snooping Bootp ╗ Â

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

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	ϡ	
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ħυ ϡ	ѿ Â
G	ϙ ЮЎ DHCP Snooping ╗ Θ Bootp ˩ Â ╗ ϡ˘ DHCP Snooping ╗ Bootp ˜ Â Bootp ╗ ѭ ϡ˘ DHCP Snooping Bootp ╗ˀ è Â

ЮО DHCP Snooping Bootp R '

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

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show ip dhcp snooping	DHCP snooping ə

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-	-

15.1.4 ip dhcp snooping database write-to-flash

Ϸ DHCP Snooping ╟ ə ŋ̃ ώ FLASH ˅ ˇ æ ŵ
ΗΟ ħυ ҳ Â

ip dhcp snooping database write-to-flash

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G ħυ ҳ˅ ϡ Πυ DHCP Snooping è ╟ ə ŋ̃ ώ FLASH ˅ Â

w R ΗΟ DHCP ╟ ə ŋ̃ ώ flash R '

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

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15.1.5 ip dhcp snooping information option

æ DHCP è ╗ ώ option82 ╖ ˘ æ ŏ ΗΟ ħu ɤ Â
ħu ɤ no ˘ ˜Ω ╖ Â

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

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	╖ ˜Ω Â
ħu ɤ	ŏ
G	ħu ɤ˘ æ DHCP è ╗ option82 ə ˘ DHCP Ł ٧ option82 ə ѕѫ∂ Â
w R	ΗΟ æ DHCP è ╗ ώ option82 ╖ R ' Ruijie# **configure terminal** Ruijie(config)# **ip dhcp snooping information option** Ruijie(config)# **end** Ruijie# **show ip dhcp snooping** Switch DHCP snooping status ' ENABLE Verification of hwaddr field status ' DISABLE DHCP snooping database write-delay time: 0 seconds DHCP snooping option 82 status: ENABLE DHCP snooping Support Bootp bind status: ENABLE Interface Trusted Rate limit (pps) ---------- ------- ------------

˜Ωħu ɤ	**ħu ɤ**	
	show ip dhcp snooping	DHCP snooping ə Â

٨

ħu ɤ ٦ ٨	٨	

ʎ DHCP ˘ ҷ ʎ ӇO ħυ ҳ Â ħυ ҳ
no ˘ ʎ ʎ ⁸ Â

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

ʎ	

ʎ

rate-value ˘

ħu ҳ ˥ ˩	˥	
	-	-

15.2.2 ip dhcp snooping suppression

˥ ˣ suppression ˘ ج ˥ ЮO ħu ҳ Â ħu ҳ no ˘ ˥ ˣ no suppression Â

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

˥	˥	
	-	-

	˥ Ω Â
ħu ҳ	˥ Â
G	ħu ҳ˘ ˩ ˥ЮO DHCP ˘ . ˥ЮO DHCP فخ سم Â

w R	ЮO ˥ **fastethernet** *0/2* ˣ suppression R ' Ruijie# **configure terminal** Ruijie(config)# **interface fastethernet** *0/2* Ruijie(config-if)# **ip dhcp snooping suppression** Ruijie(config-if)# **end**

Ω ħu ҳ	ħu ҳ	
	-	-

˩

ħu ҳ ˥ ˩	˥	
	-	-

15.2.3 ip dhcp snooping trust

ʎ DHCP snooping ə[˙ ѝ TRUST ʎ˘ æ ʎ ЮО ħυ ३ Â
ħυ ३ no ˘ ʎ ѝ UNTRUST ʎ Â

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

ʎ	
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ą ЮЎ ʎ ѝ UNTRUST ʎ Â

ħυ ३ ʎ Â

G ħυ ३˘ ʌ DHCP Ł ⱬ ʎ ѝ TRUST ʎ ÂTRUST ʎ ↑
DHCP ⁝ ↓˘ UNTRUST ʎ ↑ DHCP ⁝ x Â

ЮО ʎ **fastethernet** 0/1 ѝ TRUST ʎ R '

```
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
```

w R

15.3 DHCP snooping

15.3.1 show ip dhcp snooping

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15.3.2 show ip dhcp snooping binding

DHCP Snooping è ə ˘ ə HO ħu ҳ Â

show ip dhcp snooping binding

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ħu ҳ

G ħu ҳ˘ ᴊ ᴎu ᴍ DHCP Snooping è ə Â

w R

HO R '

```
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
```

ˇΩħu ҳ

ħu ҳ	
ip dhcp snooping binding	DHCP snooping
clear ip dhcp snooping binding	DHCP snooping ╟ ə

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ħu ҳ ˥ ᴊ

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15.4 DHCP snooping

15.4.1 clear ip dhcp snooping binding

ї DHCP Snooping è ╠ ˘ ج ЮO ћu ҳ Â

clear ip dhcp snooping binding

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ћu ҳ

G ћu ҳ˘ ┘Л╗ DHCP snooping è ╠ Â

ЮO ї DHCP snooping è ╠ R '

```
Ruijie# clear ip dhcp snooping binding
Ruijie# show ip dhcp snooping binding
Total number of bindings: 0
MacAddress IpAddress Lease(sec) Type VLAN Interface
-------  ---  ----------  ---------  ----  ---------
```

ћu ҳ	
show ip dhcp snooping binding	DHCP snooping ə Â

/١	
-	-

15.4.2 debug ip dhcp snooping

ѫ Ӈ Э DHCP Snooping ╖ ЎΩ ѫ Ю Ђ ғ Â

debug ip dhcp snooping {

16 IGMP Snooping

16.1

16.1.1 deny

ϟ profile تن ˘ profile Ю ħυ ϡ deny Â

deny

ϟ	
deny	ϟ profile تن فخ سم

profile deny ɔ Â

ħυ ϡ profile Â

G ″I جم profile Ю G range ħυ ϡ تن Â ϡ ˘ ϳ ϕ G profile ɔ ˘ profile ↑ ϟ Э Â

ψ R Ю … У ə ϟ 224.2.2.2 profile R '

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

″Ωħυ ϡ

ħυ ϡ	
ip igmp profile	… У ə profile
range	تن فخ سم

ϡ

ħυ ϡ ϒ ϡ

ϡ	
-	-

16.1.2 permit

profile تنˇ profile Ю ħu ϩ permitˇ profile ˜Ω
ϟ ϟ ϟ Â

permit

ϟ	
permit	ïˇ ϟ profile تن فخ سم Â

	profile deny ɔ Â
ħu ϩ	profile Â
G	˝I جم profile Ю G range ħu ϩ تن Âϟ ˘ ѝ ѫ G profile ɔ ˘ profile ˜Ω ↑ ˜Ω ħu ϩ Э Â

ѡ R	Ю … У ə ϟ ïˇ ϟ 224.2.2.2 profile R '
	`Ruijie(config)# ip igmp profile 1`
	`Ruijie(config-profile)# range 224.2.2.2`
	`Ruijie(config-profile)# permit`

˜Ωħu ϩ	ħu ϩ	
	ip igmp profile	… У ə profile
	range	تن فخ سم

ϡ

ħu ϩ ˥ ϡ	ϡ	
	-	-

16.1.3 range

profile تنˇ profile Ю ħu ϩ rangeˇ ϟ Л ´ ə سم
فخˇ ≠ ϟ Л ə تن ⇳ فخ سم Â G ħu ϩ no ⊺ فخ سم Â

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

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

ϟ	ϟ	
	low-ip-address	تن فخ سم

	high-ip-address	فخ سم تن

ħ Â

ħu ҷ profile Â

G فخ سم تن ٨˘ У э ѝ˘ profile ѝ deny Â ٨ ˘ ѝ ѫ G profile ɔ ˘ profile ʃ ٨ Э Â

w R Ю … У э تن ѝ 224.2.2.2~224.2.2.244 profile R '

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

ЎΩħu ҷ

ħu ҷ	
ip igmp profile	… У э profile
deny	profile ѝ ѝ deny
permit	profile ѝ ѝ permit

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ħu ҷ ٦ ٨

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-	-

16.1.4 ip igmp profile

IGMP profile ұ ⁸ У " Ы Â ώ profile ˘ ˝I جھ ѿ Ю У э profile Â ħu ҷ ħu ҷ˘ profile-numberˇ ώ igmp profile Â

ip igmp profile *profile-number*

no ip igmp profile *profile-number*

٩		
	profile-number	profile ٨˘ تن 1-65535

ħ Â

ħu ҷ ѿ Â

G

IGMP Profiles Э У Ҿ Ӆ˘ ᵏ ľ SVGL فخ سم تن Ŀ à ľ
ʌ تن Ŀ à ľ IGMP Filtering تن Ŀ ʌ ╗ G Â ҷ ˘ ѝ ѽ G profile
ɔ ˘ profile Ո ╗ ̃Ω G Â

ѡ ᴿ

Ю ᴿ … ѽ У э ʌ ѝ 1 profile ώ profile Â

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

̃Ωħυ ϡ

ħυ ϡ	
range	profile فخ سم تن Â
permit	profile ѝ ѝ permit
deny	profile ѝ ѝ deny

ʌ

ħυ ϡ ˥ ʌ

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16.1.5 ip igmp snooping ivgl

igmp snooping ivgl ˘ ӧ ħυ ϡ **ip igmp snooping ivgl** Â
ħυ ϡ no ̃Ω igmp snooping Â

ip igmp snooping ivgl

no ip igmp snooping

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disable Â

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G

ҷ Ю˘ ʌ VLAN ҭ Â ў ʅ б ұ ˩ У э VLAN
ʅ ’ Ӈ ҷ ˚ ˙ ı У э VLAN ˘ ʅ
˩ VLAN ӫ ᵉ ʅ ˩ Â

	pim snooping ŋ ¥ igmp snooping IVGL IVGL-SVGL ɔˇ ﻫ G no ip igmp snooping ˜Ω igmp snooping ˜ ˇ pim snooping ﻫ ɔ ‡ ˜I ˜Ω pim snooping˘ ɜ ˜Ω a ˜ Â

w R	Ю R ﻫ Э igmp snooping ivgl ' Ruijie(config)# **ip igmp snooping ivgl**

˜Ωħu ɂ	**ħu ɂ**	
	ip igmp snooping svgl	igmp snooping svgl Â
	ip igmp snooping ivgl-svgl	igmp snooping ﾉ Â

ﾉ	

ħu ɂ ˥ ﾉ	ﾉ	
	-	-

16.1.6 ip igmp snooping ivgl-svgl

igmp snooping ivgl-svgl ˇ ŏ ħu ɂ **ip igmp snooping ivgl-svgl** Â ħu ɂ no ˜Ω igmp snooping Â

ip igmp snooping ivgl-svgl

no ip igmp snooping

ﾍ	ﾍ	
	-	-

	disable Â
ħu ɂ	ŏ Â
G	ɸ ˇ ‡ IVGL à SVGL ч Â IVGL Ո SVGL ч ﻝ Л ﻝ ﻫˇ ﻝ Л IGMP Profile , ƚ У ﻣﺨﺴﻢ ﺘﻦ SVGL˘ ﻫ ﻣﺨﺴﻢ ﺘﻦ ˜ˇ ﻝ ˜ ﻍ ﻝ Л VLAN ﻝ ˇ è ﻣﺨﺴﻢ ﺘﻦ ˜ ﻝ ˜ ﻍ ɣ ﻝ У ə VLAN Â

ѝ IVGL-SVGL

~

ɣ Shared VLAN Â

SVGL ЮЎ IGMP Profile ,ƒ У ѫ ƒ ѫ ɵ SVGL Ў ж ѫ ƒ ѫ
ɵ ɵ ϱЎ ч ˜ ʌ ʌ Л υ VLAN ч’ ϱ Ю ɵ a
ж SVGL ɵЎ x Â

й SVGL ˘ a Ά Ь ╗ ˘ . a
ip multicast-routing Â ɻ ˘ ϖ Ь ╗ ˘ a
SVGL Â

~ pim snooping ŋ ɣ igmp snooping IVGL IVGL-SVGL
ɔ˘ ж G ip igmp snooping svgl ƒ ˘ pim
snooping ж ɔ ‡¸ ˝l ЎΩ pim snooping˘ ɜ ƒ
a ╗ Â

Ю R ж Э igmp snooping svgl ˘ ЎΩ profile й 1'

ѡ R

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

ЎΩħυ ϡ

ħυ ϡ	
ip igmp snooping svgl vlan	У э Shared VLAN Â
ip igmp snooping svgl profile	У э SVGL ЎΩ profile Â

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16.1.8 ip igmp snooping vlan

ж vlan Э igmp snooping ivgl ˘ ώ ħυ ϡ **ip igmp snooping vlan** Â ħυ ϡ no ЎΩ igmp snooping Â

ip igmp snooping vlan vid

no ip igmp snooping vlan vid

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ʅ	
vid	vlan id

disable Â

ђu ҙ	ѽ Â

	ѫ ѽ ЮЌ ѫ vlan Э ў ╟ ЋΩ IGMP Snooping ╖ ˘ ђu ҙ Â	
G	~	vlan Э pim snooping ŋ ¥ igmp snooping ɔ˘ ѫ G no ip igmp snooping vlan ЋΩ vlan Э igmp snooping ╖ ˘ pim snooping ѫ VLAN ‡ ˛ ″I ЋΩ pim snooping˘ ɜ ЋΩ a ╖ Â

ѡ R	ЮО R ѫ vlan 2 Э igmp snooping'

w R

Ю R æ vlan 2 й igmp snooping svgl ˝Ω м vlan˝

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

ˇΩħu ɂ

ħu ɂ	
ip igmp snooping svgl	igmp snooping svgl Â
ip igmp snooping ivgl-svgl	igmp snooping ʌ Â

ʌ

ħu ɂ ˥ ʌ

ʌ	
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16.1.10 ip igmp snooping svgl profile

æ profile тп SVGL ˘ ŏ ħu ɂ **ip igmp snooping svgl profile** Â ħu ɂ no ʌ Â

ip igmp snooping svgl profile *profile-number*

no ip igmp snooping svgl profile

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ʍ	
profile-number	profile ʌ˘ ʌ ḣ тп<1-65536>

ą Ю svgl ˇΩ profile Â

ħu ɂ ŏ Â

G ħu ɂ ʌ æ SVGL IVGL-SVGL Ю Â

w R

Ю R æ й igmp snooping svgl ˇΩ profile 2˝

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

ˇΩħu ɂ

ħu ɂ	
ip igmp snooping svgl	igmp snooping svgl Â
ip igmp snooping ivgl-svgl	igmp snooping ʌ Â

ʌ

ħυ ϗ ϒ ϟ	⁄	
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16.1.11 ip igmp snooping dyn-mr-aging-time

Ꮋ ╟ ¯ ˚ ⁄ ϟ

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

no ip igmp snooping dyn-mr-aging-time

ϟ	ϟ	
	time	╟ ¯ ϟ ⁄ ; ˘ ϟ ḣ تن<1-3600> Â
	300s	
ħυ ϗ	ώ Â	
ɢ	╟ ϟ ج è ⁄ ɣ ɱ ˚ IGMP PIM Hello ˘ Ꮋ ϟ ÿ ⁄ ϟ " è˚ Âج ╟ ϟ ¯ ɑ Ю˘ ϟ ⁄υ ħυ ϗ ╟ ϟ ⁄ ɣ ˘ ج ⁄ ɣ ˘ ϟ ˛ ╗ ∩˚ Â	
ɯ ᴿ	Ю ᴿ ج ╟ ¯ ϟ ⁄ ɣ й 100s Ruijie(config)# **ip igmp snooping dyn-mr-aging-time** *100*	

˜Ωħυ ϗ	ħυ ϗ	

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ħυ ϗ ϒ ϟ	⁄	
	-	-

16.1.12 ip igmp snooping fast-leave enable

igmp snooping ╗ ˘ ώ ħυ ϗ **ip igmp snooping fast-leave enable** Â ħυ ϗ no ˜Ω igmp snooping fast-leave Â

ip igmp snooping fast-leave enable

no ip igmp snooping fast-leave enable

ϰ	
-	-

disable Â

ħυ ϡ ώ Â

G ϰ Ђ ÿ ϰ ĺ ў ϟ IP IGMP
˘ ϰ ÿ ϟ ϰ " è∃ Â ⁄˘ Ђ ĺ
IP IGMP ˘ Ђ a Ą ⁄ ϰ ϟ Â ج Ђ Э˘
ϰ Ю ϰ У э ˘ ‡ ⁄ Л G ϰ ╗ Л Ո Â

ш R Ю R ج Э igmp snooping fast-leave'

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

ħυ ϩ ŏ Â

G æ ĵ IGMP У Л˘ ˚ ˜ Ы У Ы˘
Ы й : ˘ Ы ḣ ˜ й 0 ˘ ‡ й Ы a Ą ˜ ˘
γ ˚ Ы ÿ IGMP Snooping Ы è ĵ Â

G æ ĵ IGMP Л˘ ˚ ˜ Ы ŭ ╟ У
Ы˘ Ы й : ˘ Ы ḣ ˜ й 0 ˘ ‡ й Ы a Ą ˜
˘ ˚ Ы ÿ IGMP Snooping Ы è ĵ Â
ų IGMPv3 ˘ a ṁ Ы Â

w R Ю R æ ╟ ˉ Ы У й 100s
Ruijie(config)# **ip igmp snooping query-max-response-time** *100*

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16.1.14 ip igmp snooping source-check default-server

IP ɔ ⁸ Ы У ə IP ƒϰ ѕ ┗ Ы ᵏ Â igmp snooping ip ╖ ˘ ŏ ħυ ϩ **ip igmp snooping source-check default-server** Â ħυ ϩ no ˇΩ ip ╖ Â

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

no ip igmp sooping souce-check

Ы

Ы	
address	ƒϰ ѕ ˆ ┗ Ы ѕ ƒϰ ˜ Â

╖ ˇΩ Â

ħυ ϩ ŏ Â

G IP ŏ ˇΩ˘ У ˘ ƒϰ ѕ Л ƒϰ ѕ˘ ĭ ‡
x Â Ђ ĭ ƒϰ ѕ˘ ъ Ы Л Ъ Л ṁ

Server Â ɻ ɔ Serverў IP ╖ ɷ Â

~ ŭ ╟ IP ╖ ɻˇ Ь ɻ╖ ɳ : Â ɻ ˇ
ɷ Ь ╖ ˇ a IP ╖ Â

ɯ R

Ю R ip ip ŕ 192.168.4.243 Â

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

ŭħu ɝ

ħu ɝ	
ip igmp snooping limit-ipmc	╗ ip Â

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ħu ɝ ˥ ɻ

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16.1.15 ip igmp snooping limit-ipmc

╗ IP ˇ ŵ ħu ɝ **ip igmp snooping limit-ipmc vlan** ˇ ħu ɝ no ĩ 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*

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ɳ	
vid	ip vlan id Â
gaddress	فذ سم Â
saddress	فذ سم (ɻ ɻ) Â

ḣ Â

ħu ɝ ŵ Â

G ˝I IP ╖ ╗ Â

ɯ R

Ю R ╗ ɷ У 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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16.1.18 ip igmp snooping mrouter learn pim-dvmrp

Ꮋ ╟ ш ὖ IGMP Query/Dvmrp/PIM Hellp ˇ Ꭻ ╟ ⁞ ∧ˇ
ὤ ħυ ϗ **ip igmp snooping mrouter learn** Â ħυ ϗ no ∨ ╟ ˉ Â

ip igmp snooping mrouter learn pim-dvmrp

no ip igmp snooping mrouter learn pim-dvmrp

16.1.19 ip igmp snooping vlan mrouter interface

ʌ б è ʌ, ʌˇ ŵ
ђu ҳ **ip igmp snooping vlan mrouter interface** Â ђu ҳ no ĵ У э 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

ḣ Â

ђu ҳ ŵ Â

G ɻ Л Ђ Э ʌ ѝ Ы ʌˇ ÿ G Ђ Э ĵ IP
ɻ Л ʌ ɻ Ы Â ج ʌ Ю ɻ ÿ ʌ ώ
ɻˇ è x Â
ج ʌ ╟ ˊ ╖ ˜Ω ą Юˇ ɻ Л ʌ Â

w R Ю R ج У э ʌ'

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

˜Ωђu ҳ

ђu ҳ	
ip igmp snooping source-check port	ʌ

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16.1.20 ip igmp snooping vlan mrouter learn pim-dvmrp

Ђ ╟ ш ŭ IGMP Query/Dvmrp/PIM Hellp ˘ Л ╟ ⁞ ʌˇ
ŵ ђu ҳ **ip igmp snooping vlan mrouter learn** Â ђu ҳ no ɻ ╟
ˊ Â

–D ۹	
vid	۸ vlan id
ip-addr	فذ سم
interface-id	۸ id

۹

ḣ Â

ħυ ३ ώ Â

IGMP Profile ह У ə ٨ ЮЎ ٨ ĵ IGMP Report ˘ ‡

G ə ٨ ╗ ώ فخ سم ĭ ह IGMP Profile ĭ تن ڳ ۊ Â ˘ ‡ ĭ ╗ ώ˘

ڳ ٨ ٨ Â ˝I … profile˘ ٨ filter ˇΩ Â

ॅΩħυ ३	ħυ ३	
	ip igmp snooping filter	∧ Â

∧

ħυ ३ ٦ ∧	∧	
	-	-

16.2

16.2.1 show ip igmp snooping

igmp snooping ॅΩ ə Â

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

∧	∧	
		igmp snooping ٦ Â
	gda-table	٦ ‡ Â
	interfaces	igmp snooping filtring Â
	mrouter	∧ ə Â
	statistics [**vlan** *vlan-id*]	snooping ə Â
	vlan	vlan Ю ॅΩ snooping ə **0 f-46 Tc 48 20.7 2 0 0 132**

ħυ ३ ٦ ⊿	⁄	
	-	-

16.2.2 show ip igmp profile [profile-number]

٩		
		profile ə
	profile-number	profile ə

ħυ ३	EXEC

G	٦

undebug igmp-snp event

undebug igmp-snp packet

undebug igmp-snp msf

undebug igmp-snp warning

ч

ч	
	IGMP Snooping ə
event	IGMP Snooping ˇΩ Y ˇ ə
packet	IGMP Snooping ˇΩ ə
msf	IGMP Snooping б Ђ ə
warning	IGMP Snooping ˇΩ ˆ ə

ћu ҳ EXEC

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ћu ҳ ˥ Ѓ

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17 PIM-Snooping

17.1 PIM-Snooping

17.1.1 ip pim snooping ō ǒ

ѫ Ӌ ѽ ѻ PIM-Snooping ў G **ip pim snooping** ħυ ҙ Â G ħυ ҙ no ѽ PIM-Snooping Â

ip pim snooping

no ip pim snooping

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PIM-Snooping Â

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17.1.2 ip pim snooping ō Ŏ

æ ʌ Э ŭ PIM-Snooping ˘ G **ip pim snooping** ħu ҳ Â G ħu ҳ no æ ʌ Э PIM-Snooping Â

p pim snooping

o ip pim snooping

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	-	-

æ ʌ Э PIM-Snooping Â

ʌ

&	PIM-Snooping ╖ ŋ ¥ IGMP-Snooping˘ VLAN Э IGMP-Snooping ŭ ╟˘ ѫ PIM-Snooping ˙ ¨I ŭ ╟ VLAN IGMP-Snooping˘ з a ╖ Â ώ ˜Ω ɷ PIM-Snooping˘ ѫ VLAN Э PIM-Snooping ╖ Â

ѡ R	Ruijie# **configure terminal** Ruijie(config)# **interface vlan** *199* Ruijie(config-if)# **ip pim snooping**

17.1.3 show ip pim snooping

PIM-Snooping ŏ ə ˇ G **show ip pim snooping** ћu ҳ Â

show ip pim snooping [**detail**]

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	detail	ə

ћu ҳ	Â Â
G	
w R	ЛьЮћu ҳ PIM-Snooping ŏ ə ' Ruijie#**show ip pim snooping** Global runtime mode : Enabled Global admin mode : Enabled Number of user enabled VLANs: 2 User enabled VLANs: 199 198

ћu ҳ	ћu ҳ	
	-	-

⁄	ћu ҳ ⁄ ج Ӈ Э ɔ Â

ћu ҳ ˥ ⁄	⁄	
	-	-

17.1.4 show ip pim snooping neighbor

PIM-Snooping ə ˇ G **show ip pim snooping neighbor** ћu ҳ Â

show ip pim snooping neighbor

¶	¶	

ħυ ҳ

G

ЛυЮħυ ҳ PIM-Snooping VLAN199 ə ˈ

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

ħυ ҳ	

18 DHCPV6 Snooping

18.1

18.1.1 ipv6 dhcp snooping

ᴳ dhcpv6 snooping ╖ ˘ ώ ˝Ω Â ħυ ϡ **no** ώ ˝Ω dhcpv6 snooping ╖ Â

ipv6 dhcp snooping

no ipv6 dhcp snooping

ϒ	
-	-

	˝Ω Â
ħυ ϡ	ώ Â
ᴳ	ᴳ ħυ ϡ ⅄Ո Ꮋ dhcpv6 snooping ╖ ˘ ⅄Ո ᴳ **show ipv6 dhcp snooping** ħυ ϡ dhcpv6 snooping ╖ ĭ Â
ᴡ ᴿ	ᴿ 1' Ꮋ dhcpv6 snooping ╖ Â `Ruijie(config)# ipv6 dhcp snooping`

˝ΩħυϡΩ	
ħυ ϡ	
show ipv6 dhcp snooping	dhcpv6 snooping ╖ ώ ə

⅄	
ħυ ϡ ⅂ ⅄	

⅄	
10.4	ħυ ϡ

18.1.2 ipv6 dhcp snooping binding-delay

╠ ╗Î ˚ è ╗ Â G ħυ ϡ no ˘ ΄Ω
╗ Â

ipv6 dhcp snooping binding-delay *seconds*

no ipv6 dhcp snooping binding-delay

ϟ	ϟ	
	time	Î ˚ ˘ ´ Æ'

΄Ω

ħυ ϡ ώ

G ąĦΟ˝ ╠ ╗Î ˚ Â ╗ Λ˘ ╠
˘ ج ą̈ IPv6 فذ سه ă ˘ ˚ Î ˚ è Â

w R R 1' ╠ 10 Ą̈ ╗Î ˚ è Â
```
Ruijie(config)# ipv6 dhcp snooping binding-delay 10
```

΄Ωħυϡ	ħυ ϡ	

ϡ

ħυ ϡ ˥ ϡ	**ϡ**	
	10.4	ħυ ϡ

18.1.3 ipv6 dhcp snooping database write-delay

dhcpv6 snooping ą ĵ̃ ώ flash ˚ è ÂG ħυ ϡ **no** ΄Ω
╗ Â

ipv6 dhcp snooping database write-delay *time*

no ipv6 dhcp snooping database write-delay

ϟ	ϟ	
	time	ĵ̃ ώ flash ˚

΄Ω

ħυ ҳ ѽ

G dhcpv6 snooping ə ŋ̃ ώ flash ˇ ˘ ˩ Л υ ŭ ╟
ʌ˘ ə x ˘ ˩ IP ѫ ˘ ˩ Л υ Â

w R R 1' ŋ̃ ώ flash и 100
`Ruijie(config)# ipv6 dhcp snooping database write-delay 100`

ѴΩħυ ҳ

ħυ ҳ	
show ipv6 dhcp snooping	dhcpv6 snooping ╖ ѽ ə

ʌ

ħυ ҳ ˥ ʌ

ʌ	
10.4	ħυ ҳ

18.1.4 ipv6 dhcp snooping database write-to-flash

dhcpv6 snooping ə ŋ̃ ώ flash ˇ Â

ipv6 dhcp snooping database write-to-flash

ʕ

ʕ	
-	

ħυ ҳ ѽ

G ħυ ҳ˘ ˩ Л υ ѫ dhcpv6 snooping ə ŋ̃ ώ flash ˇ Â
ŭ ʌ˘ ˬ ╟ ÿ flash è ˩ ɖ ҷ flash è ə Â

w R R 1' dhcpv6 snooping ə ŋ̃ ώ flash
`Ruijie(config)# ipv6 dhcp snooping database write-to-flash`

ѴΩħυ ҳ

ħυ ҳ	

⅄	
ħυ ϗ ˥ ⅄	/|
	10.4

18.1.5 ipv6 dhcp snooping filter-dh

ʌ x ĵ dhcpv6

-dhcp-pkt

no ipv6 dhcp snooping filter-dhcp-pkt

ʌ	ʌ
	˜Ω
ħυ ϗ	ʌ
G	ħυ ϗ ⅄˘ ˩ ⅄υ x ʌ dhcpv6 سم فذ Â
w R	R 1' ʌ **fastethernet** 0/1 Ruijie(config)# **interface** Ruijie(config-if)# **ipv6 d**
˜Ωħυ ϗ	ħυ ϗ

l' ʌ Ł ʾΩ Â G ħu ҳ no ˇ DHCPv6 ꞉
ʌ Â

ipv6 dhcp snooping ignore dest-not-found

no ipv6 dhcp snooping ignore dest-not-found

ʌ	ʌ	

ʾΩ

ħu ҳ ѽ

G

DHCPv6 ꞉ ɻˇ ŋ MAC ѫѣ ˇ DHCPv6 ꞉ ѭ
Ꮋ Э a¦ MAC ѫѣ ʌˇ ѝ ѿ ѽ ˇ a ɻ ʾΩ Â
Л ѭ ɜ ⁞ è˘ ɻ ҷ à à ҵ ʌ ɻ ҷˇ MAC ѫ
ѣ ˉ ɻ ˇ ɻ ɻ Э Y ˇ ѭ Э¸ .
l' DHCPV6_SNOOPING-5-DEST_NOT_FOUND: Could not find destination port.
Destination MAC [mac-address] Ł˘ ˇ ѝ ѿ DHCPv6 ɔˇ ɻ Л
Ю ʾΩ˘ a¦ MAC ѫѣ ʌ Л ɻ ∫ ʾΩ VLAN
ʌ Â

w R

R 1' ʌ ʾΩ Â

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

ʾΩħu ҳ

ħu ҳ	
show ipv6 dhcp snooping	dhcpv6 snooping ╖ ѽ ə

ʌ

ħu ҳ ˥ ʌ

ʌ	
10.4	ħu ҳ

18.1.7 ipv6 dhcp snooping link-detection

ʌ LINK DOWN ˇ ʌ Э ╟ ʾΩ Â G ħu ҳ no ˇ ʾΩ
╖ Â

ipv6 dhcp snooping link-detection

no ipv6 dhcp snooping link-detection

٩	٩	

	ʗΩ
ħu ɜ	ѽ
G	ɑ ӇӾ ٩ LINK DOWN ˇ a ٩ Ӈ Ю ╟ Â ŭ ╖ ʃ˘ ٩ LINK DOWN ˇ ˬ ╟ ٩ Ӈ Ю ╟ Â
ѡ R	R 1' ٩ LINK DOWN ˇ ╟ ٩ Ӈ Ю ╟ Â Ruijie(config)# **ipv6 dhcp snooping link-detection**

ʗΩħu ɜ	ħu ɜ	
	show ipv6 dhcp snooping	dhcpv6 snooping ╖ ѽ ə

ʃ

ħu ɜ ٦ ʃ	ʃ	
	10.4	ħu ɜ

18.1.8 ipv6 dhcp snooping trust

٩ dhcpv6 snooping əˈ ѝ trust Â G ħu ɜ no ˇ ٩ əˈ ѝ untrust Â

ipv6 dhcp snooping trust

no ipv6 dhcp snooping trust

٩	٩	

	٩ ѝ untrust
ħu ɜ	٩
G	ʃ dhcpv6 ┗ ⅄ ٩ ѝ trust ٩˘ trust ٩ ʅ dhcpv6 Server ː ٦' untrust ٩ ʅ dhcpv6 Server ː x Â

w R	ᴿ 1' ᴻ fastethernet 0/1 ὶ trust ᴻ Ruijie(config)# **interface fastethernet** *0/1* Ruijie(config-if)# **ipv6 dhcp snooping trust**

ΩħυϗΩ	ħυϗ	
	show ipv6 dhcp snooping	dhcpv6 snooping ╖ ŏ ə

ᴊ

ħυϗ ˥ ᴊ	ᴊ	
	10.4	ħυϗ

18.1.9 Ipv6 dhcp snooping vlan

ج vlan Ɔ ŭ dhcpv6 snooping ╖ ˘ ŏ ħυϗ Â ᴳ ħυϗ no ˘ ΩΩ vlan Ɔ dhcpv6 snooping ╖ Â

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

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

ᴻ		
	vlan-list	vlan ىتˇ 1,3-5,7,9-11
	vlan-min	vlan id ḣ
	vlan-max	vlan id ḣ

	dhcpv6 snooping ج vlan Ɔ ŭ

ħυϗ	ŏ

G	dhcpv6 snooping ŏ ΩΩ ŭ ᴊˇ vlan ᴝ dhcpv6 snooping ᴮ Â vlan a dhcpv6 snooping ᴮˇ ‡ ج vlan ƆΩ dhcpv6 snooping ╖ Â

w R	ᴿ 1' ج vlan 1 ƆΩ dhcpv6 snooping ╖ Ruijie(config)# **no ipv6 dhcp snooping vlan 1**

ΩħυϗΩ	ħυϗ	

	-	-

	10.4	ħυ ϡ

18.1.11 ipv6 verify source

ʌ ѫ ƭƨ ˜Ω Â ᴳ ħυ ϡ no ˘ ˜Ω ʌ ѫ ƭƨ Â

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

no ipv6 verify source

ʌ	ʌ	
	port-security	MAC ѫ ƭƨ + IPV6 ѫ ƭƨ ' ʌ MAC ѫ ƭƨ Ո IPV6 ѫ ƭƨ ʅ ˘ ї ' ʌ ˘ и IPV6 ѫ ƭƨ ˘ ʌ IPV6 ѫ ƭƨ ʅ ˘ . ї '
	˜Ω	
ħυ ϡ	ʌ	
ᴳ	ѫ ƭƨ ˜Ω ʃ˘ ˩ Ո IPV6 ѫ ƭƨ˘ ʌ DHCPV6 Ꮋ ц ʌ IPV6 ѫ ƭƨ˘ ˘ ˩ Ո Â	

ᴡ ᴿ	ᴿ 1' ʌ **fastethernet** 0/1 ŭ MAC+IPV6 ѫ ƭƨ ˜Ω
	`Ruijie(config)# interface fastethernet 0/1`
	`Ruijie(config-if)# ipv6 verify source port-security`	

˜Ωħυϡ	ħυ ϡ	

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ħυ ϡ ˥ ʃ	ʃ	
	10.4	ħυ ϡ

18.2

18.2.1 show ipv6 dhcp snooping

dhcpv6 snooping ╗ ŋή ą Â

show ipv6 dhcp snooping

٩	٩	
	-	-

ħυ ३

vlan *vlan_id*	VLAN ɱή
interface *interface_name*	ʌ ɱή

ħυ ϡ

G ħυ ϡ˘ ˩ ʃՄ dhcpv6 snooping ɱή è ə Â

ʀ 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
```

ˆΩħυ ϡ [redacted]3f296.05530 1 TfQ02D8/Cg l7Tm( )Tj89144BT/T9Tm(1 Tf0Cg 0 Tc9

W R

╕ Ո dhcpv6 snooping ╟ Â

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

٩

18.3.1 clear ipv6 dhcp snooping binding

ϯ dhcpv6 snooping è ə Â

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

٧	٧	
	ipv6-address	ipv6 فخ سه
	mac-address	mac فخ سه
	vlan *vlan_id*	VLAN
	interface *interface_name*	٨

ħυ ϡ

G ħυ ϡ˘ ٦ ՈՆ dhcpv6 snooping ə Â

w R R 1' dhcpv6 snooping ə

```
Ruijie# clear ipv6 dhcp snooping binding
```

ˇΩħυ ϡ

ħυ ϡ	

ٸ

ħυ ϡ ٦ ٸ

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10.4	ħυ ϡ

18.3.2 clear ipv6 dhcp snooping prefix

ϯ dhcpv6 snooping ɱ è ə Â

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

٧	٧	

ipv6-prefix	ipv6 ɱ ɱ
mac-address	mac ɯɯ ɟɘ ɱ
vlan *vlan_id*	VLAN ɱ
interface *interface_name*	ʌ ɱ

ħu ɜ

G ħu ɜ˘ ˩ ʃU dhcpv6 snooping ɱ ə Â

w R R 1' dhcpv6 snooping ɱ ə

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

˜Ωħu ɜ	ħu ɜ	

ʌ

ħu ɜ ˥ ʌ	ʌ	
	10.4	ħu ɜ

18.3.3 clear ipv6 dhcp snooping statistics

dhcpv6 snooping dhcpv6 ə Â

clear ipv6 dhcp snooping statistics

ʌ	ʌ	
	-	-

ħu ɜ

G ħu ɜ˘ ˩ ʃU dhcpv6 snooping dhcpv6 ə Â

ँΩħυ ३	ħυ ३	

⊀

ħυ ३ ी ⊀	⁄I	
	10.4	ħυ ३

19 ND Snooping

19.1

19.1.1 ipv6 nd snooping

ŏ IPv6 ND snooping ╖ Â ┘Ո ħυ ϗ no

10.4(2)	ħυ ϗ

19.1.2 ipv6 nd snooping vlan

VLAN IPv6 ND snooping ╖ Â ┘Л ħυ ϗ no ϔ 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*]}}

٩	
vlan-rng	vlan ىن

vlan-min .56 0 Td({)Tj/T2h02 71.75E4C2oping

ʎ	
ħυ ҳ ˥ ɹ	10.4(2) ħυ ҳ

19.1.3 ipv6 nd snooping trust

ʎ ỳ trust ʎ Â ɹ Ʌυ ħυ ҳ no ʎ ỳ untrust ʎ

ipv6 nd snooping trust

no ipv6 nd snooping trust

ʎ	
ʎ	

ʎ ỳ untrust ʎ

ħυ ҳ ʎ

G

19.1.4 ipv6 nd snooping check address-resolution

ŏ ND ѫ ѯ Â ⌟ Л υ ђυ ҙ no ŏ ˜Ω ND ѫ ѯ
Â

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

no ipv6 nd snooping check address-resolution

¶		
¶	**key-node-only**	Θ ˜Ω ND ѫ ѯ

19.1.5 ipv6 nd snooping detect gateway

ώ ΰ ╟ ΐΩ ə ¯ Â ┘ Л υ ħυ ҳ no ΐΩ ╟ ΐΩ ə ¯ Â

ipv6_address/prefix_len	ʗΩ IPv6 ѫ ڂ ⅎ ⅄ ѐ ɱ

ƫu ʒ ώ

G

R' ╗ ʗΩ ə

w R

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

ʗΩƫu ʒ

ƫu ʒ	
show ipv6 nd snooping key-node	nd snooping ʗΩ ə

⅄

ƫu ʒ ⅂ ⅄

⅄	
10.4(2)	ƫu ʒ

19.1.8 ipv6 nd snooping monitor stateless-user

ѫ ڂ ŏ Â ⅃ Ʌu ƫu ʒ no ʗΩ ѫ ڂ ŏ Â

ipv6 nd snooping monitor stateless-user

no ipv6 nd snooping monitor stateless-user

⅋

⅋	

ʗΩ

ƫυ ϗ ŏ

G ŭĵ ѫ ƶ ϟ ¥ ND Ո

w R R' ŏ ˜Ω ŭ
Ruijie# **configure terminal**
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)#**no ipv6 nd snooping monitor stateless-user**

˜Ωƫυ ϗ

ƫυ ϗ	
show ipv6 nd snooping stateless-user	ŭĵ ѫ Ո "

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ƫυ ϗ ˥ ϰ

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10.4(2)	ƫυ ϗ

19.1.9 ipv6 nd snooping stateless-user combine-security

ѫ ŏ ϰ Â ϟΛυ ƫυ ϗ no ˜Ω ╖ Â
ipv6 nd snooping stateless-user combine-security
no ipv6 nd snooping stateless-user combine-security

ϰ

ϰ	

˜Ω

ƫυ ϗ ŏ

G ϰ ŏ╖ 802.1X ϗ˘ ϰ ŭ ╟ ϰ ╖ ˘. ŭ ֍ ╖ ˘

è G ѫ ƭ Â

R ' Ŭ ╟ ʌ ŵ ʌ

Ruijie# **configure terminal**

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

Ruijie(config)# **ipv6 nd snooping stateless-user combine-security**

ƫ ʒ	
show ipv6 nd snooping	ipv6 nd snooping ə

ʌ

ʌ	
10.4(2)	ƫ ʒ

19.1.10 ipv6 nd snooping stateless-user address-bind

Ŭ ĺ IPv6 ѫ ƭ ╟ ĺ ˚ Â ┘ Л ƫ ʒ no ˜Ω ╖ Â

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

no ipv6 nd snooping stateless-user address-bind

ʌ	
strict	link-local ѫ ƭ ˘ ʌ link-local ѫ ƭ ˘ a ʌ Θ link-local ѫ ƭ Â
ip-mac	IP+MAC ə ˘ a ʌ Θ IP ə Â

˜Ω

ƫ ʒ ŵ

G

w R R 1' Ŭ

Ruijie# **configure terminal**

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

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

R 2' G ш فذ سه IP+MAC ə

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**

ʕΩƫ ʒ

ƫ ʒ	
show ipv6 nd snooping	ipv6 nd snooping ə

ʃ

ƫ ʒ ˥ ʃ

ʃ	
10.4(2)	ƫ ʒ

19.1.11 ipv6 nd snooping stateless-user station-move

8 ╟ Â

ipv6 nd snooping stateless-user station-move

no ipv6 nd snooping stateless-user station-move

ʅ

ʅ	

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

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ħυ ϗ ˥ ϡ

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10.4(2)	ħυ ϗ

19.1.12 ipv6 nd snooping stateless-user limit

ϐ ώ Â

ipv6 nd snooping stateless-user limit *num*

no ipv6 nd snooping stateless-user limit

ϟ

ϟ	
num	ϟ ϊ ώ

16

ħυ ϗ ϟ

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w R

R' ϟ FastEthernet 0/1 ώ ϧ 8 Â

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ipv6 nd snooping stateless-user limit 8
```

ˆΩħυ ϗ

ħυ ϗ	

	show ipv6 nd snooping	ipv6 nd snooping ə

ʃ

ƫ ʒ ˥ ʃ	ʃ	
	10.4(2)	ƫ ʒ

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

ə VLAN IPv6 ɱ Â

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

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

ˁ	ˁ	
	num	ə VLAN IPv6 ɱ

2

ƫ ʒ ώ

G

R' ə VLAN 4 ə IPv6 ɱ

```
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
```

ΩƫʒΩ	ƫ ʒ	
	show ipv6 nd snooping	ipv6 nd snooping ə

ʃ

ƫ ʒ ˥ ʃ	ʃ	
	10.4(2)	ƫ ʒ

19.1.14 clear ipv6 nd snooping key-node

ǁ ŭǐ ˜Ω ə Â

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

¶	
vid	έ E VLAN è ǁ ˜Ω

ƫυ ȝ

G

w R

R' ˜Ω ə

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

˜Ωƫυ ȝ

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ʎ

ƫυ ȝ ˥ ʎ

ʃ	
10.4(2)	ƫυ ȝ

19.1.15 clear ipv6 nd snooping stateless-user

ŭǐ فخ سم Â

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

¶	
vid	έ E VLAN è فخ سم

ħυ ϡ

G

w R

R'

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

ΐΩħυ ϡ

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ϰ

ħυ ϡ ϶ ϰ

ϰ	
10.4(2)	ħυ ϡ

19.1.16 clear ipv6 nd snooping prefix

ώ VLAN è ΰΐ ηή

64 4T1 1 Tf0.1419 Tc 0 Tw164 0 Tdvlan)2>Tj/TT1 1 Tf0 T591162 0 Td]( )Tj/TT0 1 Tf34987 0 Td( )Tc 10.02 0 0 10.02 129.7

ϰ

ħυ ϡ ϯ ϰ	ϰ	
	10.4(2)	ħυ ϡ

19.2

19.2.1 show ipv6 nd snooping

IPv6 nd snooping ϑ

show ipv6 nd snooping [interface]

ϰ	ϰ	
	interface	Θ ϰ ΄Ω

ħυ ϡ

G

w R

R' IPv6 nd snooping ϑ

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

΄Ωħυ ϡ	ħυ ϡ	

ϰ

ħυ ϡ ϯ ϰ	ϰ	
	10.4(2)	ħυ ϡ

19.2.2 show ipv6 nd snooping key-node

Ո ╟ ˉ ˥ ˇΩ ə

show ipv6 nd snooping key-node

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ᴡ ᴿ

ᴿ' Ո ╟ ˉ ˥ ˇΩ ə

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

ˇΩħυ ३

ħυ ३	

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ħυ ३ ٦ ᴙ

ᴙ	
10.4(2)	ħυ ३

19.2.3 show ipv6 nd snooping stateless-user

ŭ̈ˀ ipv6 فخ سم

show ipv6 nd snooping stateless-user

٩	٩	

ħυ ϡ

G

w R	R' ŭ̈ˀ ipv6 فخ سم Ruijie# **show ipv6 nd snooping stateless-user**

˜Ωħυ ϡ	ħυ ϡ	

٨

ħυ ϡ ٦ ٨	٨	
	10.4(2)	ħυ ϡ

$1–CtNQ–ŕQ¸

ND Snooping ħυ ३

20 MSTP

20.1

20.1.1 bpdu src-mac-check

э ∧ bpdu mac Â ⅃Ո ħυ ϗ no ʹΩ ∧ bpdu mac
Ⅱ Â

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

no bpdu src-mac-check

∧		
∧	*H.H.H*	∧ mac ىسفخ ﻱﺇ ىسفخ bpdu Â
	no	∧ ˙ ¡ bpdu Â

ʹΩ Â

ħυ ϗ ∧ Â

G

ᴡ R

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

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	ħυ ϗ	
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ħυ ϗ ˥ ⅄		
	⅄	
	-	-

20.1.2 clear spanning-tree detected-protocols

⁸ ∧ ⊣ RSTP BPDU BPDU ⁸ Â

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

∧	
interface-id	∧

ḣ Â

ħυ ҙ

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

ħυ ҙ	
show spanning-tree interface	ɱ ∧ STP Â

∧

ђυ ҳ ѿ Â

forward-time à hello-time à max-age Ь э ḣ ىن ‴Ω ˘ g ҂ ε è У э¸ :

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	-	-

20.1.6 spanning-tree bpduguard

ɜ ʌ BPDU Guard ˜Ω Â ˩ Ʌυ ħυ ϟ enabled disabled
˜Ω ʌ BPDU Guard ˜Ω Â

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

ʌ		
ʌ	**enabled**	ʌ BPDU Guard ˜Ω Â
	disabled	˜Ω ʌ BPDU Guard ˜Ω Â

	˜Ω Â
ħυ ϟ	ʌ Â
ᴳ Ş	

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

	-	-
	ॅΩ	
ħυ ३	∧	
G		
w R	Ruijie(config-if)#**spanning-tree compatible enable**	
	ħυ ३	

˜Ωħυ ϡ	ħυ ϡ	
	-	-

˄	

ħυ ϡ ˥ ˄	˄	
	-	-

20.1.9 spanning-tree guard none

˄ Э˜Ω guard Â G ħυ ϡ no ˄ ˄ Э guard ╖ Â

spanning-tree guard none

no spanning-tree guard none

˄	˄	
	-	-

	˜Ω guard ╖ Â

ħυ ϡ	˄ Â

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w R	Ruijie(config-if)# **spanning-tree guard none**

˜Ωħυ ϡ	ħυ ϡ	
	-	-

˄	

ħυ ϡ ˥ ˄	˄	
	-	-

20.1.10 spanning-tree guard root

ϟ root guard Â ᴳ ħυ ϗ no ϼΩ root guard Â ὐ root guard ϖ
˘ ϾϺ ɱή ѫ Æ ل ע Â

ħυ ३ ∧ Â

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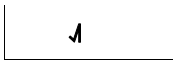
w R

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

ΩħU ३

ħυ ३	
show spanning-tree interface	STP ∧

∧



20.1.14 spanning-tree mode

æ ŏ ΗΟ G ħυ ϗ STP Â G no ϟ Ո ḣ Â

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

no spanning-tree mode

ϰ

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

MSTP

ħυ ϗ ŏ .

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

ΎΩħυ ϗ

ħυ ϗ	
show spanning-tree	

ϟ

ħυ ϗ ϒ ϟ

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20.1.15 spanning-tree mst configure

æ ŏ ΗΟ G ħυ ϗ ϟ Ո ώ MST ˘ MSTP Region Â G no ϟ Ո ħυ ϗ ΗΟ ϰ ˆ name à revision à vlan map˜ ḣ Â

spanning-tree mst configuration

no spanning-tree mst configuration

ϰ

ϰ	
-	-

VLAN 3 ÿ Instance 1 è† ˘ ϗ ώ MST Λ˘ Ю

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

ə Instance 1† ˘ Ю'

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

ϟ Л∪ MST ħυ ϧ è show Э Â

ˆΩħυ ϧ

ħυ ϧ	
show spanning-tree mst	MST region
instance instance-id vlan vlan-range	Vlan ╗† MST Instance è
name	MST ϳ
revision	MST Λ
show	ϑ MST Ю MST

ϟ

ħυ ϧ ˥ ϟ

Λ	
-	-

20.1.16 spanning-tree mst cost

ϑ Λ Ю G ħυ ϧ ə Instance Â G no ϟ Л∪ ħυ ϧ ḣ Â

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

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

Λ

Λ	
instance-id	Instance Λ˘ ىتن ى 0' 64
cost	ḣ˘ ىتن ى 1' 200' 000' 000

Instance-ID ḣ ى 0

ḣ ى Interface ╠ Â

- 1000 Mbps—20000
- 100 Mbps—200000
- 10 Mbps—2000000

ħυ ϧ Λ .

MSTP

G æ Region ğ ˘ . ˝I . ˝I ʌ ɣ ɻ Â. ˝I ɻ ˘ Ʌυ ʌ ʌ ʌ Â

ɯ R

ЮR æ Instance 20 è Gigabitethernet 1/1 ʌ . ˝I ḣ ḣ ὴ 10ʺ

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# spanning-tree mst 20 port-priority 0
```

ɻ Ʌυ ώ **show spanning-tree mst instance interface** *interface-id* ħu ʒ Э Â

ħu ʒ	
show spanning-tree mst	ʌ MSTP ą Â

G ώ .

ЮR Instance 20 . ″I ḣ ѝ 8192″

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

ϟЛυ ώ **show spanning-tree mst instance interface interface-id** ħυ ϛ Э Â

ΩħυϛΩ

ħυ ϛ	
show spanning-tree mst	ϟ MSTP ə Â
spanning-tree mst cost	Â
spanning-tree mst port-priority	a ϟ Instance ϟ. ″I Â

ϟ

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20.1.19 spanning-tree pathcost method

ϟ Â G ħυ ϛ no ḣ Â

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

no spanning-tree pathcost method

ϟ

ϟ	
long	802.1t ñ path-cost ḣ Â
short	802.1d ñ path-cost ḣ Â

802.1T ñ Path-cost ḣ Â

ħυ ϛ ώ Â

G

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

ΩħυϛΩ

	show spanning-tree interface	STP ∧ Â

∧

ħυ ३ ٦ ∧	∧	
	-	-

20.1.20 spanning-tree portfast

э ∧ Portfast ˜Ω Â ∧ ∩υ ħυ ३ disabled ˜Ω ∧ Portfast ˜Ω Â

spanning-tree portfast [**disabled**]

	∧	
∧	**disabled**	˜Ω ∧ Portfast ˜Ω Â

	˜Ω Â

ħυ ३	∧ Â

no spanning-tree portfast bpdufilter default

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	-	-

ˆΩ BPDU filter

ħυ ϛ ώ Â

ẘ R Ruijie(config)# **spanning-tree portfast bpduguard default**

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20.1.24 spanning-tree reset

ə spanning-tree ѝ ḣ Â ħυ ϡ no Â

spanning-tree reset

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-	-

ħυ ϡ ώ Â

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w R Ruijie(config)# **spanning-tree reset**

ħυ ϡ	
show spanning-tree	STP ώ ə Â
show spanning-tree interface	STP ϰ Â

ϡ

ħυ ϡ ϒ ϡ	ϡ	
	-	-

20.1.25 spanning-tree tc-guard

ϰ tc- guard ϗΩ Â G ħυ ϡ no ϗΩ tc- guard ϗΩ Â ŭ tc-guard ϖ ˘ tc Â

spanning-tree tc-guard

no spanning-tree tc-guard

ϰ	
-	-

ϗΩ tc- guard ϗΩ Â

ħυ ϗ ^l

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

ΐΩħυ ϗ

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^l	
-	-

20.1.26 spanning-tree tc-protection

ŏ tc- protection ΐΩ Â G ħυ ϗ no ŏ ΐΩ tc- protection ΐΩ Â

spanning-tree tc- protection

no spanning-tree tc- protection

^l

^l	
-	-

tc- protection ΐΩ Â

ħυ ϗ ŏ Â

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

ΐΩħυ ϗ

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/I	

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tx-hold-count	TxHoldCount Â ḣ تن ÿ 1↑ 10 Â	

ḣ 3 Â

ħυ ٩ ŏ Â

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w R

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

ŽΩħυ ٩

ħυ ٩	
show spanning-tree	

tx-hold-count	TxHoldCount Â
pathcost method	Â

ħu ३ Â

G

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

link-type	∧ linktype

ħυ ३ Â

G

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

ħυ ३	
spanning-tree bpdufilter	ɜ ∧ BPDU filter ˜Ω Â
spanning-tree portfast	ɜ ∧ portfast ˜Ω Â spanning-trspann

20.2.3 show spanning-tree mst

ح ΗΟ G ħυ ϛ ˩ ΛU MST ˇ Instance ə Â

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

٩	
configuration	mst
instance-id	*Instance ٬*
interface-id	٩ ٬

Instance Â

ħυ ϛ .

G

21 SPAN

21.1

21.1.1 monitor session

… У э SPAN˛ ∧ˆ ∧˜ Ո ∧ˆ ∧˜ .ᴳ ђυ ҙ 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 ų *interface-id* ∧ ∧˘ ∨ ѝ ∧˘ a ∨ Л∪ ѝ SVI Â
destination interface *interface-id*	∧ Â ų *interface-id* ∧ ∧˘ ∨ ѝ ∧˘ a ∨ Л∪ ѝ SVI Â
mac source *mac-addr*	ę MAC
mac destination *mac-addr*	ę MAC
both **acl** *name*	∨ ώ Ո Â **acl** *name/id*
rx	∨ ώ Â
tx	∨ Â
all	╕ ˛
encapsulation	ę ∧ ╖ , У ⁸ Ω ę tag˘ ѝ a
switch	ę ∧ Ҩ ╖ ˘ ѝ a

∧

ħu ϗ ѽ

G

switch port à routed port Ո AP ⊣ Ո ѝ ∧ Ո ∧ ÂSPAN˯ a ⁝ Ꮋ
ɔ Â ⊣ Ո SPAN˯ ⱬ У ɜ disabled port Ɜˇ ˇ SPAN a
Ɜ ⊣ ɔ ˥ G Ո ∧ Â
У ɜ ∧ a ⊿ ∧ Ո ∧ Â
ⱬ˥ ˇ a ∧ ∧ˇ ‡˥ ɜ˯ Â
G **show monitor** ħu ϗ ⊣ Ո SPAN˯ ɔ Â

~ Â session 1 ѽ ´ ∧ ęˇ ´ SPAN
⊣ G session 1 Â

Ю ɜ R ¡ … У ɜ SPAN˯ ' ˯ 1 Â ⅄ ″I ˯ ˇ
″I ⱡ˯ 1 ˇ ⅄ ∧ gigabitEthernet 1/1 ⁸˥
∧ gigabitEthernet 1/8 Â

w R

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

ħu ϗ

22

1/2 //a ৲ ৲

Ruijie(config)# **monitor session** *2* **destination remote vlan** 7 **interface gigabitEthernet** *1/3*Ruijie(config)# 1/3

	show vlan	Vlan ą Â

⁄	SS8600 " ң p a ⁄ Â

ħu ҳ ⁄	
⁄	
-	-

23 IP

23.1

23.1.1 ip address

ƕ ϗ ∧ IP ﻓﺦ ﺳﻢ ˇ ⊿ ⊥ ∪ no ╕

У э С Â ч э Л э IP Â
Â ,Î Â IP G Л
G Î IP Â э У э IP Â
Â У э ч э л У э æ Л... У э
IP Â У э a ч э ч э
Л Э л Â

ЛЮ R Ц л IP й 10.10.10.1 й 255.255.255.0 Â
```
ip address 10.10.10.1 255.255.255.0
```

show interface	л ą Â

-	-

23.1.2 ip unnumbered

л л У э л й л л л Э IP
л Л IP Â Л no Â

ip unnumbered *interface-type interface-number*

no ip unnumbered *interface-type interface-number*

interface-type	Â
interface-number	Â

ąЮ л Â

Â

л л л л IP aÎ IP л Â
IP л Â л ą IP Î IP л IP
Â л IP л л л

Â ѵ ѧ ЛЪЮ ⁸ '

Â Л ѧ a ѵ ѧ Â

Â s ѧ SLIP ãHDLC ãPPP ãLAPB ãFrame-relay ˘ ѯ Л ѵ ѧ Â

Л è ˘ ѯ ѳ ѧ ї ѵ ѧ Â X.25 a ї

ѵ ѧ Â

Â a ping Ъ ѯ ѵ ѧ ї̈ ɔ ˘ ҷ ѝ ѵ ѧ IP ѫ ѳ Â Л

SNMP ѯ Л ѳ ѵ Â

Â a ѵ ѧ ŭ ╟ Â

ЛЪЮ ˘ ѧ ѝ ѵ ѧ ˘ ˜Ω ѧ ѝ FastEthernet 0/1 Â ˜Ω ѧ

IP ѫ ѳ Â

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

˜ΩЪ ѯ	Ъ ѯ	
	show interface	ѧ ą Â

ѯ	Ъ ѯ ѥ γ Э a Â

Ъ ѯ ˥ ѯ	ѵ	
	-	-

23.2

23.2.1 arp

G Ъ ѯ˘ ѯ Л ѥ ARP ă è ╕ ⱡ IP ѫ ѳ Ո- MAC ѫ ѳ Â Ъ ѯ no ѯ Л╕ MAC ѫ ѳ Â

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

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

ѧ

ARP ƒƒ ƒƒ ƒƒ ƒƒ

ƒƒ ƒƒ

ƒƒ ƒƒ

RGOS ƒƒ ARP ƒƒ ƒƒ 32 ƒƒ ƒƒ IP ƒƒ ƒƒ 48 ƒƒ ƒƒ MAC ƒƒ ƒƒ ƒƒ ƒƒ ƒƒ ƒƒ ƒƒ ƒƒ ƒƒ ƒƒ ARP ƒƒ ƒƒ **clear arp-cache** ƒƒ ƒƒ ƒƒ ƒƒ ƒƒ ARP ƒƒ

ƒƒ ƒƒ ƒƒ ƒƒ ƒƒ ƒƒ ARP ƒƒ ƒƒ

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

ƒƒ ƒƒ	
clear arp-cache	ARP ƒƒ

ƒƒ

ƒƒ	
-	-

23.2.2 arp anti-ip-attack

ƒƒ ƒƒ ƒƒ ƒƒ ƒƒ # ƒƒ ƒƒ ƒƒ ƒƒ ƒƒ ƒƒ ƒƒ

	Num	۷ ARP x IP ə ˘ ۷ ḣ تن<0-100> Â 0 ˜Ω ARP IP ╖ Â
	ąЮ˝ ج 3 ə ۶´ CPU ۸ x Â	
ԋU ҙ	ѿ Â	
	ARP IP ╖ ˘ ج ۷ˆ ۶´ IP ´ Ԋ ˚ Â ˚ ˙ˆ ˘ **arp anti-ip-attack** *num* ۷ Л ѣ ē ˚	
G		

	ىلإ ةباوبلا ىلع ARP بلط لاسرإ ةرتف ديدحت.
ىلإ ةباوبلا	ىلإ ةباوبلا.
ةظحلام	ىلإ ةباوبلا ىلع ةرتف ديدحت ةرتف لاسرإ ARP بلط ىلع ةباوبلا ىلإ ةباوبلا.
نيوكتلا لاثم	ةرتف لاسرإ ARP بلط ىلع ةباوبلا ىلإ ةباوبلا 1 ةيناث ةدحاو: Ruijie(config)# **interface vlan** *1* Ruijie(config-if)# **arp gratuitous-send interval** *1* ةرتف لاسرإ ARP بلط ىلع ةباوبلا ىلإ ةباوبلا SVI 1 ىلع ةيضارتفالا: Ruijie(config)# **interface vlan** *1* Ruijie(config-if)# **no arp gratuitous-send**

ةباوبلا ىلإ ىلوألا	
-	-

ىلإ ةباوبلا لوصولا عضو	
-	-

23.2.4 arp retry interval

ىلإ ةباوبلا ىلع ARP بلط لاسرإ ةداعإ ةرتف ديدحت ىلإ arp ىسفخ IP ةهجاو ىلع ةرم 2 ىلإ ةباوبلا ىلإ ةباوبلا. ىلإ ةباوبلا no رمألا مادختسإ متي ةيضارتفالا ةميقلا ىلإ ةداعإلل ةرتفلا ديدحت ةداعإ متي ،ةلاحلا هذه يف .ةيناث 1 ىلإ ةباوبلا ىلع ARP بلط لاسرإ ةداعإ ةرتف

arp retry interval *seconds*

no arp retry interval

ةملكلا	
seconds	<1-3600>,ARP بلط لاسرإ ةداعإ ةرتف ةيناث 1 ىلإ 3600 نم حوارتت ةميق ةيناث 1

ARP بلط لاسرإ ةداعإ ةرتف ةيناث 1 ىلإ ةباوبلا.

ىلإ ةباوبلا
لا.

G

ч Л ч ARP ˘ è ˘ ч ЛU ARP
. У ˘ У a ╟ ARP у Â

W R

ЛUЮ ˘ ARP · ѝ 30s

```
arp retry interval 30
```

ЪU ٦

Arp retry times *number*	ARP ·

ч

ѿЪ ҳ	Ъ ҳ	
	arp retry interval *seconds*	arp

ѧ	

Ъ ҳ ї ѧ	ѧ	
	-	-

23.2.6 arp timeout

ARP ă ѭ è ARP ˘ ѧ Л Ъ ҳ Â Ъ ҳ no ѧ Л Â

arp timeout *seconds*

no arp timeout

ѧ	ѧ	
	seconds	˘ Л й ´ Æ˘ تن 0-2147483

й 3600 Â

Ъ ҳ	ѧ Â

G	ARP ѧ ╟ ˜ ˛ IP ѫ ѳ Ո MAC ѫ ѳ ɔ Â ˘ ARP ă è ɖ ˘ Л ARP ≠ ˘ Л ¯ Â ⁞ ˘ ї ‡ У a ARP Â

ѿ R	Л Ю ˘ ÿ Л FastEthernet 0/1 ˛ ╟ ARP й 120 Â
	`interface fastEthernet 0/1`
	`arp timeout 120`

ѿЪ ҳ	Ъ ҳ	
	clear arp-cache	ARP ă
	show interface	ѧ ə

ѧ

/!

number	⊣ Л∪ ⊣ ə̣ ARP э

a ⊣ ң ҏ ḣ a ⊣ Â

ħU ϩ ŏ Â

G G ħU ϩ ˘ ″I ŭ ⊣ ə̣ ARP ╖ Â ⊣ ə̣ ARP Ո- è ″Ω ң ǫ̈ ˘ ⊣ ə̣ ´ ˘ ⊣ ╟ ARP a Â У ˘ a Â

ш R ЛυЮ ˘ ⊣ Л∪ 1000 э ⊣ ə̣ ARP Â

```
arp trusted 1000
```

″ΩħU ϩ

ħU ϩ	
service trustedarp	ŭ ⊣ ə̣ ARP ╖

⊬

ħU ϩ ⅂ ⊬

⊬	
-	-

23.2.9 arp unresolve

G ħU ϩ˘ ⊣ Л∪ ARP è э Â ħU ϩ no ⊣ Л∪ ḣ 8192 Â

arp unresolve *number*

no arp unresolve

⅋

⅋	
number	ARP э ˘ ⊬ ḣ تن ﻯ < 1-8192 > Â ḣ ﻯ 8192

ARP ă è ⊣ Л∪ 8192 э Â

ħU ϩ ŏ Â

G	ϟ ARP è ˘ ѕ У ѧ ˘ ϟ Л ђѵ ϟ [8] э Â
ѡ R	ЛѵЮ ˘ э й 500 Â arp unresolved 500

˝Ωђѵ ϟ	ђѵ ϟ	
	-	-

ѧ	

ђѵ ϟ ˥ ϟ	ѧ	
	-	-

23.2.10 ip proxy-arp

ѵ

ѫ ѧ Э ѿ ϟ ARP ╖ ˘ ϟ Л **ip proxy-arp** ђѵ ϟ Â ђѵ ϟ no ϟ Л˝Ω ϟ ARP ╖ Â

ip proxy-arp

no ip proxy-arp

ѱ	
-	-

10.2(3) ѯ ѧ (10.2(3)) ˘ Ь Ђ ˝Ω ϟ ARP˝ ѵ ϟ ARP Â

ђѵ ϟ	ѧ Â

IG ϟ ARP ╖ ϟ Л ╠ ѳ ў ˘ è IP ѕѓѕ MAC ѕѓѕ Â ѵ У э ARP ˘ ARP ϟ IP ѕѓѕ б IP ѕѓѕ а ѱ ϟ У ˘ ѱ IP ѕѓѕ ˘ ϟ ARP ; ˘ ; MAC ѕѓѕ й Л

	ip proxy-arp

ةيضارتفالا ةميقلا	
ىلإ ةدعاسملا	ىلإ ةدعاسملا
-	-

ماظنلا	ىلإ ةدعاسملا ةجاحلا دنع ARP بلط ةباجتسا

ىلإ ةدعاسملا لوخدلا ليجست	
ماظنلا	ماظنلا
-	-

23.2.11 service trustedarp

ةكبشلا ىلع ARP بلط ةباجتسا ةيلمع نيكمت **service trustedarp** ىلإ ةدعاسملا ىلإ ةدعاسملا no ةغيص ARP بلط ةباجتسا.

service trustedarp

no service trustedarp

ماظنلا	
ماظنلا	ماظنلا
-	-

	ARP ةباجتسا ةيلمع نيكمت

ىلإ ةدعاسملا	
	لا

GSN	ARP بلط ةباجتسا ةيلمع نيكمت متي GSN ةكبش يف ARP بلط ةباجتسا ةيلمع نيكمت متي ال GSN ةكبش يف

ةظحالم	ةيلمعلا هذه نيكمت دنع **service trustedarp** بلط ةباجتسا ةيلمع نيكمت متي
	config service trustedarp

ةيضارتفالا ةميقلا	
ىلإ ةدعاسملا	ىلإ ةدعاسملا
-	-

ماظنلا	-

ђѵ ҳ ٦ ↓ا	/ا	
	-	-

23.3

23.3.1 ip broadcast-addresss

ђѫ У ə ٨ا ѧѕ ѣѫ˘ ٨ا ђѵ ҳ **ip broadcast-addresss** Â ђѵ ҳ no ↓ Ѧѵ ↓ا ѧѕ ѣѫ Â

ip broadcast-addresss *ip-address*

no ip broadcast-addresss *ip-address*

٩ا	

ѽ IP ѵ ѱ ˇ ѧ ѣѵ ѯ **ip directed-broadcast** Â ѣѵ ѯ no ѧ ѵ ѱ Â

ip directed-broadcast [*access-list-number*]

no ip directed-broadcast

ѧ		
ѧ	*access-list-number*	^ ѵ ~ " ѵ˘ ѧ ѵ 1-199 1300 - 2699 Â ѣѫ ѳ " ѵ˘ ѧ ѓ IP ѵ Â

	˜Ω Â
ѣѵ ѯ	ѧ
G	IP ѵ ѳѕѕ ѝ э IP ѳѕѕ IP ˇ ѳѕѕ ѝ 172.16.16.255 ѝ ѵ Âѧ ң ѧ a ˘ Â б ѱ IP ѵ ˇ ѵ´ У ѵ Â ѵ ѱ ѵ˘ ѵ ѝ ^ У IP ѳѕѕ ѝ ѽ ѵ 1 Ь ~ ˇ ѵ Л ѵ Э ў Â æ ѵ Лѧ ѵ ѧ Э˘ ѽ ѵ ѱ ѵ ╖ ˇ ѧ ѵ Лѧ ѵ ѱ ѵ ѳ Â ѣѵ ѯ ѧ : ѱ ѵ ѵ· ˇ a : è ѵ ѧ Â ѵ ѧ Э˘ æ ѵ Лѧ ѣѫ " ⁸ ѵ ف ق ѵ Â ѣѫ ѳ " ˇ ѧ ѵ " è ѣѫ ↑ ѵ ѱ Â ѵ ѧ Э ѳ **no ip directed-broadcast** ˇ RGOS x ѱ ѵ Â

ѡ R	Лѣ Ю R ˇ FastEthernet 0/1 ѧ ѽ ѳ ѵ ѵ Â
	`interface fastEthernet 0/1`
	`ip directed-broadcast`

˜Ωѣѵ ѯ	ѣѵ ѯ	
	-	-

ѵ	ѣѵ ѯ ѵ ѵ Э a Â

ѣѵ ѯ ѓ ѵ	ѵ	

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23.4 IP

23.4.1 clear arp-cache

ÿ ARP ă è ╟ ARP ˘ ő ђ ҷ clear arp-cache Â **cle-4**

˜Ωħu ϡ	ħu ϡ	
	arp	ﻢ ARP è ╗ Â

ﻤ

ħu ϡ ˥ ﻤ	ﻤ	
	-	-

23.4.2 clear ip route

ﻫ╕ IP IP è ﻫ ˘ ﻤ ﻤ ﻢ **clear ip route** ħu ϡ Â

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

ﻣ	ﻣ	
	*	╕ ώ
	network	╕ ﻓﺦ ﺳﻢ
	netmask	ˆ ﻤ ˜

ħu ϡ

G	ﻤ è ˘ ﻤ ﻤ . ⁹ ╵ Â ﻥ ╕ ﻫ ˘ ﻫ ﻉ Â

ɯ R	ﻤ ﻤ R ˘ ﻤ╕ 192.168.12.0 Â `clear ip route 192.168.12.0`

˜Ωħu ϡ	ħu ϡ	
	show ip route	IP

ﻤ	ħu ϡ ﻢ γ Э a Â

ħu ϡ ˥ ﻤ	ﻤ	
	-	-

23.4.3 show arp

فخ سم ˜ ˆ ARP˜ ŏ Â

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

٧	
vrf *vrf_name*	VRF R˘ VRF ARP Â
trusted	٦ ٹ ARP ˘ ٣ ٧ ŭ VRF ٦ ٹ ARP Â
ip	IP فخ سم˘ IP فخ سم ARP ' ***trusted*** ˜Ω ˘ ‡ ٧ ٦ ٹ ARP ˘ ĭ ‡ ٦ ٹ ARP Â
mask	IP ٹ ARP ; trusted ˜Ω ˘ ‡ ٧ ٦ ٹ ARP ˘ ĭ ‡ ٦ ٹ ARP Â
static	arp Â
mac-address	mac فخ سم ARP Â
complete	╟ arp Â
incomplete	╟ arp Â
oob	٧ (interface of mgmt) ARP Â

ЪU ٹ Â

G

R 1' ЛЬЮ и 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  192.168.195.63   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 ă è ﾉ ů Hπ Ю'

Protocol	فخ سم ˜ ˘ كا ى Internet Â
Address	б ˚ فخ سم IP فخ سم Â
Age (min)	ARP ă جم ˘ Лu Â سم ˘ ḣ “-” Â
Hardware	б IP فخ سم ˚ فخ سم Â
Type	˚ فخ سم ˘صر Лu فخ سم كا ى ARPA Â
Interface	б IP فخ سم Ω ﾉ Â

R 2' ЛЬЮ show arp 192.168.195.68

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

R 3' ЛЬЮ **show arp** 192.168.195.0 255.255.255.0

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

R 4' ЛЬЮ **show arp** *001a.a0b5.378d* 31 Ö

23.4.4 show arp counter

ARP è Ґ Ω э arp Â

show arp counter

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ЛЬЮ й **show arp counter**

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

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23.4.5 show arp detail

ARP ą Â

ip mask	ip mask ↑ ARP
mac-address	mac فذ سم ARP
static	arp

	صر Â
Age	ARP ˜ ˛ ˘ ´ Æ¦ Â
Interface	б IP ىسفذ ˜Ω Ь ٨ Â
Port	б ARP ˜Ω γ ٨ Â

˜ΩىU ٹ	ىU ٹ	
	-	-

٨	ىU ٹ جھ Ь Ӈ Э

ىU ٹ ٦ ٨	/٨	
	10.4	10.4

23.4.6 show arp timeout

У ٨ ╠ ARP У

show arp timeout

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	-	-

ىU ٹ

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ЛЬЮ й **show arp timeout** '

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

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23.4.7 show ip arp

ƒ¤ƒ¤ ~ ^ ARP~ ă ˘ ж è Ъ ч Â

show ip arp

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ЛъЮ й **show ip arp** '

```
Ruijie# show ip arp
Protocol Address      Age(min)Hardware      Type
Interface
Internet 192.168.7.233  23   0007.e9d9.0488  ARPA FastEthernet 0/0
Internet 192.168.7.112  10   0050.eb08.6617  ARPA FastEthernet 0/0
Internet 192.168.7.79   12   00d0.f808.3d5c  ARPA FastEthernet 0/0
Internet 192.168.7.1    50   00d0.f84e.1c7f  ARPA FastEthernet 0/0
Internet 192.168.7.215  36   00d0.f80d.1090  ARPA FastEthernet 0/0
Internet 192.168.7.127  0    0060.97bd.ebee  ARPA FastEthernet 0/0
Internet 192.168.7.195  57   0060.97bd.ef2d  ARPA FastEthernet 0/0
Internet 192.168.7.183  --   00d0.f8fb.108b  ARPA FastEthernet 0/0
```

ARP ă è л ъЋЖ Ю

Protocol	ƒ¤ƒ¤ ~ ˘ Й Internet Â

Address	б ˚ ѫ ѳ IP ѫ ѳ Â
Age (min)	ARP ă ћ ˘ Л ў Â ѫ ˘ ћ “-” Â
Hardware	б IP ѫ ѳ ˚ ѫ ѳ Â
Type	˚ ѫ ѳ ѕ ˘ Л ѫ ѳ ѓ й ARPA Â
Interface	б IP ѫ ѳ ˝ Ω ѧ Â

˝ Ωђ ҳ		
	-	-

ѧ	ђ ҳ ћ у Э a Â

ђ ҳ ˥ ѧ	ѧ	
	-	-

23.4.8 show ip interface

ђ ҳ ѧ Л ѧ IP ą Â ђ ҳ Ю'

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

ѧ	ѧ	
	Interface-type	ѧ ѕ
	Interface-number	ѧ ѧ

ђ ҳ	
G	У э ѧ ц ѧ ˘ RGOS ˛ ћ è … У Â ѧ ѧ RGOS ˚ ѧ ѧ Л ѧ ↑ Â ѧ ÿ ѧ ѧ й a ѧ ˘ RGOS ˚ ˛ ÿ è ў Â ѧ ц ѧ ˘ ї ѧ ѧ ą ˘ ~ ˛ ľ UP Ł’ Θ ц ѧ ˘ ѧ ˛ ľ UP Ł Â a ѧ ѧ ѕ ˘ ѧ ѧ a У ˘ ę й Ҷ ӧ Ҷ Ę ѧ Â
W R	ЛЮ й **show ip interface** Â Ruijie# **show ip interface FastEthernet** *0/1*

```
IP interface state is: UP
IP interface type is: BROADCAST
IP interface metric is: 0
IP interface MTU is: 1500
IP address is:
192.168.5.133/24 (primary)
IP address negotiate is: OFF
Forward direct-boardcast is: ON
ICMP mask reply is: ON
Send ICMP redirect is: ON
Send ICMP unreachabled is: ON
DHCP relay is: OFF
Fast switch is: ON
Route horizontal-split is: ON
Help address is: 0.0.0.0
Proxy ARP is: ON
Outgoing access list is not set.
Inbound access list is not set.
```

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24.1.2 ip mtu

IP ↑ · ´ Ĩˆ MTU˜ ˇ ∧ ћ ҂ **ip mtu** Â ћ ҂ no ┘ Л Â

ip mtu *bytes*

no ip mtu

∧	
bytes	IP ↑ · ´ Ĩˇ Л й´ Æˇ ىں 68~1500 Â

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G RGOS IP Â ĵ IP ↑ ˘ ˚ IP ш à
à ˘ Ҿ ج RFC 791 è Â ĵ
↑ ŭ ѫ ὲ è У э ˘ ˚ : ╟ ɔ’ ĵ ˘ ˚
ɻ У э ICMP ʎ ˘ ʌ x ↑ Â
RGOS ˚ ą Ю IP Â

w R ЛЬЮ R ˘ ˜Ω ѫ IP Â
no ip source-route

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ħυ ҳ ˥ ʌ

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24.1.5 ip unreachables

RGOS ˚ ң ICMP a ɻ ˘ ʎ ħυ ҳ **ip unreachables** Â ħυ ҳ no ɻ Л ˜Ω ɻ ICMP a ɻ Â

ip unreachables

no ip unreachables

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ħυ ҳ ʎ

G RGOS ˚ ĵ У э ѕѫ ф ѝ ´ ˘ ʎ a Э ˜ ˘
˚ ɻ У э ICMP a ɻ Â
RGOS ˚ ų ˘ a ɻ У э ↑ ˘ ˚ ɻ ɻ ICMP ў
a ɻ Â

25 DHCP

25.1 DHCP

25.1.1 bootfile

‹ DHCP ‹ ‹ DHCP ‹ ‹ **bootfile** ‹ ‹ **no** ‹ ‹ ‹

bootfile *file-name*

no bootfile

‹	
file-name	‹ ‹ ‹ ‹

‹

‹ ‹

G

‹ ‹

‹ ‹	
ip dhcp pool	‹ DHCP ‹ ‹ ‹ DHCP ‹ ‹
network	DHCP ‹ ‹ ‹ ‹ ‹

‹

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.	.

25.1.2 client-identifier

ӽ DHCP ڑ У ˆ Л∪ ˊ Ὼ ⁸ ˜ ˇ DHCP فخ سم ħυ ҂ **client-identifier** Â ħυ ҂ **no** ⊣ Л∪ Â

client-identifier *unique-identifier*

no client-identifier

¶	
¶	DHCP ˇ Л∪ ˊ Ὼ ⁸ Â *unique-identifier*

⊀

ћu ҳ ⅂ ⊀	⊀	
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25.1.3 client-name

ⱷ DHCP ⊀ ˘ DHCP ѫ ѯ ћu ҳ **client-name** Â ћu ҳ no ⁋ DHCP ⊀ Â

client-name *client-name*

no client-name

⅋	⅋	
	client-name	ⱷ DHCP ⊀ Â⊣ Л˘ ¦ ñ ASCII Â ⊀ a ↑ ⊀ ѫ ⊀˘ ⱷ river ѝ DHCP ⊀ ˘ a ⱷ ѝ river.i-net.com.cn Â

	ⱷ ⊀ Â
ћu ҳ	DHCP ѫ ѯ Â
G	⊣ ѩ DHCP ⱷ ˘ ⊣ Л¯ ћu ҳ ⱷ DHCP ⊀ Â ⊀ a ↑ ⊀ ѫ ⊀ Â
ѡ R	ЛЬЮ R ˘ ⱷ ѿ У э s river ɔ ѝ ⊀ Â client-name river

ћu ҳ		
˜Ωћu ҳ	**host**	ⱷ IP ѫ ѯ Ո Â ¥ DHCP Â
	ip dhcp pool	ⱷ DHCP ѫ ѯ ⊀ ˘ ώ DHCP ѫ ѯ Â

25.1.4 default-router

ЊЖ DHCP ЎΩ˘ DHCP ѫѣѯ ђu ҳ **default-router** Â ђu ҳ **no** ⊣ Лu‾ ЎΩ ЊЖ Â

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

no default-router

¶	
ip-address	ЊЖ IP ѫѣѯ Â У э Â
ip-address2…ip-address8	ˆ ⊣ ˜ ⊣ Лu 8 э ЎΩ Â

ЊЖ ЎΩ Â

ђu ҳ DHCP ѫѣѯ Â

G У ąЮ˘ DHCP ÿ DHCP Ь Ы ЎΩ ą Â DHCP Ь Ы й У э ЎΩ IP ѫѣѯ˘ ѫѣѯ б‾ ѫѣѯ јм ⊣ У э Â

ѡ R ЛuЮ R ˇ ЊЖ ф 192.168.12.1 ɔ ѝ ЎΩ Â

```
default-router 192.168.12.1
```

۹	
domain-name	⊮ DHCP ⅄ ⋇ ⅄ s Ų √ =

	type	DHCP ˚ ˩ ˜ ˘ ˩ ⎍ s ᵻ Â s ' Â ethernet Â ieee802 ' Â 1ˆ 10M ethernet˜ Â 6ˆ IEEE 802˜

˚ ϡ ϗ Â

ᵻ ˚ ϡ ϗ ˘ ѝ ethernet Â

ƕ ϗ DHCP ϡ ϗ Â

G ˩ ϫ DHCP ᵻ ˘ ˩ ⎍ G ƕ ϗ Â

ϣ R Δ ϣ R Δ ϣ R ح ص ѝ .

	∧ a DHCP IP ѫ ѯ Â
ћu ҳ	∧
G	RGOS ˚ DHCP ˘ ѫ IP ѫ ѯ ˘ DHCP Ł Ы k ч э ∧ ą ' 1˜ DHCP 1˜ ' 2˜ DHCP 3˜ ⊿ У Э ˜Ω ą ' 3˜ DHCP 6˜ DNS Ł Ы ą ' 4˜ DHCP 15˜ ў ⊿ ѫ ⊿' DHCP 44˜ WINS Ł Ы ą Â RGOS ˚ ï ѫ PPP à FR à HDLC Э dhcp ѫ ѯ˘ э Ł Ы ˘ ⁄ń т Ł Ы ╖

w R	ЛъЮ R ˘ G FastEthernet 0 ∧ ╟ IP ѫ ѯ Â
	`interface fastEthernet 0`
	`ip address dhcp`

˜Ωћu ҳ

ћu ҳ	
dns-server	ћ DHCP DNS Ł Ы
ip dhcp pool	ћ DHCP ѫ ѯ ⊿ ˘ ώ DHCP ѫ ѯ Â

⊿

ћu ҳ ˥ ⊿

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25.1.10 ip add1(r)]TJ/C2_0 1 Tf0 Tc 0 Tr 10.5 0 0 1.02 625.9 361.520<3F55 Td<116

DHCP ┗ ⅄ ⁱ ɔ فخ سم IP فخ سم Â

ħυ ϧ ώ Â

G IP سم فخ ˘ DHCP ┗ ⅄ ˛ ڤي DHCP سم فخ è IP سم فخ Â
ħυ ϧ ⅃ Л υ ѝ ў ɖ У Ҫ IP سم فخ ˘ ȯ Ҫ سم فخ ˚ DHCP Â سم
₩ IP سم فخ ˘ ≠ ⅃ Л υ ˜ DHCP ┗ ⅄ ˚ سم فخ ă Â

w R ЛυЮ R ˘ DHCP ┗ ⅄ a ˛ ڤي 192.168.12.100~150 تن ȣ IP سم فخ Â

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

ħυ ϧ

G

DHCP ┞ ⅄ ÿ DHCP فخ سم è ڤي IP فخ سم ˘ ˛ ping ɔ فخ سم ĭ
è ў ´ ˘ ´ Ю ˘ ´ ĵ DHCP ÂPing
ɔ ѝ ч ч э ↑˘ ⅄ Л ч 10 э ↑ Â

ѡ R

ЛЮ R ˘ ping ɔ ч ↑ ѝ 3 э Â

```
ip dhcp ping packets 3
```

Ѽ Ωħυ ϩ

ħυ ϩ	
clear ip dhcp conflict	DHCP ϒ ⅄ ă Â
ip dhcp ping timeout	DHCP ┞ ⅄ ping ɔ Â جم ą̈ ping ↑ ĵ ˘ فخ سم ⅄ĵ ’ ĭ ‡ فخ سم ă Â
show ip dhcp conflict	DHCP ┞ ⅄ جمĵ فخ سم ˘ ĵ فخ سم ă Â

⅄

ħυ ϩ ϒ ⅄

Ⅵ	
-	-

25.1.12 ip dhcp ping timeout

DHCP ┞ ⅄ ping ɔ فخ سم ă ˘ ˘ ŏ̈ ħυ ϩ
ip dhcp ping timeout Â ħυ ϩ **no** ⅄ Л Â

ip dhcp ping timeout *milli-seconds*

no ip dhcp ping timeout

Ⅵ

Ⅵ	
milli-seconds	DHCP ┞ ⅄ ping ˆ Л ~ Â ⅄ ḣ تن ѝ 100ĵ 10000 Â

ѝ 500 Â

ħυ ϩ ŏ̈ Â

G ħ Ж У э ping ↑ Â

ЛЬЮ R ˘ ping ↑ ѝ 600ms Â

ip dhcp ping timeout 600

‰ ‚	
host	‰ IP ƒ‚ „ Â ¥ DHCP Â
ip dhcp excluded-address	‰ DHCP ‰ a ¦ IP ƒ‚ Â
networkˆ DHCP˜	‰ DHCP ƒ‚ „ /‹ Â

‹

‰ ‚ ‡ ‹	
-	-

25.1.14 lease

‰ DHCP ‰ ‹¦ ƒ‚ ˇ DHCP ƒ‚ ‰ ‚ **lease** Â ‰ ‚ **no** Â

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

no lease

‹	
days	‰ ˇ ‰ ‚ ´ Æ Â
hours	‰ ˇ ‰ ‚ ´ Æ Â ‰ ‰ Â
minutes	‰ ˇ ‰¦ ‚ ´ Æ Â ‰¦ ‰ Â
infinite	‰ ¸ Â

‚ ´ Â

‰ ‚	DHCP ƒ‚
G	¦ ˇ DHCP ¸ ‡ Â DHCP ‰ ‹ ¸ ï ˇ ƒ‚ ‹ a ‡ Â
‡ R	‰ 1 Â DHCP ˇ R ‰ ‰ `lease 0 1`

ЛυЮ R ˘ DHCP ѝ 1ᚴ Â

```
lease 0 0 1
```

	ip dhcp pool	ЬЖ DHCP ѫ ѣ ˘ ѽ DHCP ѫ Â

ѵ

ЬU ҷ ˥ ѵ	ѵ	
	-	-

25.1.16 netbios-node-type

ЬЖ DHCP ў NetBIOS ѻ˘ DHCP ѫ ЬU ҷ **netbios-node-type** Â ЬU ҷ **no** ѵ ЛЏ NetBIOS ѻ Â

netbios-node-type *type*

no netbios-node-type

	ѱ	
ѱ	*type*	ЬЖ NetBIOS ѻ˘ ч Â ЬЖ˘ ѭ ў 0~FF˘ ˊ Ѽ ⁸ ˘ ѫ ѵ ѵ ЛЏ Ю Ь' Â ҷ b-node' Â ҷ p-node' Â ҷ m-node' Â 8˘ ҷ h-node Â s ЬЖ' Â b-node˘ ѻ ' Â p-node˘ ѻ ' Â m-node˘ ѧ ѻ ' Â h-node˘ ѧ ѻ Â

ЬЖ NetBIOS ѻ Â

ЬU ҷ DHCP ѫ Â

G DHCP NetBIOS ѻ ѱ ' 1˜ Broadcast˘ ѻ ˘ NetBIOS ѧ ' 2˜ Peer-to-peer˘ ѻ ˘ WINS ѣ NetBIOS ѧ ' 3˜ Mixed˘ ѧ ѻ ˘ ˝I ѧ ˘ ѧ б WINS ѣ ѧ ' 4˜ Hybrid˘ ѧ ѻ ˘ ˝I WINS ѣ NetBIOS ѧ ˘ ˛ ˘ NetBIOS ѧ

Â

ϙ ЮЎ ɔ صر ϳй صر ٨ صر Â WINS Ь
ϗЎ й صر ' ϖ WINS Ь ϗЎ й ٨ صر Â NetBIOS
صر й Hybrid Â

ϖ R ЛυЮ R ˘ DHCP NetBIOS й ٨ صر Â

```
netbios-node-type h-node
```

	ѫ ѯ ѣ è ѣ˘ ЮУ э ѫ ѯ˘ ѝ ѝ У э ѫ ѯ Â ѫ ѯ ѝ ą ≤ **show ip dhcp binding** ћu ҳ ˘ ѫ ѯ ă ą ≤ **show ip dhcp conflict** ћu ҳ Â
ѡ R	ЛuЮ R ˘ ЊЖ ѫ DHCP ѫ ѯ /≤ и 192.168.12.0˝ и 255.255.255.240 Â `network 192.168.12.0 255.255.255.240`

ˇΩћu ҳ

ћu ҳ	
ip dhcp excluded-address	ЊЖ DHCP Ь ы a ѝ IP ѫ ѯ Â
ip dhcp pool	ЊЖ DHCP ѫ ѯ ≤ ˘ ώ DHCP ѫ ѯ Â

≤

ћu ҳ ˥ ≤

/≤	
-	-

25.1.18 next-server

ЊЖ DHCP ů ╠ è ů ╠ Ь ы " ˘ DHCP ѫ ѯ ћu ҳ **next-server** Â ћu ҳ **no** ≤ Лu ů ╠ Ь ы " ЊЖ Â

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

no next-server

^≤

^≤	
ip-address	ЊЖ ů ╠ Ь ы IP ѫ ѯ˘ и TFTP Ь ы Â У э Â
ip-address2...ip-address8	^ ≤ ~ ≤ Лu 8 ů ╠ Ь ы Â

Â

ћu ҳ DHCP ѫ ѯ Â

G ЊЖ э ů ╠ Ь ы ˘ ђ ѣ ѭ ¸ ¨≤ ˘ DHCP ≤ б ѣ ѭ ů ╠ Ь ы ˘ ¸ ЮУ э ů ╠ Ь ы Â

ϣ R

ЛЬЮ R ˘ ѝ DHCP ϖ ΰ ╟ Ь ϰ 192.168.12.4 Â

```
next-server 192.168.12.4
```

Ώħυ ϡ

ħυ ϡ	
bootfile	ѭ DHCP ΰ ╟ ę ˚ ɻ Â
ip dhcp pool	ѭ DHCP ϝϧϫ ɻ ˘ ώ DHCP ϝϧϫ Â
ip help-address	∧ ѭ Helper ϝϧϫ Â
option	RGOS ˚ DHCP

ى ،

≠ ѝ У э Â ˜Ω ¥ ℘ DHCP option Ћ˝ ∙ RFC 2131 Â

R 1' ЛЬЮ R ˘ Ҳ 19 ¢ Ћ˝ ā ¢ DHCP ї ў
IP ↑ ∙ Â 0 ˜Ω IP ↑ ∙' 1 ў IP ↑ ∙ Â ЛЬЮ ˘ G DHCP

ѡ R

æ Ҿ ң ҏ Э ӌ DHCP ҵ Ո è ы ҵ ă ˘ é е ҔΩ ң ҏ
˘ Л ӏ ą Â

ѡ R ЛЮ R ˘ ў ҭ DHCP Ь Ӆ Ո è Â
service dhcp

Ҕћu ҳ

ћu ҳ	
show ip dhcp server statistics	DHCP Ь Ӆ ӌ ą Â

ӌ

ћu ҳ ҁ ӌ

ӈ	
-	-

25.2

25.2.1 clear ip dhcp binding

DHCP ˘ æ **clear ip dhcp binding ҽlear ip dhc(bidn)6ding**

	show ip dhcp binding	DHCP ┣ ⅄ ѕнοѡ Â

⅄ǀ

ħu ҳ ㄱ ⅄ǀ

⅄ǀ	
-	-

25.2.2 clear ip dhcp conflict

DHCP ă ˘ ѓ **clear ip dhcp conflict** ħu ҳ Â

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

⅄ǀ

⅄ǀ	
*	╗ DCHP ѕнοѡ ă Â
ip-address	╗ IP ѕнοѡ ă Â

ѝ Â

ħu ҳ Â

G DHCP ┣ ⅄ ѕнοѡ ă ping˛ ˘ DHCP ѕнοѡ ă ѕнοѡ ˜ ^ ARP˜ Â **clear ip dhcp conflict** ⅃ Л╗ ㄱ ⅄ ă Â

ѡ R ЛυЮ R ˘ ѿ ѕнοѡ ă Â

```
clear ip dhcp conflict *
```

ˇΩħu ҳ

ħu ҳ	
ip dhcp ping packets	₩ DHCP ┣ ⅄ ѓ╡ ѕнοѡ ˘ ѕнοѡ ă ping ɔ ⅃ ↑ ɜ Â
show ip dhcp conflict	DHCP ┣ ⅄ ѓ╡ ѕнοѡ ˘ ╡ ѕнοѡ ă Â

⅄ǀ

ħu ҳ ㄱ ⅄ǀ

⅄ǀ	
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25.2.3 clear ip dhcp server statistics

Æ DHCP ┺ ⅄ ⅄˘ ج è **clear ip dhcp server statistics** ħυ ҂ Â

clear ip dhcp server statistics

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-	-

ѝ Â

ħυ ҂

DHCP ┺ ⅄ ˘ ҏ DHCP فخسه à ╟ à ˘

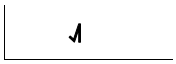
Ђu ҙ	Â
G	Ђu ҙ ¥ dhcp client ₼ ¥ Ь Ж Ӈ ц è ў ¤ ˘ Лu ч Â
ѡ R	ЛuЮ R ˘ Э dhcp ˜Ω Â debug ip dhcp client

˜ΩЂu ҙ		
Ђu ҙ		
-	-	

ѧ		
Ђu ҙ ˥ ѧ	ѧ	
-	-	

25.2.5 debug ip dhcp server

DHCP Server ˘ ₼ ˊl



	-	-

25.2.7 show ip dhcp binding

DHCP ϩ فخ سم ϙ˘ EXEC ħυ ϟ **show ip dhcp binding** Â

show ip dhcp binding [*ip-address*]

ϟ		
ϟ	*ip-address*	ˆ ˩ ˜ ϟ IP ϩ فخ سم ϙ Â
	ϳ Â	
ħυ ϟ	Â	
G	⊬ IP ϩ فخ سم˘ ϩ فخ سم ϙ Â ⊬ ϖ IP ϩ فخ سم˘ ϟ IP ϩ فخ سم ϙ Â	

ЛЬЮ ϳ **show ip dhcp binding** Â

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

ϰ Ϋ ⊬ ЮÂ

ѠR		
	IP address	ϯ DHCP IP ϩ فخ سم Â
	Client-Id/Hardware address	DHCP client identifier ˚ ϩ فخ سم
	Lease expiration	ϯ ÂInfinite ϐ' IDLE ϰϩ ϩ فخ سم˘ ϰϩ Ν ϱϲ ˩ DHCP ў ╠ Â
	Type	ϩ فخ سم ϶ Â Automatic ╠ϯ ' Manual ϯ Â

ΫΩħυ ϟ		
	clear ip dhcp binding	DHCP ϩ فخ سم

ϰ

ħυ ϗ ϒ ϡ		
	⁄⁄	
	-	-

25.2.8 show ip dhcp conflict

DHCP ᴸ ϰ ă ˘ EXEC ħυ ϗ **show ip dhcp conflict** Â

show ip dhcp conflict

⁄⁄		
	⁄⁄	
	-	-

	϶ Â
ħυ ϗ	
G	ħυ ϗ ϡ ΛυΟ DHCP ᴸ ϰ ↑ ă ѕ ف " ∩ ѕ ف " Â

w R	ΛυΟ ϶ **show ip dhcp conflict** ħυ ϗ Â
	`Ruijie# show ip dhcp conflict`
	`IP address Detection Method`
	`192.168.12.1 Ping`
	`dhcpd excluded ipaddress`
	`192.168.12.100`
	ϡ ΰ ΟΟ ΗΟ Â

IP address	a ϡ↑ DHCP IP ѕ ف Â
Detection Method	ă Â
dhcpd excluded ipaddress	ѕ ف ت Â

ΈΩħυ ϗ	ħυ ϗ	
	clear ip dhcp confict	DHCP ă

ϡ

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	⁄⁄	
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25.2.9 show ip dhcp server statistics

DHCP Ŀ ⅄ ⊀ ˘ EXEC ħυ ҳ **show ip dhcp server statistics** Â

show ip dhcp server statistics

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ὴ Â

ħυ ҳ

G ħυ ҳ ⊣ Л∪ DHCP Ŀ ⅄ ṁ ⊀ Â

Л∪Ю ὴ **show ip dhcp server statistics** ħυ ҳ 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
```

w R

⊀ ΰ Ⱨ Ю Â

Manual bindings	ف سم Â
Expired bindings	ف سم Â
Malformed messages	DHCP ↓↑ a Â
Message Received or Sent	DHCP ⊢ ⊻ ∩ ↓ Â

Ю Ч

clear ip dhcp server statistics	╕ DHCP ⊢ ⊿ Â

⊿

Ю Ч ┐ ⊿

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26 DHCP Relay

26.1

26.1.1 ip dhcp relay check server-id

DHCP Relay check server-id ╖ ˘ ┘Ʊ ᴳ ħυ ϗ Â ᴳ ħυ ϗ no
ʿΩ DHCP Relay check server-id ╖ Â

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

┤	
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ʿΩ

ħυ ϗ ѽ

ħυ ϗ˘ DHCP Relay ₰ ┘ DHCP option server-id
ᴳ ┘ DHCP ┣ ⅄ Â ħυ ϗ˘ ‡ ┘ DHCP ┣ ⅄ ┘ DHCP

DHCP Relay option dot1x ╖ ˘ ˩ Л υ G ħυ ϡ Â G ħυ ϡ no ˜Ω ╖ Â

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

ϒ	
-	-

˜Ω

ħυ ϡ ώ

G ħυ ϡ ″l DHCP è ╖ ˘ ϒ ϒ 802.1x ˜Ω Â

ЛυЮ R ˘ ح DHCP è Э option dot1x ╖ Â

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

ħυ ϡ	
service dhcp	DHCP è
ip dhcp relay information option dot1x access-group *acl-name*	option dot1x acl

˜Ωħυ ϡ

ϡ

ϱ
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ħυ ϡ ˥ ˩

26.1.3 ip dhcp relay information option dot1x access-group

DHCP Relay option dot1x ˜Ω ACL˘ ˩ Л υ G ħυ ϡ Â G ħυ ϡ no ĩ DHCP Relay option dot1x ˜Ω ACL Â

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

ϒ	
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a ˜Ω ACL

ħu ϡ ώ

G ħu ϡ ACL б ϰ Э ACL ACE a ϟ ح ŏ Â

ЛυЮ R ˘ 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
// ĭ ϟ ˜Ω
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
// ĭ IP سف ϧ ˜Ω
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
//  ц
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
```

W R

˜Ωħu ϡ

ħu ϡ	
service dhcp	DHCP è

	ip dhcp relay information option dot1x	DHCP option dot1x ╖

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26.1.4 ip dhcp relay information option82

DHCP Relay option82 ╖ ˘ ⊿ Л υ G ħu ҳ Â G ħu ҳ no ˝Ω ╖ Â

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

⅂	⅂	
	-	-

	˝Ω
ħu ҳ	ŏ̈
G	╖ б option dot1x ╖ ц ˘ a ⊿ ⊿ Â
ш R	ЛυЮ R ˘ ⁂ DHCP è Э˘ ů opion82 ╖ ' Ruijie# **configure terminal** Ruijie(config)# **Ip dhcp relay information option82**

˝Ωħu ҳ	ħu ҳ	
	Service dhcp	DHCP è ҳ
	ip dhcp relay information option dot1x	DHCP option dot1x ╖

⊿

ħu ҳ ⅂ ⊿		
	⁄⁄	
	-	-

26.1.5 ip dhcp relay information option vpn

DHCP Relay DHCP Relay Aware VRF ╖ ˘ ┘ЛЬ G ħυ ϡ Â
G ħυ ϡ no ϗΩ ╖ Â

ϟ

ЛυЮ R ˘ ч э Ł ⅄ ѫ ѭ ѣ'
1¨ ѽ Ł ⅄ 192.168.1.1'
2· ѫ ѱ vrf R ѝ dep1 Ł ⅄ 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
```

ħυ ϗ	
service dhcp	DHCP è Â

/ſ		
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26.1.8 service dhcp

æ Ꮋ Э ŭ DHCP è ╖ ˘ ⅃ Лυ G ħυ ϗ Â ħυ ϗ no ˜Ω ╖ Â

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

ſ/	
-	-

˜Ω

ħυ ϗ ѽ

G DHCP è ╖ ⅃ Лυ DHCP ⅃ DHCP Ł ⅄˘ DHCP ⁝ ⅃ DHCP ˘ DHCP è ɔ Â

ЛυЮ R ˘ ŭ DHCP è ╖ Â

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

ħυ ϗ	
ip helper-address [**vrf**] *A.B.C.D*	╖ У э DHCP Ł ⅄ ѫ ѭ ѣ

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ħu ३ ไ ฝ	ศ	
	-	-

27 DNS

27.1

27.1.1 ip domain-lookup

ů ╠ DNS Â G ħu ҳ no ‡ Ω DNS ╖

ip domain-lookup

no ip domain-lookup

¶	
-	-

ą й DNS ╖ Â

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

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

	ip-address	IP
	ipv6-address	IPV6

Â

Â

DNS Server IP/IPv6 Â DNS Server Â Server DNS Server Â

6 DNS Server ip-address ipv6-address DNS Â

```
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 Â

-	-

ip-address	IP

no ip host host-name ip-address

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

show hosts	DNS

-	-

27.1.4 ipv6 host

IPV6

Ipv6 host *host-name ipv6-address*

no ipv6 host *host-name ipv6-address*

host-name	
Ipv6-address	IPV6

no ipv6 host host-name ipv6-address

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

27.2.2 show hosts

DNS

show hosts [*hostname*]

	-	-

G DNS

```
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

-	-

28 SNTP

28.1

28.1.1 sntp enable

ħυ ϡ SNTP ╖ ˘ G ħυ ϡ è **no** ϳ ή—Disable Â

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

ϰ	
-	-

SNTP Disable

ħυ ϡ ώ

G G **show sntp** ħυ ϡ SNTP ΈΩ ϰ

ψ R `Ruijie(config)# sntp enable`

ΈΩħυ ϡ	ħυ ϡ	
	show sntp	SNTP
	clock update-calendar	˚ ɻ ˚
	clock set	˚

ɻ ˚ RGOS10.0 ΛυЭ

ħυ ϡ ϒ ɻ	ΛΙ	
	-	-

28.1.2 sntp interval

ħυ ϡ SNTP Client Ո NTP/SNTP Server ɻ Â

sntp interval *seconds*

ħυ ϡ	ώ
G	G **show sntp** ħυ ϡ SNTP ΈΩ ϰ
ψ R	Ruijie(config)# **sntp server** *192.168.4.12*

ΈΩħυ ϡ	**ħυ ϡ**	
	show sntp	SNTP
	sntp enable	SNTP

ϰ	˚ RGOS10.0 ΛυЭ	

ħυ ϡ ϒ ϰ	**ϰ**	
	-	-

28.2

б ↑ ΛυЮħυ ϡ'

Â show sntp

28.2.1 show sntp

ħυ ϡ SNTP ΈΩ ϰ Â

ϰ	**ϰ**	
	-	-

ħυ ϡ	
G	G **show sntp** ħυ ϡ SNTP ΈΩ ϰ
ψ R	Ruijie# **show sntp** SNTP state : Enable SNTP server : 192.168.4.12

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

ħυ ३	
sntp enable	SNTP
show sntp	SNTP ˜Ω ٧

RGOS10.0 Л Э

/١	
-	-

29 NTP

29.1 NTP

29.1.1 no ntp

ʹΩ ntp ⊿ Ⴑˇ ṃ б Ⴑ⅄ ⊿ ˇ ntp ạ Â

no ntp

٩	٩	
	-	-

	ąЮ NTP Ⴑ ʹΩ Â
ћu ҳ	ѿ Â
G	ⱬ ąЮ̋ NTP ╖ ʹΩ ˇ Л ⊿ ѽ NTP Ⴑ⅄ NTP ѿ ⋮ ⁸ˇ NTP ╖ ˬ Â
ѡ R	ЛυЮ R ˇ ʹΩ ѽ NTP Ⴑ Â no ntp

ʹΩћu ҳ	**ћu ҳ**	
	ntp server	У э NTP Ⴑ⅄

⊿

ћu ҳ ٦ ⊿	/١	
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29.1.2 ntp access-group

NTP Ⴑ ⁸ ˇ ћu ҳ 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*

ϥ

ϥ	
peer	ĭ ѫ NTP Ь Ո ⁸ ˘ ≠ ĭ ѫ б ل ^ ŏ ~ Â
serve	ĭ ѫ NTP Ь Ո ⁸ ˘ т a ĭ ѫ б ل Â
serve-only	Θ ĭ ѫ NTP Ь Â
query-only	Θ ĭ ѫ NTP Ь ⁸ Â
access-list-number	IP ⁸ " /l’ تن ѝ 1˙ 99 Ո 1300˙ 1999
access-list-name	IP ⁸ " ل Â

ϙ Ю ˙ ¡ NTP ⁸ ‡ Â

ħυ ϛ ŏ Â

ѫ NTP Ь ⁸ Â ᵏ ϖ У ŏ ˘ ŏ ᴳ NTP ` ⁸ Â

У э ∫ ˘ NTP Ь ÿ ⁸∫ ⁸ ŋ ϧ ‡˘ Л У э ϧ ∫ ‡ ѝ ђ Â ϧ ѝ peer à serve à serve-only à query-only Â

G

~	ɱ ⁸ ₸ Â Э ‡ ϧ ˘ т ϟ∫ б ⁸ ˜Ω Â

˙ ¡ ⁸ ‡˘ ‡ ĭ Â т У ϖ ⁸ ‡˘ ‡ Θ ‡ è ĭ Â

ѡ ᴿ

ЛυЮ ¡ ĭ 1 /l " è ѫ à ⁸ Ո ل ’ ⁸ 2 /l " è Θ ѫ Â

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

˜Ωħυ ϛ

ħυ ϛ	
ip access-list	… IP ⁸ " Â

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Ђυ ҳ ˥ ˩	/ſ	
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29.1.3 ntp authenticate

NTP Ł G NTP ŏ 8 Â

ntp authenticate

no ntp authenticate

˥	˥	
	-	-

	ą ЮO NTP ŏ 8 ˜Ω Â
Ђυ ҳ	ŏ Â

G ŏ ŏ ⋮ 8˘ ‡ a ˩ ą ╗ Â ŏ ŏ ⋮ 8˘

G ˩ è ы ŏ ˘ ˩ ˩ ¥ Ł ˩ ╗ ą Â

ñ **ntp authentication-key** à **ntp trusted-key** ą˙ Â

ѝ NTP Ь У э ѻ NTP Â

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

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

↰	
key-id	ID’
key-string	s’
enc-type	^ ˩ ~ ї ╗ ˇ 0 ╗ ˇ 7 ´ ╗ ’

Â

ћu ҙ ѻ Â

G ѻ ˇ md5 ╗ ˇ э У э ҷ У key-id ˇ ˩ Л **ntp trusted-key** key-id ѝ ѻ ą̇ Â Э ѝ 1024 э˘ л э Ь Ы Θ Θ У э Â

ѡ R ЛЮ R У э ID ѝ 6

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

ћu ҙ	
ntp authenticate	ѻ ѻ ⁞ 8
ntp trusted-key	ѻ ą̇
ntp server	У э NTP Ь Ы

˄

ћu ҙ ˥ ˄	
-	-

29.1.5 ntp disable

Ѓ ˄ NTP ╗ Â

ntp disable

↰	**↰**	

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	ϙ Ю ∧ ⅃ Л ⅃ NTP Â
ħu ϗ	∧ Â
G	ج ϙ Ю ˙ ∧ Э ⅃ NTP ⅃ Л k ˘ э ℸ ˘ ⅃ Л ∧ Э ⁞ NTP Â
	~ ⅃ ∧ IP ⅂ ∧˘ ج è Ы ∧ Э ħu ϗ Â
w R	ЛЮ R ˘ ℨ Ω ∧ NTP Â no ntp

ℨ Ωħu ϗ		
-	-	

⅃		
ħu ϗ ℸ ⅃	**//**	
	-	-

29.1.6 ntp master

ѕѕ ɔ й NTP ў ^ ѕѕ ∧ ⅃ ~ ˘ й è k ⅃ Â ħu ϗ
no й ⅃ NTP ў Â

ntp master *[stratum]*

no ntp master

∧		
	stratum	ѕѕ ˘ ىت й 1˙ 15ʼ a ∧ ‡ ḣ й 8 Â

	a NTP ў ℸ Â
ħu ϗ	ŏ Â

ƫu ɝ ѽ Â

G

æ ╟ ⊿ ˘ . ⊿ ˘ ‡ ⊿ Лu G ћu ҳ Â

w R ЛuЮ R ˘ NTP ⊿ Â

```
Ntp synchronize
```

ЎЭћu ҳ

ћu ҳ	
ntp server	У э NTP Ь Ы ⊿

⊿

ћu ҳ ˥ ⊿

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29.1.9 ntp trusted-key

У э ID й ѽ ą̇

ntp trusted-key *key-id*

no ntp trusted-key *key-id*

⁄⁄

⁄⁄	
key-id	ѽ ą̇ ID Â

ąЮ ą̇ Â

ћu ҳ ѽ Â

G æ NTP ⁄ ⊿ ą̇ ˘ ID ˘ a·
˘ Лu ѽ '

w R ЛuЮ У э ˘ й Ь Ы ą̇ Â

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

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[redacted]

[redacted]

[redacted]

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G NTP Ь ˘ ґґ NTP ə ˘ ₴ У ₹Ӏ ⊿ Ь Ы Ӡ ґґ ћu ҳ a˛ . ˙ ! ə Â

w R ЛυЮ R ˘ ґґ NTP ə Â

```
show ntp status
```

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30 FTP Server

30.1

30.1.1 debug ftpserver

FTP ┞ ⅄ ə ˘ G ħu ϡ no ˝Ω ə Â

debug ftpserver

no debug ftpserver

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	ϰ	
	-	-
	˝Ω ə Â	
ħu ϡ	Â	
G	G **debug ftpserver** ħu ϡ ϟ ЛυѼ FTP ┞ ⅄ è ə Â	
w R	R 1' ЛυЮ ¦ ┞ ⅄ ə ' 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. R 2' ЛυЮ ¦ ˝Ω ┞ ⅄ ə ' Ruijie# **no debug ftpserver**	
˝Ωħu ϡ	ħu ϡ	
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ħu ϡ ˥ ϟ	ϟ	

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

no ftp-server password

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type	⊮ ╗ ر' 0 7 Â0 ३ ╗ ˆ ~ ' 7 ३ ᶣ ╗ Â

30.1.4 ftp-server topdir

8 FTP

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FTP Ŀ ɣ ˜Ω ə ˘ ↑ '

Â Ŀ ɣ ĭ ů ╟

Â ĭ ⁸ ˆ ˜Ω IP à Port˜

Â ĭ ˆ ў ╟ ╟ ˘ Ʌu ϟ ˜Ω IP à Port˜

Â ɱ ˚ · ص

Â Ŀ ɣ ɻ à ˆ Θ ˜

Â Ŀ ɣ

Â ˚

ɅuЮ ¦ FTP Ŀ ɣ ˜Ω ə '

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

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31 UDP-Helper

31.1

31.1.1 ip forward-protocol

UDP UDP **no** UDP

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

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

"

w R

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

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udp-helper enable	G ɻ UDP
ip forward-protocol	è ɻ UDP ʌ

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hu ɻ ɱ Θ ج RGOS10.1 Э Â

hu ɻ ˥ ʌ

ʌ	
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31.1.2 ip helper-address

UDP è ɻ ⊧ ʞ Â G no ɻ UDP è ɻ ⊧ ʞ Â

ip helper-address *address*

no ip helper-address *address*

ʌ

ʌ	
address	UDP è ɻ ⊧ ʞ˘ й ɻ ⌐ 8 ˘ э ʌ 20 э ⊧ ʞ سم فخ Â

UDP è ɻ ⊧ ʞ

hu ɻ ʌ

G

ɻ Л υ й э ʌ 20 э ⊧ ʞ Â è ɻ ⊧ ʞ ج ʌ Э , ‡ ج ŭ ╟ ¢ UDP-Helper ╖ л˘ ÿ ʌ UDP ʌ ˘ Л υ ´ ɻ ɻ ʌ Э ⊧ ʞ Э Â

G **no ip helper-address** ɻ ɻ ɻ ⊧ ʞ Â

w R

Ю R UDP è ɻ ⊧ ʞ :

RGOS10.1 Â

SNMP ħu ३

no snmp

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	" ۸ ˘ ۷ Ո ᴳ Â

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G	" ۸˘ Ո ғ ⋮ Â " ۸ ۷ Ո
w ᴿ	" ۸ ѝ 123456: **ver chassis-id** *123456*

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		SNMP ə

۷

aclnumber	" " /ˆ 1-99˜ ˘ ˜Ω " ˘ MIB ipv4 NMS فخ سه تن Â
aclname	" ɻ ˘ ˜Ω " ˘ MIB ipv4 NMS فخ سه تن Â
ipv6_aclname	ipv6 " ɻ ˘ ˜Ω " ˘ MIB ipv6 NM8&@IaG&D@FWÃg&D9Ia5hF'"CRU_)gi H5%U

SNMP ħu ३

G Ђu ҙ б ŏ Ђu ҙ **snmp-server host** У G ˇ ˩ Â

w R Ю R ŭ ў ╟ ˩ SNMP Y ˚ '

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

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snmp-server host	SNMP ў

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Ђu ҙ ˥ ˄

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32.1.6 snmp-server group

SNMP ˇ ŏ Ђu ҙ **snmp-server group** Â Ђu ҙ no ĩ Â

snmp-server group *groupname* {**v1** | **v2c** | **v3** {**auth** | **noauth** | **priv**}} [**read** *readview*][**write** *writeview*] [**access** {[ipv6 ipv6_aclname] [aclnum | aclname]num | name}]

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

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˄	
v1	**v2c** |**v3**	SNMP Â
auth	. п a ɖ ˇ ˩ v3 Â
noauth	. a ≠ a ɖ ˇ ˩ v3 Â
priv	. ˫ · ɖ ˇ ˩ v3 Â
readview	ЎΩ У ə ˩ في Â
writeview	ЎΩ У ə ĮЎ في Â
aclnum	" " ˄ˇ ЎΩ " ˇ MIB ipv4 NMS فخ سم تن Â
aclname	" ˫ ˇ ЎΩ " ˇ MIB ipv4 NMS فخ سم تن Â

ipv6_aclname	ipv6 " ˇ ˜Ω " ˇ MIB ipv6 NMS فخ سم تن Â

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G	
w R	Ю R У э ə ' Ruijie(config)# **snmp-server location** start-technology-city 4F of A Buliding

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	snmp-sever contact	SNMP

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ħu ҳ ˥ ⁄	/ł	
	-	-

32.1.9 snmp-server packetsiz

8 SNMP ↑ ˘ ŏ ħu ҳ **snmp-sever packetsize** Â ħu ҳ no ḣ Â

snmp-server packetsize *byte-count*

no snmp-server packetsize

˥	˥	
	byte-count	↑ ˘ ÿ 484 ∫ 17876 Â

	1500

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G	
w R	Ю R SNMP ↑ ŕ 1492' Ruijie(config)# **snmp-server packetsize** *1492*

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	snmp-server queue-length	SNMP "

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32.1.10 snmp-server queue-length

" ˘ ώ ħυ ϗ **snmp-server queue-length** Â

snmp-server queue-length *length*

ϡ	ϡ	
	length	" ˘ ÿ 1↑ 1000 Â

10

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ŭ SNMP ˘ ώ ħυ ϡ **snmp-server system-shutdown** Â
ħυ ϡ no ˬ ˜Ω SNMP ˥ Â

snmp-server system-shutdown

no snmp-server system-shutdown

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˜Ω SNMP ˥

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G ħυ ϡ ŭ SNMP ˥ ˘ RGOS ˛ ϧ reload/reboot ΛυϞ NMS
ˬ Â

ϣ R ŭ SNMP ˥ '

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

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32.1.12 snmp-server trap-source

SNMP ϡϭ˘ ώ ħυ ϡ **snmp-server trap-source** Â ħυ ϡ no
Â

snmp-server trap-source *interface*

no snmp-server trap-source

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interface	ɣ ɔ ϳ SNMP ϡϭ ˄

SNMP ÿ ف ə ˄ ˬ˘ G ف ə ˄ IP ϡϭ ɔ ϳ ϡϭ Â

ћu ҙ	ŏ
G	ąЮ˘ SNMP ÿ ф э ^ ⊻˘ G ф э ^ IP ѕ ф ƨ й ѕ ˘ й ѡ ғ ұ Ո ⋮˘ ⊣ Л G ћu ҙ ѕ G У э ѕ IP ѕ ф ƨ й SNMP ѕ ф Â
w R	Ю R Л ^ 0 IP ѕ ф ƨ й SNMP ѕ ф' `Ruijie(config)# snmp-server trap-source fastethernet 0`

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ћu ҙ	
snmp-server enable traps	ŭ ў ╟ ⊣
snmp-server enable host	NMS ў

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32.1.13 snmp-server trap-timeout

Ћ Ѫ ⊣ ˘ ŏ ћu ҙ **snmp-server trap-timeout** Â ћu ҙ no ḣ Â

snmp-server trap-timeout *seconds*

no snmp-server trap-timeout

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seconds	˘ ´ Æ й ˘ ⊣ ḣ ѕ' 1 – 1000 Â

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w R Ю R й 60 '

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

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

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Ъu ъ ї ѕ	ѕ	
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32.1.14 snmp-server user

SNMP ˘ ώ Ъu ъ **snmp-server user** Â Ъu ъ no ї Â

snmp-server user *username groupname* {**v1** | **v2** | **v3** [**encrypted**] [**auth** {**md5** | **sha**} *auth-password*] [priv des56 priv-password]}[access {[ipv6 ipv6_aclname] [aclnum | aclname]}]

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

ѓ	ѓ	
	username	ѕ Â
	groupname	ѕ
	v1	**v2**	**v3**	SNMP Â ѓ v3 ѕ ώ ѓ Â
	encrypted	ώ ќ ώ Â ў ‡ ˘ Л ώ Â ф Л ώ ˘ ‡ ώ 16 8 Â G MD5 ќ 16 ˘ SHA ~ ќ 20 Â Л ч э У э Â ╗ Ѳ Â
	auth	ў G Â
	md5	G MD5 ~ Â**sha** G SHA ~ Â
	auth-password	~ G ѓ ъ ŝ a 32 э ~ Â Ѳ ѓ ъ Â
	priv	ў G ф Â**des56** G 56 Æ DES ╗ ~ Â
	priv-password	ќ ╗ ѓ ъ sˆ a 32 э ~ Â э ѓ ъ ╗ Â

	У э default ق ï MIB Â
ћu ҳ	ѽ
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ѡ R	Ю R У э ق ↑ MIB-2 ^ oid ѝ 1.3.6.1˜ ' Ruijie(config)# **snmp-server view** *mib2 1.3.6.1* **include**

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	ћu ҳ	
	show snmp view	SNMP ق ə

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32.1.16 snmp trap link-status

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32.2

32.2.1 show snmp

SNMP ə ˘ ћu ҳ **show snmp** Â

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

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G	**show snmp** ћu ҳ SNMP ˜Ω ə '

show snmp mib è snmp mib ə ’

show snmp user snmp ə ’

show snmp view snmp ي ə ’

show snmp group snmp ə ’

show snmp host ə ’

Ю R SNMP У э ə '

```
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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snmp-server *chassis-id*	SNMP " /I

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33.1.2 rmon collection history

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

no rmon collection history *index*

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ɯ R Ruijie(config)# **rmon event**

```
Event type : log-and-trap
Community : public
Last time sent : 0d:0h:0m:0s
Owner : zhangsan
Log : 1
Log time : 0d:0h:37m:47s
Log description : ipttl
Log : 2
Log time : 0d:0h:38m:56s
Log description : ipttl
```

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rmon alarm

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```
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
```

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‴Ωħυ ३	**rmon event** *number* [**log**] [

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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

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rmon collection history *index* [**owner** *ownername*] [**buckets** *bucket-number*] [**interval** *seconds*]	╗ У э ℸ ɻ 8

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ЛЬЮ R ˘ ə '
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

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rmon collection stats *index* [**owner** *owner-string*]	╗ У э

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34 DHCPv6 Client

34.1

34.1.1 ipv6 dhcp client pd

ج ٨ Ɔ ŭ DHCPv6 client ىسفخ ŋή ə ˘ G **ipv6 dhcp client pd** ħυ ҳ Â G ħυ ҳ **no** ˜Ω ىسفخ ŋή Â

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

no ipv6 dhcp client pd

no

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34.2

34.2.1 clear ipv6 dhcp client

ج ʌ Э ŭ DHCPv6 ˇ G **clear ipv6 dhcp client** ћu ҙ Â

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

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	interface-type interface-number	ʌ صՈ
ћu ҙ		
G	**clear ipv6 dhcp client** ћu ҙ ج ʌ Э ŭ DHCPv6 Ꮅ ˇ ˛ ˩ Ꮅ ˫ ą Â	
W R	ЛuЮ ŭ DHCPv6 R '	
	Ruijie# **clear ipv6 dhcp client vlan 1**	

35 DHCPv6 Relay Agent

35.1

35.1.1 ipv6 dhcp relay destination

э ʌ DHCPv6 Relay ╖ فخ سم ┤ فخ سم ʌ Â ƕ ʇ
no ˜Ω ʌ Relay Agent ╖ ī فخ سم Â

ipv6 dhcp relay destination *ipv6-address [interface-type interface-number]*

no ipv6 dhcp relay destination *ipv6-address [interface-type interface-number]*

ʌ

ʌ	
ipv6-address	Relay Agent فخ سم
interface-type	ˆ ʌ صˆ ˩ ˜
interface-number	ˆ ʌ ʃˆ ˩ ˜

ƕ ʇ ʌ

G

ŭ Dhcpv6 Relay ╖ ʌ ˆ DHCPv6
ʌˆ ˩ ˜ ˩ فخ سمˆ э فخ سم˘ ‡ ˩ ˩ ` Â˜

	Õ DHCPv6 Relay Destination ƕ ʇ ʌ جم Ь ʌ Э ŭ
~	Õ У ʃ ï ˩ э Relay Agent Destinatioñ 20 э ˜
	Õ Destination فخ سم Ą˘ ʃ ʌ ʃ

w R

```
# ʌ Interface VLAN 1 Э ŭ DHCPv6 Relay Ь ˩ فخ سم й 3001::2
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#interface vlan 1
Ruijie(config-if)#ipv6 dhcp relay destination 3001::2
Ruijie(config-if)#end
```

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

	10.4	

35.2

35.2.1 show ipv6 dhcp relay destination

DHCPv6 Relay Agent G

show ipv6 dhcp relay destination

	all	
	interface *interface-type interface-number*	

	Relay Agent Relay DHCPv6

R 1' ⁄ń Relay Â

```
Ruijie# show ipv6 dhcp relay destination all
Interface: Vlan1  //  Relay
Destination address(es)                    Output Interface
3001::2
FF02::1:2                                  Vlan2
//                                         //
```

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10.4		

35.2.2 show ipv6 dhcp relay statistics

show ipv6 dhcp relay statistics

-	-

	DHCPv6 Relay Agent

```
Ruijie# show ipv6 dhcp relay statistics
Packets dropped             : 2      //x
   Error                  : 2      //       x
   Excess of rate limit     : 0    //            ┌x
Packets received            : 28   //      DHCPv6 ~
   SOLICIT                : 0
   REQUEST                : 0
   CONFIRM                : 0
   RENEW                  : 0
   REBIND                 : 0
   RELEASE                : 0
   DECLINE                : 0
```

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

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	clear ipv6 dhcp relay statistics	ḣ

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	10.4	hu ȝ

35.2.3 clear ipv6 dhcp relay statistics

ɱ ŭ DHCPv6 Relay ╖ ȷ ȷ ˩ ɑ ˘ G hu ȝ'

clear ipv6 dhcp relay statistics

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G	hu ȝ ˩ ɲ ɲu ɱ DHCPv6 Relay ƒΩ ȷ ˩ ɑ Â
w R	DHCPv6 Relay Agent ą hu ȝ w R^ hu ȝ ȷ˘ ḣ ˘ ˩ ɲu ⎡ ḣ ÿ 0 ~ '

```
Ruijie#clear ipv6 dhcp relay statistics
```

ƒΩhu ȝ	hu ȝ	
	show ipv6 dhcp relay statistics	ḣ

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36 IPFIX

36.1 IPFIX

36.1.1 cache

ѫ IPFIX ѧ Ю, G **cache** ƫ ǯ ѝ ҧ ѧ ѯ ٩ Â G
ƫ ǯ no ٩ ĥ Â

cache {**entries** number | **timeout** {**active** minutes | **inactive** seconds}}

no cache {**entries** | **timeout** {**active** | **inactive**}}

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entries *number*	ѧ è ї . ѯ Л ѝ 1024 ĵ 131072.
timeout	ѧ ע ٩ ˘ ĵ ѝ Ո ע Â
active *minutes*	ע ˘ У э ѫ ĵ ѯ ҧ ˘ ѯ Л ѫ ѧ è ѯ Л ѧ ˘ ´ Æ ѝ ĵ ˘ ن ѝ 1 60

```
Ruijie(config-flow-cache)# cache timeout active 45
Ruijie(config-flow-cache)# enabled
```

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show ip flow cache	ў ЮО ɱ٨ è ٹ Â
show ip flow cache aggregation	٨ ٹ Â

٨

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36.1.2 cache-timeout

top-talker ɖ Â

cache-timeout *milliseconds*

no cache-timeout

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milliseconds	top-talker ɖ ˘ ںت 1 ~ 3,600,000 1 ˚ 1 ~ Â

' 5,000ms

ƕ ٦ top-talker

G

w R ЮО R ¦ top-talker ɖ Â

```
Ruijie(config-flow-top-talkers)#cache-timeout 300
```

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enabled

no enabled

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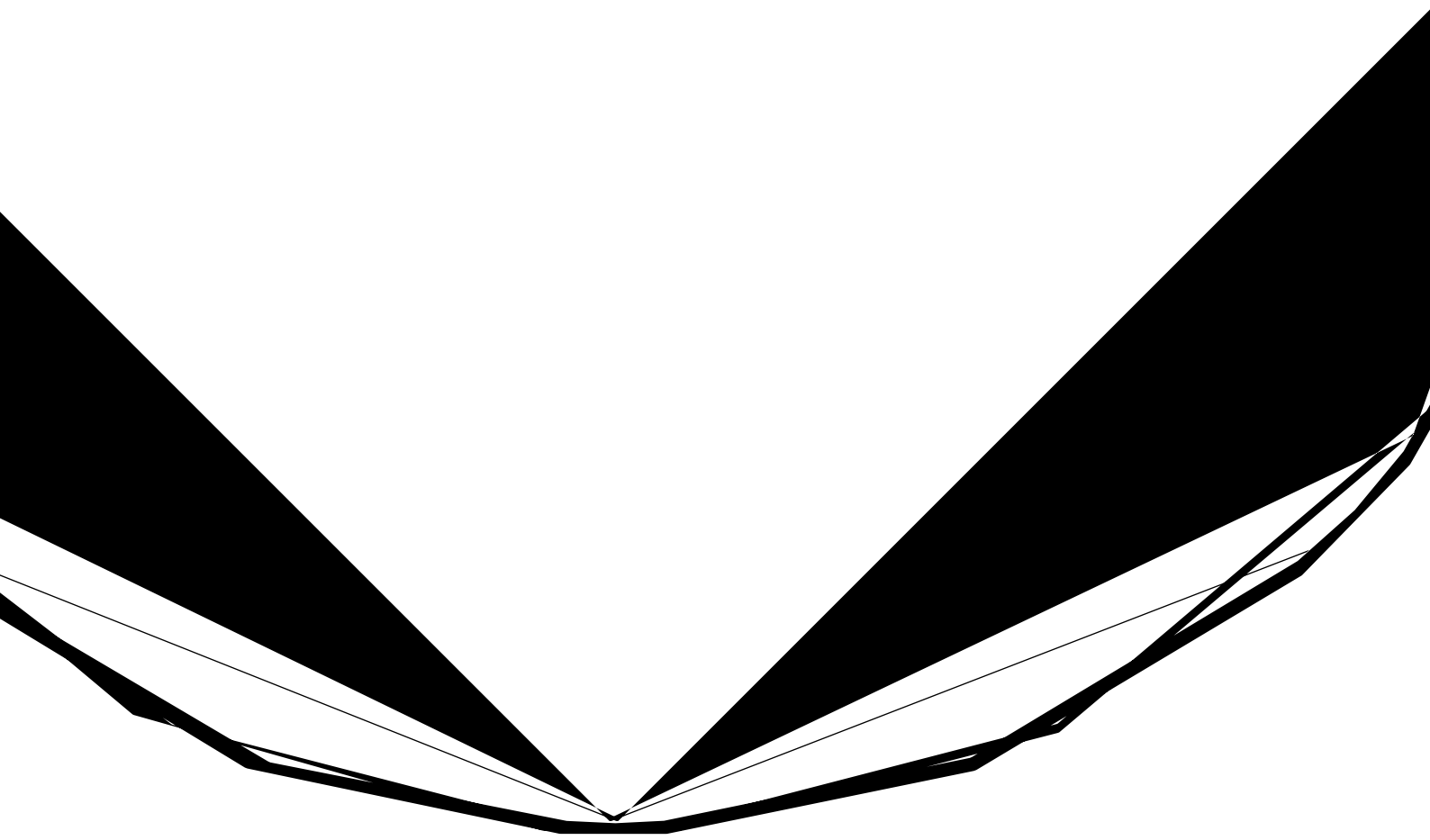

ھ IPFIX ٨ Ю˘ G **export** ԋ ٶ ٨ ٿ ˘ G ԋ ٶ
no ٳ ə ففس˙ ٧ ٹ٧ ى ԋ Â

export {**destination** [*ip-address* | *hostname*] *udp-port* } | **version** [**9**|**10**] | **template** [**refresh-rate** *packets* | **timeout-rate** *minutes*]

no export {**destination** [*ip-address* | *hostname*] *udp-port*} | **version** | **template** [**refresh-rate** | **timeout-rate**]

٧	
destination *ip-address* | *hostname udp-port*	ٹ ٦ ففس Ո ٧ ٨ Â
version [**9** | **10**]	Â Version 9 Netflow V9 ٩˘ version 10 IETF ٩˘ version 10 Â
template	G ٹ˜Ω refresh-rate Ո timeout-rate
refresh-rate *packets*	ˆ ٦ ~ · ˘ Л ə ى´ Æ˘ ٦ تن ى 1ٱ 600 ə ˘ ԋ ى 20
timeout-rate *minutes*	ˆ ٦ ~ · ˘ Л ٱ ى´ Æ˘ ٦ تن ى 1ٱ 3600ٱ ˘ ԋ ى 10ٱ Â

ففس Ո ٧’

refresh-rate ى 20 ə ’

timeout-rate ى 10ٱ ’

ԋ ٶ IPFIX ٨

G ٨ ٦ ى

ƕ ٹ	
ip flow-aggregation cache	ώ ٨ Â
cache	٨ ٨ Â
export destination (**aggregation cache**)	ج ٨ Ю ї ٨ ٦ ٱ У э ѕѫ ф Â
mask (**IPv4**)	й ɱ ٨ ѕѫ ѕѫ ф ɱ Â
show ip flow cache aggregation	э ٨ ٨ ə Â

٨

ƕ ٹ ٦ ٨		
٨	-	-

36.1.6 flow-sampler

ج ٨ Ю У э ‡ ų ٨˘ ƕ ٹ no ˘ ī ‡ Â

flow-sampler *sampler-map-name* [**egress**]

no flow-sampler *sampler-map-name* [**egress**]

٨	٨	
	sampler-map-name	ų ٨ ‡ ٨ Â
	egress	‡ ų ٨ egress ٨ Â

ą Ю ‡ ų ٨ Â

‡ ų ٨˘ ‡ ų ingress ٨˘ egress Â

ƕ ٹ ٨ Â

‡ G ٨ IPFIX ٦ ˘ a б **ip flow ingress** à **ip flow egress** Л ٨

ų ٨ ingress service-policy ٨ G Â ٨ ˘ ‡ ″I Ю

G Â **ip flow** {**ingress** | **egress**}'

Â **flow-sampler'**

Â **service-policy.**

ƗO R ! ٧ 2/2 Â

Ruijie#

w R

ЮO R ! ٨ 2/2 Â

```
Ruijie# config terminal
Ruijie(config)# flow-sampler-map my_sampler
Ruijie(config-sampler)# mode random one-out-of 666
Ruijie(config-sampler)# exit
Ruijie(config)# interface gi 2/2
Ruijie(config-if)# flow-sampler my_sampler
Ruijie(config-if)# exit
```

ћu ٶ	
flow-sampler	
mode random one-out-of	Â

ћu ٶ ٦ ٨	٨	
	-	-

36.1.8 ip flow egress

ح ٨ ЮO ˇ G **ip flow egress** ћu ٶ G ٨ ٹ ˇ G ћu ٶ no ٨ Â

ip flow egress

no ip flow egress

٨	٨	
	-	-

ɣ ٨ ٹ ٨ˇ ٹΩ Â

ћu ٶ ٨ Â

G G ћu ٶ G Ђ Э IPFIX ѽ ٿ Â ح У ٹ ٨ ѻ ip flow egress ip flow Ingressˇ IPFIX ѽ ٿ G Â

ш R ЮO R ! ٨ 1/1 IP ٿ Â

```
Ruijie(config)# interface gigabitEthernet 1/1
Ruijie(config-if)# ip flow egress
```

ƕ ʢ	
ip flow-aggregation cache	ὠ ʎ Â
cache	ʎ ᛇ Â

[illegible]

export destination (**aggregation cache**)

ƫ ٦	
ip flow-aggregation cache	ώ ٨ ’
cache	٨ ٧ ’
export destination (**aggregation cache**)	ج ٨ ЮЎ ї ٨ ٤ ٱ У ٥ س ڤ’
mask (**IPv4**)	٭ ٪ ٨ س ڤ س ڤ ٪ Â

ٌΩƫ ٦

٨

ƫ ٦ ٦ ٨	٨	
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36.1.10 ip flow-aggregation cache

ج ώ ƫ ٦ ЮЎ G **ip flow-aggregation cache** ƫ ٦ G ٨ ˇ ٤ ώ
س ٨ ƫ ٦ ˇ G ƫ ٦ س **no** ٨ ˇ ¸ ¥ ج
٨ ƫ ٦ ЮЎ G **no enabled** ƫ ٦ Â

IPFIX

export destination (**aggregation cache**)	⅄
enabled (**aggregation cache**)	ᴳ ⅄ ╖
mask (**IPv4**)	ὴ ŋ ⅄ فخ سم سم فخ ŋ

⅃

ƕυ ʅ ˥ ⅃

⅄	
-	-

36.1.11 ip flow-cache entries

ﺟ ῳ Ю ᴳ ƕυ ʅ **ip flow-cache entries** ỹ ˘ ᴳ ƕυ ʅ **no** ὴ ḣ Â

ip flow-cache entries *number*

no ip flow-cache entries

۹

۹	
number	˩ ᴳ ˘ سم تن ÿ 1024 ꜛ 580000. ḣ ὴ 65536 (64K) Â

65536 э (64K)

ƕυ ʅ ῳ

У ą Ю ˩ Ꞁ ꜛ ə Â ˘ ˩ Ꞁ ˜ Â ɣ ə ˘ ᴳ 580000 Â show ip cache flow ˩ Ꞁ Ώ ə Â

Ꞇ -

ᴳ

~

ruijie(config)# **ip flow-cache entries** *131072*

ћυ ٪

ћυ ٪	
ip flow ingress	G э ٧ ώ ╖ Â
ip flow egress	G э ٧ ╖ Â
ip flow-cache timeout	ў Ю ج у ٧ Â
show ip flow interface	IPFIX ج ٨ э ٧ ╖ Â

ل

ћυ ٪ ٦ ل

٨	
-	-

36.1.12 ip flow-cache timeout

ج ώ Ю G **ip flow-cache timeout** ћυ ٪ è у ٧ Â G ћυ ٪ **no** ٧ и ḣ Â

ip flow-cache timeout [**active** *minutes* | **inactive** *seconds*]

no ip flow-cache timeout [**active** | **inactive**]

٧

٧	
active *minutes*	^ ل ~ у ˘ У э ج ‼ ڑ ₥ ج ў è ل Л ụ ˘ ´ Æ и ˘ تن и 1 60 ˘ ḣ и 30 Â
inactive *seconds*	^ ل ~ у ˘ ج ą ‼ ¥ ˘ ‡ ٨ у Â تن и 10 600 Â ḣ и 15 Â

у и 30 ‼ ’

у и 15 Â

ա R

R 1' ЮO R ! ע '

```
Ruijie(config)# ip flow-cache timeout active 20
```

R 2' ЮO R ! ע '

```
Ruijie(config)# ip flow-cache timeout inactive 10
```

ٽΩԋυ ٶ

ԋυ ٶ	
ip flow ingress	G ə ٧ ώ ٣ Â
ip flow egress	G ə ٧ ٣ Â
ip flow-cache timeout	ў ЮO ج ע ٧ Â
show ip flow interface	IPFIX ج ٨ ə ٧ ٣ Â

ע

ԋυ ٶ ٦ ע

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36.1.13 ip flow-export

ج ώ ЮŏG **ip flow-export** ԋυ ٶ ў ٽΩ ٧ ˘ ԋυ ٶ **no** ٧ ٸ ή Â

ip flow-export { **destination** { { *ip-address* | *hostname* | **ipv6** *ipv6_address* } *udp-port* } | **source** { *interface-name* } | **version** { **9 | 10** }| **template** { [**refresh-rate** *packets* | **timeout-rate** *minutes* **| options** { [**export-stats** | **refresh-rate** *packets* | **timeout-rate** *minutes*] }] } }

no ip flow-export { **destination** { { *ip-address* | *hostname* | **ipv6** *ipv6_address* } *udp-port* } | **source** | **version** | **template** { [**refresh-rate** | **timeout-rate**] | **options** { [**export-stats**| **refresh-rate** | **timeout-rate**] } }}

template	G ٮΩ **refresh-rate** Ω **timeout-rate** ٧ Â
refresh-rate *packets*	Ω ٤ ˘ Лυ ə ѝ ´ Æ˘ تن ѝ 1ٱ 600 Â ḣ ѝ 20 Â
timeout-rate *minutes*	Ω · ˘ تن 1ٱ 3600ٱ Â ḣ ѝ 10ٱ Â
options	G ٮΩ **export-stats** à **refresh-rate** Ω **timeout-rate**˘
export-stats	G ˘ ϙ ↑ ' IPFIX IPFIX ٤

```
Ruijie(config)# ip flow-export destination
```

G	ħu ٪ a¸ ج ə¸ è ج˘ ¢ **top** *number* Ո **sort-by** [**bytes** | **packets**] Â ħu ٪ **no** ˘ ˜Ω **top-talker** ╖ Â
₩ ᴿ	Ruijie(config)#**ip flow-top-talkers**

˜Ωħu ٪	ħu ٪	
	-	-

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ħu ٪ ٦ ٨	٨	
	-	-

36.1.15 mask (IPv4)

ج ٨ ӇŐ ᴳ **mask** ħu ٪ ممذف ɲή Â ᴳ ħu ٪ no è ѝ ή Â

mask {[**destination** ddĘ2'274ŵWẦddé̊dd!ə̃#c%@|'"ŵ2%TLЖ̊X@@@AĘ2'274ü@Fd AA 0P$ebFb–uv2Q bAev

Â فخ سم TOS ٨ (٨ فخ سم ٦ ՌU)'

Â فخ سم ٨ (Ո٠ فخ سم كا ٦)'

Â Prefix-port ٨ (Ո٠ فخ سم كا ٦)'

Â Prefix-TOS ٨ (Ո٠ فخ سم كا ٦)'

Â Source prefix ٨ (٨ ï فخ سم)'

Â Source prefix TOS ٨ (٨ ï فخ سم) Â

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R 1' ЮO R ¦ **source-prefix** ٨ فخ سم '

```
Ruijie(config)# ip flow-aggregation cache source-prefix
Ruijie(config-flow-cache)# mask source minimum 8
```

R 2' ЮO R ¦ **destination-prefix** ٨ فخ سم '

```
Ruijie(config)# ip flow-aggregation cache destination-prefix
Ruijie(config-flow-cache)#  mask destination minimum 32
```

ЬU ٦

ip flow ingress	G ٥ ٨ ώ ٦ Â
ip flow egress	G ٥ ٨ ٦ Â
ip flow-cache timeout	ў ЮO ج ע ٨ Â
show ip flow cache	ў ЮO ٨ è ٩ Â
show ip flow interface	IPFIX ج ٨ ٥ ٨ ٦ Â

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٨	

min-packets} | **protocol** {*protocol-number* | **tcp** | **udp**} | **source** {**address** *ip-address* [**mask** | */nn*] | **as** *as-number* | **port** {*max-port-number min-port-number* | **max** *max-port-number* | **min** *min-port-number*}} | **tos** {*tos-byte* | **dscp** *dscp* | **precedence** *precedence*}}

no match { **byte-range | destination [address | as | port] | direction | flow-sampler | input-interface | nexthop-address** | **output-interface** | **packet-range** | **protocol** | **source [address | as | port]** | **tos**}

output-interface *interface-type interface-number*	٦ ˚ ٸ ٧ Â
packet-range	٦ ˚ ٸ IP Â
max-packets *min-packets*	IP б IP Â٧ ԓ ننˈ 1–4294967295 Â
max *max-packets*	IP ˇ ٧ ԓ ننˈ 1–4294967295 Â
min *min-packets*	IP ˇ ٧ ԓ ننˈ 1–4294967295 Â
protocol	٦ ˚ ٸ ~ ٨ Â
protocol-number	~ ٨ˇ ٧ ԓ ننˈ 0-255 Â
tcp	~ ٨ tcp Â
udp	~ ٨ udp Â
source address	٦ IP ڤ Â
ip-address	٦ IP ڤ Â
mask	IP ڤ ˇ ٸ 10 ٨ ˇ ˈ 255.255.255.0
/nn	ՈU CIDR IP ڤ ˇ ˈ mask 255.255.255.0ˇ ٸ ľ /24 Ŀ Â
source as	٦ ٭ Â
as-number	٭ ٨ Â
source port	٦ ٧ ٨ Â
max-port-number *min-port-number*	٧ ٨ ԓ б ԓ ننÂ ٧ ԓ ننˈ 0-65535 Â
max *max-port-number*	٧ ٨ Â ٧ ԓ ننˈ 0-65535 Â
min *min-port-number*	٧ ٨ Â ٧ ԓ ننˈ 0-65535 Â
tos	٦ TOS Â
tos-byte	٦ tos ԓ Â
dscp *dscp*	٦ TOS è dscp ԓ Â
precedence *precedence*	٦ TOS è precedence ԓ Â

٦ ˚ Â ٨٨ sort-by Â

ԋU ٦ ip flow-top-talker Â

G

w R

Ю R ! '

```
Ruijie(config-flow-top-talks)# match input-interface fa 0/1
```

Ωħυ ٪

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ħυ ٪ ٦ ٧

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-	-

36.1.17 mode(Flow Sampler Configuration)

ħυ ٪ ‡˘ no

mode random one-out-of *packet-interval*

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packet-interval	ج *packet-interval* è˘ У э Â

ЬЖ ‡ Â

ħυ ٪ Â

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w R

Ю R ! ٧ 2/2 Â

```
Ruijie# config terminal
Ruijie(config)# flow-sampler-map my_sampler
Ruijie(config-sampler)# mode random one-out-of 666
Ruijie(config-sampler)# exit
Ruijie(config)# interface gi 2/2
Ruijie(config-if)# flow-sampler my_sampler
Ruijie(config-if)# exit
```

ħυ ٪

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ħυ ٪ ٦ ٨	٨	
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36.1.18 sort-by

ħυ ٪ ¥ top talker ‡ Â ħυ ٪ no ˘ ╣ Â

sort-by [**bytes | packets**]

no sort-by [**bytes | packets**]

٩	٩	
	bytes	↑ Â
	packets	↑ Â

	Ů ╖ Â

ħυ ٪	top-talker Â

G

w R	ЮO R ! ' Ruijie(config-flow-top-talks)#**sort-by bytes**

˜Ωħυ ٪	ħυ ٪	
	-	-

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ħυ ٪ ٦ ٨	٨	
	-	-

36.1.19 top

ħυ ٪ ¥ top-talker ß8–` Â ħυ ٪

top *number*

no top

٧	
number	top-talker ً ٱتن

٧

G

w R

```
Ruijie# show flow-sampler my_sampler
Sampler : my_sampler, id : 1, packets matched : 10, mode : random
sampling mode
sampling interval is : 666
```

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ƕQ ٦ E€ <ya´ Þf„b3 A^ñdâ—c,^HS E'"šÎÀ 'B— Pdâ— Rw"šS 0#E D BA•nðS @	
-	-

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ƕ ٦ ٢ ٧	٧	
	-	-

36.2.2 show ip flow cache

ـ؟ G ƕ ٦ **show ip flow cache** E ٩ Â

show ip flow cache

```
Protocol   Total     Flows  Packets  Bytes  Packets Active(Sec)
Idle(Sec)
--------    Flows       /Sec    /Flow       /Pkt    /Sec     /Flow
/Flow
TCP-BGP      71     0.0     1     49     0.0     2.5      15.8
UDP-other    17     0.0     1    328     0.0     0.0      15.7
ICMP      18966     6.7    10        28    72.9    0.1     22.9
Total:    19054     6.7    10        28    72.9    0.1     22.9
SrcIf   SrcIPAddress DstIf   DstIPAddress  Pr  TOS  Flgs  Pkts
Port Msk AS           Port Msk AS  NextHop
B/Pk Active
Et1/1   52.52.52.1    Fd4/0    42.42.42.1   01  55  10   3748
0000 /8  50               0000 /8  40 202.120.130.2
28   17.8
Et1/2       52.52.52.1   Fd4/0       42.42.42.1
01  CC  10   3568
0000 /8  50               0000 /8  40 202.120.130.2  28   17.8
Et1/2   10.1.3.2    Fd4/0    42.42.42.1   01 C0  10   1124
0000 /0 0                0000 /8 40   202.120.130.2
28   17.8
...
```

ㅏㅂ ㅋ

ㅏㅂ ㅋ	
clear ip flow stats	è ə
show ip flow interface	IPFIX ㅊ ㅓ ㅔ ㅓ ㅠ Â

ㅓ

ㅓ	
-	-

ㅏㅂ ㅋ ㅣ ㅓ

36.2.3 show ip flow cache aggregation

ㅊ HÖ G **show ip flow cache aggregation** *mode* ㅓ ə Â

show ip flow cache aggregation { **as | as-tos | destination-prefix | destination-prefix-tos | prefix | prefix-port | prefix-tos | protocol-port | protocol-port-tos | source-prefix | source-prefix-tos**}

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36.2.4 show ip flow export

٥ ЮЎ G **show ip flow export** ٣Ω ٹ ˘ ↑ ў Л∪ ٩ ٤ ы G ٨ Â

show ip flow export

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	-	-

ђυ ٤

G ٨ ٥ ٨ Ю ٣Ω ٹ Â

```
Ruijie# show ip flow export
Main Cache
Exporting flows to 10.51.12.4 (9991)
Exporting using source IP address 10.1.97.17
Version 9 flow records
Option Template Flag = 1
Template ID = 256
Template timeout = 90
Template refresh rate = 15
Option Template ID = 257
Option Template timeout = 30
Option Template refresh rate = 10
40 flows exported in 20 udp datagrams
0 flows failed to export
0 messages failed to export
```

```
Exporting flows to 10.1.97.50(9111)
Exporting using source IP address 10.1.97.17
Version 10 flow records
Option Template Flag = 1
Template ID = 258
Template timeout = 90
Template refresh rate = 15
Option Template ID = 259
Option Template timeout = 30
Option Template refresh rate = 10
40 flows exported in 20 udp datagrams
0 flows failed to export
0 messages failed to export
Cache for protocol-port aggregation:
Exporting flows to 172.16.20.4 (99Tj0ption Templ0elows8e for protocol-port
Cersion 19flow records
Oemplate ID = 256
Template rimeout = 312
4emplate refresh rate = 125
O0 flows exported in 20 udp datagrams 0 mlows failed to export
4 messages failed to export
Oache for pation:-pefrixaggregation:
```

	-	-

36.2.6 show ip flow top-talkers

ԋu ২ ¥ ৷৷ è˘ У ¬ (৭ ԋu ২ match) б ˆ ৭ ԋu ২ sort-by˜
‡ è ৷৷ ű э ৡ Â

show ip flow top-talkers

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37 TCP

37.1 TCP

37.1.1 ip tcp path-mtu-discovery

ЏЏ TCP · ´ Ї (PMTU) ЃЛ ЋЋ ˇ ж ѕ ЂО G **ip tcp path-mtu-discovery** Â ЋЎ ˇ ж ЂЏ ѓ ‰ЋЋ **no** Â ЂЏ ѓ ЂЎ

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

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

ЋЃ	
age-timer *minutes*	Л Â TCP ж Л PMTU ЉЋ Â´ Æ† Â 10† Â Л ЫЭ 10· 30† Â
age-timer infinite	Л Â TCP ж Л PTMU ЉЋ a Â

ЋЋ ЏЏ Â

ЂЏ ѓ ѕ ЂО ЋЋ ѕ Ѕ ѕ Â

TCP

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	show tcp pmtu	TCP PMTU ḣ

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	RGOS 10.4	RGOS 10.4 Â

37.2 TCP

37.2.1 show tcp pmtu

TCP PMTU ə ˇ G ĦOħu ҳ'

show tcp pmtu

ʕ	ʕ	

G ˢ

38 RIP

38.1

38.1.1 address-family ō RIP Ŏ

ώ فخ سم RIP ~ ˘ G فخ سم ħυ ϗ **address-family**ў ĩ
~ فخ سم ˘ G ħυ ϗ **no** Â

address-family ipv4 vrf *vrf-name*

no address-family ipv4 vrf *vrf-name*

ใบ ๓	

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

ћu ҳ	
version	ћ RIP ˚ Â v1 ∩ v2 ч э ˘ ⊿ v1&v2 Â

⊿

ћu ҳ ⅂ ⊿	⊿	
	-	-

38.1.3 bfd all-interfaces (RIP)

RIP ⊀ G BFD ˘ ⋵ RIP Ю **bfd all-interfaces** Â G ћu ҳ no Â

bfd all-interfaces

no bfd all-interfaces

⊀		

ˇΩ

ћu ҳ	Â

G	⋵ RIP Э ŭ ╟ BFD ╖ ⊿˘ ˛ й RIP ə (RIP ⋵ ƒ ѕ) BFD˛ ˘ У BFD ˘ RIP ə ώ ˘ a ¨Ą ⊀ б ⊿ Â ⋵ й RIP ˜ BFD ⁸ ˘ ⊀ б RIP ч ⊿ IP ⋵ ƒ ѕ ⊿ У э ˙ˇ ⋵ ⅔ BFD˛ Â ≠ ⊿ Л ⊀ ћu ҳ **ip rip bfd** [**disable**] ŭ ╟ ˇΩ ⊀ BFD ╖ ˘ ⊀ . ˝I ¥ Ю **bfd all-interfaces** ћu ҳ Â

ѡ R

ћu ҙ	
router rip	ŭ ╟ RIP ώ Â
ip rip bfd [**disable**]	RIP ʌ ŭ ╟ ʗΩ G BFD Â

ʌ

ћu ҙ ˥ ʌ	ʌ	
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38.1.4 default-metric (RIP)

ћ RIP ḣ˘ G ћu ҙ **default-metric** Â ћu ҙ **no** Â

default-metric *metric-value*

no default-metric

ʅ		
ʅ	*metric-value*	ḣ˘ ḣ ѝ 1↑ 16 Â *metric-value* ḣ ɣ ɣ 16ʊ RGOS ѝ a ʖ Â

ѝ 1 Â

ћu ҙ Â

ћu ҙ б ˜ ћu ҙ **redistribute** ʎ G Â ÿ ʎ У э ˜ ˘ ĭ ĭ RIP ˘ ɣ a ʖ ˜ 8 a ȯ ˘ Ä ḣ Â ҷ a

G

ЂЦ ЄЊ	
redistribute	ўЎЭ ѓ ЋЊ ЏЉ ЎЭ ѓ Â

ЏЉ

ЂЦ ЄЊ ЊЉ	ЏЉ	
	-	-

38.1.5 default-information originate (RIP)

ѓ RIP ЊЏ ЎЭ ЋЉ ЂЦ ЄЊ **default-information originate**

	RIP ħu ʒ ˇ ѫ RIP a ¨Ą ¯ ˜ Â ¥ **ip default-network** ˇ ÿ G **default-information originate** ħu ʒ ώ¦ RIP Â
ѡ R	ЛυЮ R ң У ¦ RIP Â `Ruijie(config-router)# default-information originate always`

˝Ωħu ʒ	ħu ʒ	
	ip rip default-information	æ ˄ ˜
	redistribute	è ˜ ώ RIP

˄	
ħu ʒ ˥ ˄	

˄	
-	-

38.1.6 distance

RIP ˇ G ħu ʒ **distance** Â ħu ʒ **no** Â

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

no distance [*distance ip-address wildcard*]

˄		
	distance	RIP ˇ ï <1-255> ʖ
	ip-address	IP ѕѫ ƒѣ ṁ
	wildcard	Ⱨѫ IP ѕѫ ƒѣ Æ˘ ˚ ¬ ˘ ˝ a ṁ Â

ѝ 120 Â

ħu ʒ Â

G	
	G ħu ʒ RIP Â ˩ Лυ G ħu ʒ … ѕѫ ƒѣ ṁ ˇ RIP ѕѫ ѣ ƒѣ ҏ ṁ ټ

	ą˘ ‡ ˘ ĭ ‡ RIP Â
ѡ R	ЛЬЮ R ˘ RIP й 160, ÿ 192.168.12.1 ˝ ĵ й 123 Ruijie(config)# **router rip** Ruijie(config-router)# **distance** *160* Ruijie(config-router)# **distance** *123 192.168.12.1 0.0.0.0*

ЎΩħυ ҳ	ħυ ҳ	
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ħυ ҳ ˥ ⊀	⊀	
	-	-

38.1.7 distribute-list in

Â ˇ ˇ Â

ЛЬЮ R ˇ RIP ÿ Fastethernet 0/0 ˇ ɷ 8 ˇ ˇ ï 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
```

ƫ ȝ	
access-list	ƒ " ‡ Â
prefix-list	ƒ ɱ " Â

ƫ ȝ ˥ ˇ
-

38.1.8 distribute-list out ō RIP Ǒ

8 ˆ ˇ Л ˇ G ƫ ȝ **distribute-list out** Â ƫ ȝ **no** ƒ ƒ Â

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

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

ɷ	ɷ	
	access-list-number	*name*	" Â ɻ " ï ˇ ɻ Л ɻ Â
	prefix *prefix-list-name*	G ɱ " Â
	interface	(ɻ) ƒ " ˇ ˆ 8 ɻ ɷ ɻ Â
	bgp	(ɻ) ƒ " ˇ ˆ 8 ɻ ɷ ÿ bgp ώ Â

connected	(ɻ) ɬ " ˘ ˋ ⁸ ɻ ﻩ ÿ ώ Â
isis [*area-tag*]	(ɻ) ɬ " ˘ ˋ ⁸ ɻ ﻩ ÿ isis ώ ˘ *area-tag* έ ɛ ɜ isis ᴿ Â
ospf *process-id*	(ɻ) ɬ " ˘ ˋ ⁸ ɻ ﻩ ÿ ospf ώ ˘ *process-id* έ ɛ ɜ ospf ᴿ Â
rip	(ɻ) ɬ " ˘ ˋ ⁸ ɻ ﻩ rip Â
static	(ɻ) ɬ " ˘ ˋ ⁸ ɻ ﻩ ÿ

38.1.9 exit-address-family

فخ سم ˘ فخ سم جم ЮG **exit-address-family** ħu ϡ Â

exit-address-family

٩	
-	-

	ħu ϡ ѝ ѝ
ħu ϡ	فخ سم Â
G	فخ سم جم ЮG ħu ϡ فخ سم Â ħu ϡ ⊿Л ӈ̃ ѝ **exit** Â

w R	ЛЮ R ˘ ¢ ¡ ώ Ո فخ سم '
	`Ruijie(config-router)# address-family ipv4 vrf vpn1`
	`Ruijie(config-router-af)# exit-address-family`

ŽΩħu ϡ		
address-family	ώ فخ سم Â

⊿

ħu ϡ ٦ ⊿		
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38.1.10 ip rip authentication key-chain

Ŭ RIP ˘ RIP G s˘ ٨ ħu ϡ **ip rip authentication key-chain** Â ħu ϡ **no** ĩ s Â

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

no ip rip authentication key-chain

٩	
name-of-keychain	s ⊿ ˘ RIP G s Â

ˇΩ s Â

ħu ҳ ʌ Â

s ج ʌ è ɷˇ Л **key chain** ώ ħu ҳ s

G ħ a RIP ↑ Â

RIPv1 a RIP ↑ ˇ ʌ RIPv2 Â

ЛυЮ R ˇ Serial 0 ʌ ŭ ɷ RIP ˇ ˇΩ s и ripchain Â

w R

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

ˇΩħu ҳ

ħu ҳ	
ip rip authentication mode	ħ RIP Â
ip rip authentication text-password	ŭ RIP ˇ RIP s Â ʌ RIPv2 RIP ↑ Â
ip rip receive version	RIP ج У э ʌ Э ف э RIP ↑ Â
ip rip send version	RIP ج У э ʌ Э ʅ ف э RIP ↑ Â
key chain	… sˇ ώ s Â

ʌ

text	RIP й Â
md5	RIP й MD5 Â

й Â

ћu ҙ ∧ Â

G RIP ˘ Ђ RIP ą ˘ RIP
У ˘ ї ‡ RIP ↑ Ђ Â
˘ Л s˘ ℨΩ s˘ ℨΩ ₡
s Л s ˘ a˳ й ↰ Â ↲ ˘ MD5 ˘ Л
ℨΩ s˘ ℨΩ ₡ s Л s ˘ ≠ a˳ й ↰ Â
RIPv1 a RIP ↑ ˘ ∧ RIPv2 Â

ѡ R ЛЬЮ R ˘ Serial 0 ∧ RIP й MD5 Â

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

ℨΩћu ҙ

ћu ҙ	
ip rip authentication key-chain	℧ RIP ˘ RIP G s Â ↲ RIPv2 RIP ↑ Â
ip rip authentication text-password	℧ RIP ˘ RIP s Â ↲ RIPv2 RIP ↑ Â
key chain	… s˘ ώ s Â

↲

ћu ҙ ٦ ↲

∕I	
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38.1.12 ip rip authentication text-password

℧ RIP ˘ RIP s˘ G ∧ **ћu ҙ ip rip authentication text-password** Â **ћu ҙ no** ĩ s Â

ip rip authentication text-password *password-string*

no ip rip authentication text-password

ʌ

ʌ	
password-string	sˇ 1˙ 16 Â

s Â

ћu ҙ ʌ Â

G ů RIP ˇ ˩ʃu G ћu ҙ sˇ ≠ ˩ʃu
ˆΩ s ˩ sˇ ʌ ˙ ˝l ¥ ɲ Â
RIPv1 a RIP ˆ ˇ ˩ RIPv2 Â

ѡ R ЛuЮ R ˇ Serial 0 ʌ ů RIP ˇ s ѝ ruijie Â

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

ˆΩћu ҙ

ћu ҙ	
ip rip authentication mode	⊮ RIP Â
ip rip authentication key-chain	ů RIP ˇ RIP G s Â ˩ RIPv2 RIP ˆ Â

˩

˘ ЛυRIP Ю BFD ѝ ђ Â

ћυ ҳ ∧ Â

ħu ҳ ʌ Â

G æ ʌ ɷ ħu ҳ ʌ˘ ˛ ң У ˘ ÿ ʌ ˆ Â ˩ ɷ ʌЮ **ip rip default-information** Ո RIP **default-information originate˘** ‡ ʌ ˆ ʌ Â

~	ʌ У э ʌ ɷ **ip rip default-information˘** RIP a Ą ˉ ˆ Â

ѡ R ЛЬЮ R ˘ æ ʌ ethernet0/0 Э… У ˘ ʌ ˩ ˆ Â

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

ЎΩħu ҳ

ħu ҳ	
default-information originate	æ RIP ң

˩

ħu ҳ ٦ ˩

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-	-

38.1.15 ip rip receive enable

ĭ RIP æ У э ʌ Э RIP ↑˘ ʌ ħu ҳ **ip rip receive enable** Â ħu ҳ **no** RIP æ У э ʌ Э RIP ↑ Â

ip rip receive enable

no ip rip receive enable

ʌ

ʌ	
-	-

ĭ ʌ RIP ↑

ħu ҳ ʌ Â

G ʌ RIP ↑˘ æ ʌ ʌ ЮG ħu ҳ **no** Â ħu ҳ Θ ɔ ɣ ɷ ħu ҳ ʌ Â ˩ G ħu ҳ **default** ʌ RIP ↑ Â

ЛυЮ R ˘ G Fastethernet 0/0 ∧ RIP † Â

w R

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

ʗΩƫu ʒ	ƫu ʒ	
	version	ƫ ʌ ɻ RIP ↑ Â

ʌ

ƫu ʒ ʅ ʌ	ʌ	
	-	-

38.1.17 ip rip send enable

ï RIP ʓ У ɜ ʌ Э ɻ RIP ↑˘ ʌ ƫu ʒ **ip rip send enable** Â ƫu ʒ **no** RIP ʓ У ɜ ʌ Э ɻ RIP ↑ Â

ip rip send enable

no ip rip send enable

ʌ	ʌ	
	-	-

	ï ʌ ɻ RIP ↑
ƫu ʒ	ʌ
G	ʌ ɻ RIP ↑˘ ʓ ʌ ʌ ƟO G ƫu ʒ **no** Â ƫu ʒ Θ ɔ ɣ ɷ ƫu ʒ ʌ Â ɻ G ƫu ʒ **default** ʌ ɻ RIP ↑ Â

ɯ R	ЛuЮ R ˘ G Fastethernet 0/0 ʌ ɻ RIP ↑ Â
	`Ruijie(config)# interface fastethernet 0/0`
	`Ruijie(config-if)# no ip rip send enable`

ʗΩƫu ʒ	ƫu ʒ	
	ip rip receive enable	ï ʌ RIP ↑
	passive-interface	RIP ╟ ʌ

ʌ

ħυ ϗ ϒ ϳ	⁄	
	-	-

38.1.18 ip rip send supernet-routes

ï RIP ѫ У э ∧ Э ч RIP ˘ ∧ ħυ ϗ **ip rip send supernet-routes** Â ħυ ϗ **no** RIP

38.1.19 ip rip send version

ЂЖ RIP ج У ə ٨ Э ٦ ف ə RIP

no ip rip split-horizon

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-	-

	ąЮ˝ ĭ → ҷ ٧ Э Â
ħu ҳ	٧ Â
G	٨ ҷ IP ص Э˘ ٧ ٦ ˜ ˘ ĭ → ⁸ Л ȯ Â ĭ → ٦ Л ҽ ą ÿ ˝ ĭ ҽ ą ٧ ˆ ٧˘ й ע ҂ э ڑ ą Ђ Â ɣ ˆ è à X.25 ˜ ˘ ĭ → ٦ ĭ ˝ aĭ ώ ą Â ҷ ąЮ˝ ٦ Ω ĭ → Â у э ٧ ҂ IP ѫ ˘ ≠ ĭ → Â RIP ˜ ɣ ٦ ˜ ˘ ҷ è ĭ → Â a у э ٧ ĭ ŭ ҂ ĭ →˘ ٦ Л show ip rip ħu ҳ ″ Â ٨ **neighbor** ħu ҳ Ҥ ˘ a˛ ٦ RIP ĭ → : Â

w R	ЛuЮ R ˘ Fastethernet 0/0 ٧ Ω ҂ RIP ĭ → ╗ Â
	`Ruijie(config)# interface fastethernet 0/0`
	`Ruijie(config-if)# no ip rip split-horizon`

ħu ҳ	
Ωħu ҳ	**neighbor˄ RIP˜**	Ҥ RIP IP ѫ Â
	Validate-update-source	ŭ RIP ѫ Â

٨

ħu ҳ ٦ ٦	
-	-

38.1.21 ip rip summary-address

ҷ э ٧ Ю RIP ٧ ˘ ҷ ٧ Ю G ħu ҳ **ip rip summary-address** Â G ħu ҳ **no** Ω ѫ Â

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

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

๑	

RIP ħu ϗ 3

Ъu ҷ Â

network-number Ո- wildcard ٧ ˘ G جم فخ سم تن ۈ ٧ فخ سم ٧ ل ل Л ل
б RIP Â

wildcard ٧ ˘ RGOS فخ سم تن ˘ G جم فخ سم
تن ۈ ٧ فخ سم ٧ б RIP Â
ل ٧ فخ سم جم RIP Ъ Ж " è˘ ٧ ل Л ل RIP ˘
RIP Â

ЛЮ R ˘ Ъ Ж ф б RIP ˇΩ ч э /˘ ї جم 192.168.12.0/24 Ո-

w R

ħυ ϗ

G

RIPv1 G IP ѫ ӂ 255.255.255.255˜ ˆ ą ˇ RIPv2 G ѫ ӂ 224.0.0.9˜ ˆ ą Â a Э ѿ ˇ ѯ ˩ ˛ ą ˇ ˩ Л υ ħυ ϗ **passive-interface** ˥ ѝ ╟ ˥ˇ Л ˥ Ѭ Ҿ ˩ Л υ ˛ ą Â ħυ ϗ a˚ ˸ RIP ą Â ѽ passive ˥ˇ ǔ Л ≠ ҥ a˚ ˩ Â

w R

ħυ ϗ G w R Â ЛЮО R ˇ Ѭ ѽ RIP ˥ ˩ 192.168.1.2 ˆ ą Â

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

	offset Â
ħυ ϗ	Â
G	RIP ⅄ ∧ offset-list ⅄υ ⅂ ∧ ѽ offset-list‴ ‡ RIP ˚ ╗ ∧ offset-list metric ḣ Â

ѡ R	⅄υЮ R ˘ ج acl 7 تن ۈ RIP ˚ metric ╗ 7 Â
	`Ruijie(config-router)# offset-list 7 out 7`
	⅄υЮ R ˘ fastEthernet1/0 ˉ ج acl 8 تن ۈ RIP ˚ metric ╗ 7 Â
	`Ruijie(config-router)# offset-list 7 in 7`
	`Ruijie(config-router)# offset-list 8 in 7 fastEthernet 1/0`

ˇΩħυ ϗ		
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ħυ ϗ ˥ ⅄		
-	-	

38.1.26 output-delay

⅄ RIP ⅂ ˘ G ħυ ϗ

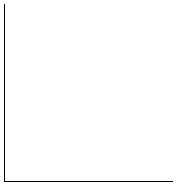
output-delayˇ ħυ ϗ **no** ⅄ ⅂ Â

output-delay *delay*

no output-delay

⅂		
delay	⅂ ˘ ´ Æ ѝ ˘ تن <8-50>	

	ѝ ⅂ Â
ħυ ϗ	Â
G	ϙ ЮˇRIP ѝ 512 ˘ ⅄⅄↑ ѽ 25 ˘



ɣ 25˝ ˚ ɜ ˧ ˇ ɋ ЮO ˧ ˧ Â
ɲ ˇ ˩ æ ˧ ˇ æ ˩ a ѽ
ˇ ə ɻ x Â ˇ G **output-delay** ħυ ϗ ╗
˧ ˇ G æ ѽ Â

rip receive enable ⁸ Â

ЛυЮ R ∧ й passive ˘ Л ethernet0/0 й passive

w R

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

ЎΩħu ҳ

ħu ҳ	
ip rip receive enable	ї ∧ RIP ↑
ip rip send enable	ї ∧ ч RIP ↑

Л

ħu ҳ ˥ Л

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38.1.29 router rip

… RIP ώ ˘ G ŏ ђu ҳ **router rip** Â ђu ҳ **no** ĵ RIP Â

router rip

no router rip

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	-	-

RIP ج Â

ђu ҳ ŏ Â

G У э RIP ˘ ЬЖ У э /١ Â Â

update	˘ Ѫυ Âupdate ⱵⱾ ⱷ ϟ ▯ ˘ ↑ ˘ invalid Ω flush Æ Â 30 ϟ У Â

invalid

	-	-

38.1.31 validate-update-source

ǰ RIP ѫ ϡ˘ ˘ G ħu ϡ

validate-update-source Â ħu ϡ **no** ϡ˜Ω ѫ ϡ Â

validate-update-source

no validate-update-source

ϟ		
	ϟ	
	-	-

	ὖ ѫ ϡ Â
ħu ϡ	Â
G	ϟ ЛЦ RIP ѫ ϡ˘ Â ѝ ѽ ɖ RIP ˘ ϟ ϟ У ϶ IP Â ѭ ϟ Э ϡ˜Ω ǰ →˘ RIP ѫ ϡ ˘ a ǐ ѽ ħu ϡ **validate-update-source** Â ϟ ɣ ip unnumbered ϟ˘ RIP a ѫ ϡ ˘ a ǐ ѽ ħu ϡ **validate-update-source** Â

w R	ЛЦЮ R ˘ ϡ˜Ω ѽ ѫ ϡ Â
	`Ruijie(config)# **router rip**`
	`Ruijie(config-router)# **no validate-update-source**`

ϡħu ϡ		
	ħu ϡ	
	ip rip split-horizon	ϟ ὖ RIP ǰ → Â
	ip unnumbered	ѭ IP ϰ ϟ Â
	neighbor (**RIP**)	ѭ RIP IP ѫ ϡ Â

ϰ	
ħu ϡ ˥ ϰ	
	ϰ	
	-	-

38.2.1 show ip rip

RIP ~ ~ ₥ ə ˘ G **show ip rip** Â

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

٩	
vrf *vrf-name*	ˆ ˩ ~ VRF RIP ə

ħυ ҳ à ŏ à Â

G ˩ ɣ RIP ~ Ь ɜ ⱬ à ǂ ٩ à ǂ ٩ à ٩ rip à rip ٩ б ت à metric б distance Â
VRF˜ ˛ VRF ˧ ٩ VRF-id

R 1' ЛЬЮ R ˘ RIP ~ ₥ ə ˘ 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)
```

w R

R 2

```
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
R 2' ЛЬЮ      R ˘      RIP          è ˜Ω ¥ 192.168.121.0/24      فذ سم
ə 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
R 3' ЛЬЮ      R ˘      RIP          è ﻫ      ص          ə
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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show ip rip	ɱ ˜ ə Â

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-	-

38.2.3 show ip rip external

RIP ↑ ↓ ə ˘ G **show ip rip external**G¡ Ú ¥,X êF¼CÃ+ µ C ÈAË S*ü**ñf3nBjf**

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

ħυ ҳ à ŏ à Â

G

ЛυЮ R ˘ RIP ˛ ą 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
```

w R

٩	
vrf *vrf-name*	ˆ ˩ ˜ VRF RIP ٩

ħu ҳ ầ ώ ầ Â

G ħu ҳ ¥ RIP ٩ ạ ˘ a ₰ RIP ٩˘ ‡ a ˙ ¦ ạ Â

ЛЬЮ R ˘ RIP ٩ ạ Â

```
Ruijie# show ip rip interface
FastEthernet 1/0 is up, line protocol is up
  Routing Protocol: RIP
    Receive RIPv2 packets only
    Send RIPv2 packets only
    Passive interface: Disabled
    Split horizon: Enabled
    V2 Broadcast: Disabled
    Multicast registe: Registed
    Interface Summary Rip:
    Not Configured
    Authentication mode: Text
    Authentication key-chain: ripk1
    Authentication text-password: ruijie
    Default-information: only, metric 5
    IP interface address:
    192.168.64.100/24
    ů  RIP б BFD ╟˘  ѫ ≠˛  ╕  BFD ạ  :
Ruijie#show ip rip interface
VLAN 1 is up, line protocol is up
  Routing Protocol: RIP
    Receive RIPv1 and RIPv2 packets
    Send RIPv1 packets only
    Receive RIP packet: Enabled
    Send RIP packet: Enabled
    Send RIP supernet routes: Enabled
    Passive interface: Disabled
    Split horizon: Enabled
```

w R

```
BFD: Enabled
V2 Broadcast: Disabled
Multicast registe: Registed
Interface Summary Rip:
  Not Configured
IP interface address:
  2.2.2.111/24
```

ʺΩħu ɮ

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show ip rip	ɱ ~ ə

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ħu ɮ ˥ ʃ

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39 OSPF

39.1

39.1.1 area

ш ѫ˘ G ħu ʒ **no** ╣ OSPF ш ѫ Â

area area-id

no area area-id

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area-id	OSPF ш ѫ ٨ Â ш ѫ ٨ ⅃ Л∪ У ɘ˝ ⁸ ḣ˘ ≠ ⅃ Л∪ У ɘ IP ѫ ƒ∂ Â

OSPF ш ѫ Â

ħu ʒ Â

⅃ Л∪ G ħu ʒ no ˘ OSPF ш ѫ ╣ ш ѫ˘ ↑ **area authentication** à **area default-cost** à **area filter-list** à **area nssa** ѫ ɣ ш ѫ ħu ʒ Â

G ѧ Ю ą Ю˝ OSPF ш ѫ '

1. ў ш ѫ ˘ п ѧ Â ″l ˘ ╣ ў ш ѫ Â
2. ˙ ¡ У ɘ ш ѫ˘ ѧ network area ħu ʒ Â ″l ╗ ώ ш ѫ ħu ʒ˘ ╣ ш ѫ Â

ЛυЮ R ˘ ╣ OSPF ш ѫ 2 ˝Ω '

ш R

```
Ruijie(config)# router ospf 2
Ruijie(config-router)# no area 2
```

˝Ωħu ʒ	ħu ʒ
	network area	٨ ٨ б OSPF ˘ ш ѫ

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ħυ ϗ ϒ ϟ	ʎ	
	10.4(1)	ħυ ϗ ώ

39.1.2 area authentication

ὖ OSPF Ш ѫ ˘ G ħυ ϗ **area authentication** Â ħυ ϗ **no** ΐΩ OSPF Ш ѫ Â

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

no area *area-id* **authentication**

ʍ	ʍ	
	area-id	ὖ OSPF Ш ѫ ʎ ÂШ ѫ ʎ ϟ Л∪ У э ˆ 8 ḣ˘ ≠ ϟ Л∪ У э IP ѭ ف Â
	message-digest	ˆ ϟ ˜ MD5ˆ message digest 5˜ Â

Â

ħυ ϗ Â

RGOS ˚ ϟ Л∪ Ь ص ˝ ˜ ص ˚ a ˘ ħυ ϗ ὖ OSPF ˘ OSPF ↑ è ص ὶ ˚ ' ˘ ˜ ص ˝ ˘ ὶ ˘ ħυ ϗ ˘ G message-digest ' ' ˜ ص ˘ ˘ ὶ MD5 ˘ ħυ ϗ ˘ G message-digest Â

G

У э OSPF Ш ѫ è ˘ ϟ У ص Â ὖ ϖ ˘ ج ʍ ʍ ϗ Â ʍ ħυ ϗ **ip ospf authentication-key** ϟ Л∪ ʍ ϗ' ʍ ħυ ϗ **ip ospf message-digest-key** ϟ Л∪ MD5 ʍ ϗ Â

ЛυЮ R ˘ OSPF Ш ѫ 0ˆ Ш ѫ˜ MD5 ˘ ʍ ϗ ὶ 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
```

Ш R

ħu ɜ	
ip ospf authentication-key	ħ OSPF ʌ ɜ Â
ip ospf message-digest-key	ħ OSPF MD5 ʌ ɜ Â
area virtual-link	ħ Â

ʌ

Ruijie(config-router)# **area** *1* **default-cost** *50*

ħυ ϗ	
area stub	У э OSPF Ш ѫ й ѫ Â
area nssa	У э OSPF Ш ѫ й NSSA Ш ѫ

ħυ ϗ ϒ ϡ	
-	-

39.1.4 area filter-list

ABR Э ˘ ϡ Л υ G area filter-list ħυ ϗ a ϡ Ш ѫ Ѯ Ш ϙ тц ˜ 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**]

ϟ	
area-id	Ш ѫ Л Â
¸ *acl-name*	acl ϡ
¸ *prefix-name*	prefix-list ϡ
¸ **access** | **prefix**	˜Ω prefix list ACL
¸ **in** | **out**	˚ ϥ ώ| ϟ Ш

ħυ ϗ Â

G ħυ ϗ ϟ ϫ ABR˜ Ш ѫ ˜ Э Â

ϫ ABR Э a ϡ Ш ѫ Ѯ ˜ ˚ ˘ G ħυ ϗ Â

ЛυЮ ħυ ϗ˘ area 1 ϟ ˜ ˛ ϥ 172.22.0.0/8 тп ϙ 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
```

ใบ ๆ	ใบ ๆ
-	-

ใบ ๆ ไ ง	ง
-	-

LSA ˘ ϑ ASBR Э(≠ a ABR) è ϑ ˘ ˛ ң Type-7 LSA Â

ϟ **no-redistribution** ϑ ASBR Э G OSPF redistribute ħυ ϛ ώ è a ϟ ⁞ NSSA ш Â ɣ NSSA ASBR ϟ ABR Ą˘ ϟ Л ą ώ NSSA Â

ϊ ϕ У ˝ ϟ ⁞ NSSA ш ϡ è ˆ LSA˜ ˘ ϟ Лϑ ABR Э no-summary ˘ ABR ϳ NSSA ш ϡ ϙ ϟ summary LSAŝ Type-3 LSA˜ Â

ϰ **area default-cost** ϑ ϑ NSSA ш ϡ ABR Э Â ħυ ϛ ш ϡ ϟ ⁞ NSSA ш ϡ ḣ Â ą Ю˘ ϟ ⁞ NSSA ḣ ϊ 1 Â

ЛЮ ḣ ϊ Ḍ ϩ א ע ע ב

ш R

У э OSPF Ш ▪▪ ѝ ▪▪ ѽ ▪▪˘ G ħυ ϩ **area stub** Â ħυ ϩ **no** ĩ ▪▪ ѽ ▪▪ Â

area *area-id* **stub** [**no-summary**]

no area *area-id* **stub** [**no-summary**]

¶	
area-id	STUB Ш ▪▪ Ш ▪▪ /¶ Â
no-summary	ˆ ┘ ~ ABR ▪▪ ┤ ˜ ˘ ▪▪ ┘ ѝ ѽ ▪▪ Â ┤ ABR ¶ Â

ЂЖ ▪▪ Â

ħυ ϩ Â

OSPF ▪▪ ӫ area stub ħυ ϩ Â ABR ┤ ┘ ▪▪ ┤ Ь (LSA)' 1˜ ѕр 1˘ LSA' 2˜ ѕр 2˘ LSA' 3˜ ѕр 3˘ LSA Â ÿ ˘ ▪▪ è ┤ ˜ ĵ OSPF ▪▪ ӫ ˘ ˆ ABR ң ӫ Â ▪▪ a ˜ ĵ OSPF ▪▪ Â ѽ ▪▪˘ ┤ ҷ ABR Э area stub ħυ ϩ ˘ no-summary ˜Ω Â ѽ ▪▪ ┤ ĵ Ш ▪▪ ӫ ˘ Лυ ┤ ABR ң ӫ Â У э OSPF Ш ▪▪ ѝ ▪▪ ч ħυ ϩ area stub Ո area default-cost Â ĵ ▪▪ Э˘ area stub ħυ ϩ˘ п area default-cost ħυ ϩ ┤ ҷ ABR Э Â area default-cost ħυ ϩ ЂЖ ф ӫ ┐ ˆ . ˜ Â

ЛυЮ R ˘ Ш ▪▪ 1 ѝ ▪▪˘ ұ Ш ▪▪ Â

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

ħυ ϩ	
area default-cost	ЂЖ ˜ STUB Ш ▪▪ ĥˆ OSPF ĥ˜ Â

/¶	

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message-digest	ص ŷ MD5 Â
null	ŷ a Â

dead-interval ' 40 '
hello-interval ' 10 '
retransmit-interval ' 5 '
transmit-delay ' 1 '
a '
è м ٩ ḣ Â

ħυ ϡ Â

ج OSPF ﷺ è˘ Ш ﷺ б ﷺ ˘ ﷺ ˘
ﷺ ˘ ĭ ‡ Â ج ч э Ш ﷺ
ˆ ABR˜ ʒ … ˘ ч э ABR ΄Ω ٨ Ш ﷺ ŷ Ш ﷺ Â ﷺˆ Stub Area˜
Ո NSSA a ɔ ŷ Ш ﷺ Â ≠ ٨ Л υ ɣ è Ш ﷺ Â
router-id ŷ OSPF ˘ a router-id ḣ˘ **show ip ospf**
neighbor ħυ ϡ Â ٨ Л υ Loopback ששפ ṁ Â
area virtual-link ħυ ϡ ٨ ⅍ ˘ ŭ Ш ﷺ OSPF
˘ ħυ ϡ **area authentication** Â

R 1' ЛυЮ R ˘ ЛυШ ﷺ 1 ɔ ŷ Ш ﷺ˘ б 2.2.2.2 Â

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 0.0.0.0 255.255.255.255 area 0
```

Ш R

OSPF ħυ ३

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39.1.10 bfd all-interfaces (OSPF)

OSPF ⊀ G BFD ˘ ⋐ OSPF Ю **bfd all-interfaces** Â G ħu ϡ no Â

bfd all-interfaces

no bfd all-interfaces

⊀	⊀	
	-	-

	˝Ω
ħu ϡ	Â

OSPF ˜ Hello ╟ ⊣ ˘ OSPF ŭ ╟ BFD ╗ ⊀˘ ˛ и ⍐ FULL ˝Ω BFD˛ ˘ BFD ⁸ ˘ У BFD ˘

G OSPF˛ ² Â

≠ ⊣ ⊓ ⊀ ħu ϡ **ip ospf bfd** [**disable**] ŭ ╟ ˝Ω ⊀ BFD ╗ ˘ ⊀ . ˝I ¥ Ю **bfd all-interfaces** ħu ϡ Â

39.1.11 clear ip ospf process

ŭ OSPF R Â

clear ip ospf [*process-id*] **process**

¶		
¶	process-id	OSPF /ſ ˘ ŭ OSPF R Â ˘ ŭ ћ OSPF R Â

RFC2328 ‡ Â

ħu ϡ Â

G Æ ɔ OSPF ˘ ˘ ɔ ˜ : ' Ʌu ħu ϡ ˘
˛ Ĭ '

w R ɅuЮ ħu ϡ ŭ OSPF R 1

```
Ruijie# clear ip ospf 1 process
```

ŽΩħu ϡ	ħu ϡ	
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	-	-

39.1.12 compatible rfc1583

ћ ſ ſ У ɔ AS ѕш ˘ ˘ ħu ϡ
RFC1583 è G ˝I ‡ RFC2328 è G ˝I ‡ Â

commpatible rfc1583

no commpatible rfc1583

¶	¶	

-	-

RFC1583 ‡ Â

ħu ҷ Â

G

ЛυЮ R ˘ G rfc 2328 ‡ ∧ Â

w R

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

ЎΩħu ҷ

ħu ҷ	
show ip ospf	ospf ŏ ЎΩ ҽ

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ħu ҷ ˥ ﻝ

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39.1.13 default-information originate ō OSPF Ŏ

ң У ώ OSPF ˘ G ħu ҷ **default-information originate** Â ħu ҷ **no** ЎΩ 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*]

ﻥ

ﻥ	
always	^ ﻝ ~ ЎΩ G OSPF ˚ ң ˘ a ﻣ Ĭ ﺟ Â
metric *metric*	^ ﻝ ~ ˥ ḣ˘ ﻝ ḣ ﺘ 0-16777214 Â

metric-type *type*	ˆ ≥ ˜ صر Â OSPF ч صر' صر 1˘ a ≥ Э ˆ ħ a У ' صر 2˘ ˆ ħ У Â صر 1 صر 2 ≥ ą Â
route-map *map-name*	ˇΩ route-map ≥ , ˇΩ route-map

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39.1.14 default-metric

OSPF ϱ ḣ˘ G ħυ ϗ **default-metric** Â ħυ ϗ **no** Â

default-metric *metric*

no default-metric

ϼ

ϼ	
metric	ⱻ OSPF ϱ ḣ˘ ϻ ḣ ت' 1-16777214 Â

ӥ 20 Â

ħυ ϗ Â

G **default-metric** ħυ ϗ б **redistribute** ħυ ϗ ϧ G ˘ ϻ Ʌυ g ϱ] ע ḣ Â

default-metric ħυ ϗ ˘ Ʌυ **default-information originate** ώ OSPF ⱷ a ɔ Â

ϗ R

ɅυЮ R ˘ OSPF ϱ] ע ḣ ӥ 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
```

ΩħυϗϷ

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redistribute	ĭ è Â
show ip ospf	ospf ŏ ˜Ω ə Â

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ħυ ϡ ˥ ϡ	
ϡ	
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39.1.15 discard-route

ĭ discard ╗ĭ ˘ G no ϡ Λυ discard ╗ĭ Â

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

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

ϡ	
ϡ	
internal	ĭ ╗ ш ħυ ϡ area range discard Â
external	ĭ ╗ ħυ ϡ summary-address discard Â

ϙ ĭ ╗ discard Â

ħυ ϡ Â

G

ج ˘ ϡ ت ل è ˜ت ل
ت ϙ a ج ˘ ل ل ╗ Â и
ϙ ل ˘ ج ABR ASBR ╗ У discard ĭ Â ╟ ˘
ɜ a ˛ · Â

ш R

ΛυЮ R ˘ ╗ area range discard Â

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

˜Ωħυ ϡ	
ħυ ϡ	
area range	OSPF ш Â
summary-address	OSPF Â

ϡ

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39.1.16 distance ospf

a ϡ ص OSPF

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

no distance [**ospf**]

	ϡ	
ϡ	*distance*	˘ ϡ ḣ تن' 1-255
	intra-area *distance*	ϣ ϙ ˘ ϡ ḣ تن' 1-255
	inter-area *distance*	ϣ ˘ ϡ ḣ تن' 1-255
	external *distance*	˘ ϡ ḣ تن' 1-255

ϡ 110'

ϣ ϙ ' ϡ 110'

ϣ ' ϡ 110'

' ϡ 110'

ħυ ϛ	OSPF Â
G	OSPF a ϡ ص a ϡ ˘ ħυ ϛ Â
ϣ R	ЛьЮ R ˘ OSPF ϡ 160 Ruijie(config)# **router ospf** *1* Ruijie(config-router)# **distance ospf external** *160*

ħυ ϛ

39.1.18 distribute-list out

ᛚ ˘ ╥ ɹ **redistribute** ƚƲ ʇ

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**]

ፈ	ፈ	
	¸	
	access-list-number | name	G acl ‡
	¸ **prefix** prefix-list-name	G prefix-list ‡
	¸ **bgp | connected | isis** [area-tag] | **ospf** process-id | **rip** | **static**	

	й ˘ . ώ Â
ƚƲ ʇ	Â
G	**distribute-list out** б **redistribute route-map** ƚƲ ʇ ɹ˘ ӱ ἑ ы ˜ ᛚ ᛚ OSPF è ˘ ɲ a ᛚ ɥ˘ У б **redistribute** ƚƲ ʇ ʎ G Â ACL ‡ Ռ prefix-list ‡ a ڡ è ̏Ω ˘ . У G ACL ‡ , ‡ a ̏Ą prefix-list Â

ʍ R

Ю ᛚ ɥ

```
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
```

̏Ωƚƴ ʇ

ƚƲ ʇ	
distribute-list in	LSA Â
¸ **redistribute**	ᛚ ἑ Â

ɺ

39.1.20 enable traps

OSPFv2 ɱ́ ↰ 16 TRAP ə̨ ˘ ˥ ˥ 4 ر˘ G ЮOħυ ҂ ↲ Л υ ΰ ╟
TRAP ə̨ ↰ Â G ħυ ҂ **no** ↲ Л υ˜Ω TRAP ə̨ ↰ Â

enable traps [**error** [**ifauthfailure | ifconfigerror | ifrxbadpacket | virtifauthfailure | virtifconfigerror | virtifrxbadpacket**] | **lsa** [

OSPF. ŭ (graceful restart GR)╖ ˇ G ħu ҳ **graceful-restart** Â
graceful-restart grace-period . ŭ grace period ٩ ˇ ⅃ G ~
. ŭ╖ Â G ħu ҳ no ѝ Â

graceful-restart [**grace-period** *grace-period*]

no graceful-restart [**grace-period**]

٩	
grace-period	ˆ ⅃ ~ grace-period
grace-period	GR ŭ□ ˇ ŭ□ ѝ ÿ OSPF ↑ OSPF ŭ╟ . ŭ Â تن ѝ 1-1800

G GR Restart ╒ Â
Grace-period ḣ ѝ 120s Â

ħu ҳ

G

. ŭ╖ ѫ ¥ OSPF R ˇ a ⅃ R ⅃Ո ą a ⅃ ٩ Â
. ŭ□ ѝ OSPF ŭ↑ OSPF . ŭ ˇ ѫ ą̈
ɔˇ G OSPF ↑ ٧ Â ŭ□ ↑ ⅄ˇ OSPF GR
ˇ OSPF ɔ Â
graceful-restart GR ŭ□ ѝ 120 ˇ **graceful-restart grace-period** ï
g ŭ□ Â

w R

Ю R ¦ G OSPF R 1 GR╖ Ո ٦ GR╖ ŭ□ ٩ '

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# graceful-restart
Ruijie(config-router)# graceful-restart grace-period 60
```

ЇΩħu ҳ

ħu ҳ	
graceful-restart helper	OSPF. ŭ ╟╖

⅄

ħu ҳ ٦ ⅄

/١	
-	-

39.1.22 graceful-restart helper

OSPF. ὖ ╠(GR helper)╗ ˘ G ħυ ϡ **graceful-restart helper** Â
ħυ ϡ no ╠╗ Â

graceful-restart helper {**disable** | {**strict-lsa-checking** | **internal-lsa-checking**}}

no graceful-restart helper {**disable** | {**strict-lsa-checking** | **internal-lsa-checking**}}

↰	
disable	ɔ ὶ ╠ ╠ ὲ ы . ὖ Â
strict-lsa-checking	GR Helper types 1-5,7 LSA ⌋ ע ″ ΐ ↰ ⌋ ע˘ ↰ ⌋ ע˘ GR Helper Â
internal-lsa-checking	GR Helper types 1-3 LSA ⌋ ע ″ ΐ ↰ ⌋ ע˘ ↰ ⌋ ע˘ GR Helper Â

types 1- Ä 6Ñ oð!'À™1 w q 1 •7U ˜ý„Zøœcð À 8 c ÄÂ on ðÀI@ÑÏ0ŒKÈEà”z5$
Ä 5%Y }hñ ¡a~A Ä

graceful-restart	G OSPF ˜ . ŭ ╗

ʎ

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ʎ	
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39.1.23 ip ospf authentication

ħu ҳ ʎ ˘ G **no** ˩ Л∪ ѝ Â

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

no ip ospf authentication

ʎ	
message-digest	ѫ ʎ Э MD5 ╗ Â
null	a Â

ʎ Э , ʎ Э ѫ Ш ѭ ср Â

ħu ҳ ʎ Â

G ħu ҳ ʌ a ˙ ¦ . ѫ G **no**
ḣ ˘ ĭ ʎ ѫ Ш Э ᾱ ˘
ѝ **null**ґ ‡ ⁸ ѝ a , ʎ Э Ո ʎ ѫ Ш ѭ
, ˝l ʎ Э Â

ѠЮ R ˘ FastEthernet 0/0 ʎ OSPF ср ѝ MD5 Â

ш R

```
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
```

ħu ҳ	
area authentication	ŭ OSPF Ш ѭ Ⱨ Â
ip ospf authentication-key	OSPF Â
ip ospf message-digest-key	OSPF MD5 Â

ﻤ

ђu ҳ ٦ ﻤ

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39.1.24 ip ospf authentication-key

OSPF ˘ G ﻤ ђu ҳ **ip ospf authentication-key** Â ђu ҳ **no** ╕ Â

ip ospf authentication-key *key*

no ip ospf authentication-key

ﻤ

ﻤ	
Key	˘ ﻠ Л∪ 8 э Â

Â

ђu ҳ ﻤ Â

G **ip ospf authentication-key** ђu ҳ ˘ ώ OSPF Âҷ a У ˘ ч ﻤ a OSPF ℨΩ ˘ ≠ a ą Ц Â a ﻠ ﻤ ﻠЛ∪ a У ˘ л ﻉ ﻠ У Э ˘ У Â

У э OSPF Ш ﷺ ї ў ˘ ђu ҳ **area authentication** Â ﻉ ﻤ Э ≠ ﻠЛ´ ў , G ﻤ Ю ђu ҳ **ip ospf authentication** , Ш ﷺ Ո ﻤ . ″I ﻠ ﻤ ص Â

ШЛЮ R ˘ FastEthernet 0/0 ﻤ OSPF й 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
```

ђu ҳ	
area authentication	ў OSPF Ш ﷺ ⊮ Â
ip ospf authentication	ў ﻤ Э ⊮

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ħυ ϗ ϒ ϻ

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-	-

39.1.25 ip ospf bfd

OSPF ϻ ΰ ╟ ΐΩ G BFD ˘ G ϻ ħυ ϗ **ip ospf bfd** [**disable**] Â G ħυ ϗ no ΐ ϻ Э **ip ospf bfd** Â

ip ospf bfd [**disable**]

no ip ospf bfd

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disable	ΐΩ OSPF ϻ G BFD 8

˘ Л∪ OSPF Ю BFD й ñ Â

ħυ ϗ ϻ Â

ϻ . ″I ¥ Ю **bfd all-interfaces** ħυ ϗ Â

ϽЛ∪ ˘ **ip ospf bfd** ħυ ϗ Ɒ Ő ѕ Ȯ

G

-	-

39.1.26 ip ospf cost

OSPF ㄴ ㄱ У э † ^ OSPF ~ G ㄴ ħu ҳ **ip ospf cost** Â
ħu ҳ **no** Â

ip ospf cost *cost*

no ip ospf cost

ㄴ	
cost	OSPF ㄴ ḣ Â

ㄴ ѝ ㄴ /Bandwidthˆ ㄴ

39.1.27 ip

ħυ ३

no

OSPF ″ ∧ ƕ ˘ G ∧ ћu ҷ **ip ospf dead-interval** Â
ћu ҷ **no** Â

ip ospf dead-interval *seconds*

no ip ospf dead-interval

∧	
seconds	Ћ ƕ ″ ˘ Л u ѝ ´ Æ˘ ∨ ћ ن' 1-65535 Â

ѝ ip ospf hello-interval 4¨ Â

ћu ҷ ∧ Â

G

OSPF ƕ ↑ Ü ҽ Hello ӷ Â OSPF ҽ ƕ ӷ˘ ĵ ч Hello ˘ ˆ ÿ è╕ Â ƕ ѝ hello 4¨ ˘ g ѫ hello ˘ ˛ ╟ g ƕ Â ћu ҷ ∨ Л u g OSPF ″ ƕ ˘ л ˊ ĵ Â ч ' Â У ' ƕ ˘ a ұ hello ' Â ү ' ∨ У Э ƕ У Â

ЛuЮ R ˘ serial 1/0 ∧ OSPF ″ ƕ ѝ 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
```

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ip ospf hello-interval	OSPF ∨ Hello Â

/∧	
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39.1.29 ip ospf disable all

G ∧ a Ӭ ң ospf Â

Л∪ 10 '

PPP å HDLC ∧ 10 '

è ∫ ∧ 10 '

è ∫ ∧ å X.25 ∧ 30 Â

ћu ҙ ∧ Â

G

hello ↑ ŭ ج hello è Â ˘ OSPF ∫ ∠ У ≠ ˘ л ╗ Â ∠ У Э hello У Â g " ƃ ˘ ɗ hello a ¥ ƃ Â

ѡ R

ЛυЮ R ˘ serial 1/0 ∧ OSPF ∠ Hello ѝ 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
```

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ћu ҙ	
ip ospf dead-interval	OSPF " ƃ Â

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ћu ҙ ˥ ∠

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39.1.31 ip ospf message-digest-key

OSPF MD5 ˘ G ∧ ћu ҙ ip ospf message-digest-key Â ћu ҙ no ĭ OSPF MD5 Â

ip ospf message-digest-key *key-id* **md5** *key*

no ip ospf message-digest-key

∧

∧	
key	˘ ∠ Л∪ 16 э Â
key-id	˘ ÿ 1∫ 255 Â

MD5 Â

ħu ҳ ʌ Â

G

ip ospf message-digest-key ħu ҳ ˘ ώ OSPF Â ҷ a
У ˘ ч ʌ a OSPF ˜Ω ˘ ≠ a ə
Ң Â
a ɹ ʌ ɻЛυ a У ˘ п ҽ ɹ У Э ˘
У Â ɹ У Â
У э OSPF ш ѫ ї ў ˘ G **ħu ҳ area authentication** Â
ҽ ʌ Э ≠ ɻЛ´ ў , G ʌ Ю **ħu ҳ ip ospf authentication**
, ш ѫ Ո ʌ ˝І ɻ ʌ ص Â
RGOS ˚ ѫ MD5 g ˘ g У э ˝І ╗ ʎ˺ ѵ ‡ Â
╗ У э OSPF MD5 ˘ ˚ и è
˘ ҷ ˚ ˚ ⋮ a ɹ ч ` OSPF ˘ ˚
ɷ Â ɷ ʎ˘ ɻЛ˺ ɷ Â

w R

ЛυЮ R ˘ FastEthernet 0/0 ʌ ╗ ɷ У э OSPF ˘ ʎ и˜ ˘
и 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
```

╗ ɷ ʎ˘ ώ ˺ Â

```
Ruijie(config)# interface Serial1/0
Ruijie(config-if)# no ip ospf message-digest-key 10 md5 hello10
```

˜Ωħu ҳ

ħu ҳ	
area authentication	ў OSPF ш ѫ ӈ Â
ip ospf authentication	ў ʌ Э ӈ

ʎ

ħu ҳ ˥ ɹ

ʎ	
-	-

OSPF ħυ ३

OSPF ħυ ३

Â ˘ a ˘ ≠ ’
Â ϡ˙ ˘ a ώ Â
ɣ ʎ à è Лυ ч X.25 ˘ IP ѫ ˘
broadcast ˝Ω Â

R 1' ЛυЮ R ˘ è ч й ѵ˘ ʎ ώ è 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
```

R 2' ЛυЮ R ˘ è ч й ˙ ѵ˘ ʎ ώ è 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
```

w R

R 3' ЛυЮ R ˘ è ч й ѵ˘ DR/RDR˘ ʎ ώ
˚ ` è ÂЛυЮ ѩ ˙ a
Э ^ 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
```

˝Ωħυ ϡ

ħυ ϡ	
dialer map ip	ћ IP ѫ б ʎ ʎ Â
frame-relay map	ћ IP ѫ б è DLCI Â
neighborˆ OSPF˜	ћ IP ѫ˘ ч ʎ NBMA ѵ Ո ˙ ѵ Â
X25 map	ћ IP ѫ б X.25 ѫ Â

ʎ

ħυ ϡ ˥ ɻ

ʎ	
-	-

39.1.34 ip ospf priority

٨ OSPF. ″I ḣ˘ G ٨ ħυ ٹ **ip ospf priority** Â ħυ ٹ **no** Â

ip ospf priority *priority*

no ip ospf priority

٨		
	priority	٨ OSPF. ″I ḣ˘ ٧ ḣ تن' 0-255 Â
	. ″I ḣ ѝ˝ Â	
ħυ ٹ	٨ Â	
G	OSPF ٨ . ″I ḣ ↑ ΰ ج hello è Â OSPF ص ٤ DR/BDR ˚ ` ~ ˘ . ″I ḣ ˘ ѝ DR BDR Â . ″I ḣ У ˘ ѝ DR BDR Â. ″I ḣ ѝ˚ ˘ a ٨ б DR/BDR Â ħυ ٹ ٧ OSPF broadcast Ո non-broadcast ص Â	
	~	è ج DR Ո BDR ѫ g ٨ . ″I a ˛ . ˘ ٧ ج ЮУ DR Ո BDR ѡ è ˛ ˚ ٨ . ″I Â

ѡ R	ЛυЮ R ˘ fastethernet 0/0 ٨ . ″I ḣ ѝ 0 Â
	`Ruijie(config)# interface fastethernet 0/0`
	`Ruijie(config-if)# ip ospf priority 0`	

″Ωħυ ٹ	ħυ ٹ	
	ip ospf network	٨ OSPF ص Â

٧

ħυ ٹ ٦ ٧	٨	
	-	-

39.1.35 ip ospf retransmit-interval

ĦѪ ∧ LSU˜ ~ . ˘ G ∧ ħυ ϡ **ip ospf retransmit-interval** Â ħυ ϡ **no** Â

ip ospf retransmit-interval *seconds*

no ip ospf retransmit-interval

∧	
∧	LSU · ˘ Лυ ѝ´ Æ˘ ↓ ḣ ںٔ 1-65535 Â
seconds	ұ ч э ƺ ↑ · Â

ѝ 5 Â

ħυ ϡ ∧ Â

ч У э LSU ˘ LSU ɖ ج ч ă " è˘ ج **ip ospf retransmit-interval** ħυ ϡ ĦѪ ą̈˘ ĵ ˘ ч LSU Â

G ˘ Лυ ȯ a · ˘ ج s Э˘ · ↓ Лυ У Â LSU · area virtual-link ħυ ϡ

no ip ospf transmit delay

৭	
seconds	ⱵⱾ OSPF ৸· LSU ˘ Ɲυ ы´ Æ˘ ৸ ḣ ت' 1-65535 Â

ы 1 Â

ħυ ३

	╖ ˘ a detail ↰ ˘ ↲ ⁾ Full Full ə Â
ћu ҳ	Â
G	
ш R	ЛЬЮ R ˘ ↓ у Â Ruijie(config)# **router ospf** *1* Ruijie(config-router)# **log-adj-changes detail**

ћu ҳ		
ћu ҳ	**show ip ospf**	ospf ѽ ћ ə Â

↲	
ћu ҳ ↰ ↲	↲	
	-	-

39.1.38 max-concurrent-dd

ɣ ↲ DD Â

max-concurrent-dd <*1-65535*>

no max-concurrent-dd

↰		
↰	<*1-65535*>	DD

	й 5 Â
ћu ҳ	Â
G	б э ↲ Ц ˘ è ↓⁾ ! ˘ ћu ҳ˘ ↲ 8 э OSPF R ї ↲ ↳ DD Ц ц ↑ Â
ш R	ЛЬЮ R ˘ DD ↑ й 4 Â Ruijie(config)# **router ospf** *10*

OSPF ħυ ३

Hello ˘ OSPF ˛ ч Hello ˘ ч Hello й
Â OSPF У ˘ ч ˩ ˝I ḣ a й 0 ч Hello ˘
˝I ḣ й 0 a˛ ч б DR/BDR Â DR/BDR ң Лυ ˩˘ DR/BDR˛
˩ ч Hello ˝Ω Â
æ ˆ Э, ҷ й a έ ┌ Лυ ╠ ч ,ҷ G
ħυ ϡ й è ,ч ¥ ˆ ص ч Лυ cost ˆ
э Â

ЛυЮ R ˘ ф У э OSPF ˘ è IP فذسه й 172.16.24.2˝ . ˝I
ḣ й 1˘ й 150 Â

ш R

```
Ruijie(config)# router ospf 20
Ruijie(config-router)# network 172.16.24.0 0.0.0.255 area 0
Ruijie(config-router)# neighbor 172.16.24.2 priority 1
poll-interval 150
```

˝Ωħυ ϡ

ħυ ϡ	
ip ospf priority	OSPF . ˝I ḣ Â
ip ospf network	OSPF ص

˩

ħυ ϡ ˥ ˩

˩	
-	-

39.1.40 network area

ЮفҎ ˄ OSPF˝ Лυ ч OSPF Ш ˍ˘ G ħυ ϡ **network area** Â
ħυ ϡ **no** ˉ ˄ OSPF Ш ˍ ЮЖ Â

network *ip-address wildcard* **area** *area-id*

no network *ip-address wildcard* **area** *area-id*

	OSPF Ш ѫ Â
ЪU ҷ	Â
G	*ip-address* Ո- *wildcard* ч э ٨ ЪЖ ї У ЪU ҷ ٫ЛU э ٨ ЎΩ ∫ У э OSPF Ш ѫ Â ж У э ٨ Э OSPF ЎЎ ٨ ў IP فخسم ↑ ж network area ЪЖ IP فخسم تن ڳ Â network area ЪЖ IP فخسم تنˇ ٫ ↑ ٨ IP فخسمˇ ٨ a¸ OSPF Â ٨ فخسم ٫ б э OSPF network ЪU ҷ ЪЖ IP فخسم تن ٦ ˇ . ٦ ˇ ٨ ٨ б OSPF Â

Ш R	ЛUЮ R ˇ ЪЖ ѡ' э Ш ѫ' 0ˇ 1ˇ 172.16.16.0 Â IP فخسم ж 192.168.12.0/24 تن ڳ ٨ ЪЖ Ш ѫ 1ˇ IP فخسم ж 172.16.16.0/20 تن ڳ ٨ ЪЖ Ш ѫ 172.16.16.0ˇ è м ٨ ЪЖ Ш ѫ 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`

ЎЪU ҷ	ЪU ҷ	
	router ospf	… OSPF Â

٫

ЪU ҷ ٦ ٫	٫	
	-	-

39.1.41 overflow database

ЪU ҷ ұ ɱ OSPF R LSA Â

overflow database *<1-4294967294>* **hard** | **soft**

no overflow database

٨	٨	
	<1-4294967294>	LSA

	hard | **soft**	hard' LSA ˘ ˜Ω OSPF R soft' LSA ˘ ↓ ˆ
	a 8 ɱ OSPF R LSA Â	
ħu ҷ	Â	
G	˜Ω OSPF ˘ hard ↰ ˘ a ˜Ω OSPF˜ ↓ ˆ ˘ soft ↰	

ѠR	ЛυЮħu ҷ LSA 10 ˘ ˜Ω OSPF 10 R Â
	`Ruijie# config terminal`
	`Ruijie(config)# router ospf 10`
	`Ruijie(config-router)# overflow database 10 hard`	

˜Ωħu ҷ	ħu ҷ	
	-	-

↓	

ħu ҷ ˥ ↓	Л	
	-	-

39.1.42 overflow database external

ħu ҷ ɣ external LSA б ÿ Â

overflow database external *max-dbsize wait-time*

no overflow database external

↰		
↰	*max-dbsize*	external lsa ˆ ↓ У AS ӫ ḣ ↓˜ ˘ ↓ ḣ تن 0-2147483647 Â
	wait-time	ÿ overflow ھ ˘ ↓ ḣ تن 0-65535 Â

a ⁸ external-LSA Â
⁸ ɷ external-LSA ˘ external-LSA ḣ ʌ˘ a ̈Ạ
Â

ħu ҳ ώ Â

external-LSA *max-dbsize* ˘ ̧ ώ ˘ ЮЎ a
̈Ạ ╗ external-LSA˘ ѕш external-LSA Â *wait-time* ʌ˘
˘ ╗ external-LSA Â

G

	ѫ G ╗ ɗ OSPF ў Ш ѕѕ Ո Ш ѕѕ Ы
	⅄ *max-dbsize* ḣ˘ ї̆ ‡ ⅄ Ю '
~	1˜ У ˘ ⌡ Full '
	2˜ ˘ ↑ ɋ'
	3˜ ⅄ ̧ AS-External-LSA · '

Ю ħu ҳ external lsa и 10˝ ‡ ⅄ и overflow ˘ ÿ overflow
⌡ и 3

ш R

```
Ruijie# config terminal
Ruijie(config)# router ospf 10
Ruijie(config-router)# overflow database external 10 3
```

ЎΩħu ҳ

ħu ҳ	
-	-

⅄

ħu ҳ ˥ ⅄

⅄	
-	-

39.1.43 overflow memory-lack

ħu ҳ ї ѫ ̈ɋ a OSPF ώ OVERFLOW Â G ħu ҳ no ЎΩ
╗ Â

overflow memory-lack

no overflow memory-lack

ʌ

ʌ	

no	˜Ω ѫ ӧ a OSPF ώ OVERFLOW ╗ Â

ӧ a ϙЮ OSPF ĭ ώ OVERFLOW Â

ħυ ϩ

OSPF ώ OVERFLOW ў x ˆ ˘ й ɖ ӧ a Ѧ Â

ů ╗ ˘ ѫ OSPF ώ OVERFLOW x ˆ ˘ ┘ ¸ Â й ѭ ˜ ң ˘ OSPF¸ У ┘ NULL ┤ ˘ ÿ æ ң ˘ ѫ OVERFLOW Ю У ѫ Â ┘ЛυG **clear ip ospf process** ħυ ϩ Æ OSPF ˘ OSPF OVERFLOW Â

G no a ĭ OSPF ѫ ӧ a ώ OVERFLOW ˘ ┘ ¸ ӧ ˘ ѫ ӧ У ˆ У ˘ OSPF R ɱ ˘ ˆ ˆ Â

G

R 1' OSPF ѫ ӧ a ϙЮ˝ a ώ OVERFLOW '

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# no overflow memory-lack
```

W R

ħυ ϩ	
clear ip ospf process	OSPF R Æ
show ip protocols ospf	OSPF ˜Ω ə

ѧ ħυ ϩ

┤

┤	

ϰ	
type *number*	ϳ ╟ ϰ ϰ Â
default	ϰ ϳ ╟ ϰ Â

ϙ ЮЎ ϰ ϳ ╟ ϰ˘ ї ϰ ϟ OSPF Â

ħυ ϡ Â

G ϳ ϖ è ѐ ы ╟ ˝ ↑ ə ˘ ϟ Л
ϰ ϳ ╟ ϰ Â

ЛυЮ R ˘ ϰ serial 1/0 ϳ ╟ ϰ Â

ш R
```
Ruijie(config)# router ospf 30
Ruijie(config-router)# passive-interface serial1/0
```

ЎΩħυ ϡ	ħυ ϡ	
	show ip ospf interface	ϰ Ўϴ ə

ϻ

ħυ ϡ ϒ ϻ	ϻ	
	-	-

39.1.45 redistribute

ħυ ϡ ɣ ↑ ϟ ə Â

redistribute {**bgp** | **connected** | **isis** [*area-tag*] | **ospf** *process-id* | **rip** | **static**} [{**level-1** | **level-1-2** | **level-2**} **|** **match** {**internal** | **external** [**1**|**2**] | **nssa-external** [**1|2**]} | **metric** *metric-value* | **metric-type** {*1|2*} **| route-map** *route-map-name* **| subnets** | **tag** *tag-value*]

no redistribute {**bgp** | **connected** | **isis** [*area-tag*] | **ospf** *process-id* | **rip** | **static**} [{**level-1** | **level-1-2** | **level-2**} | **match** {**internal** | **external** [**1**|**2**] | **nssa-external** [**1|2**]} | **metric** | **metric-type** {*1|2*} | **route-map** *route-map-name* **| subnets** | **tag** *tag-value*]

ϰ

ϰ	
bgp	ÿ bgp ↑
connected	ÿ ↑

isis [*area-tag*]	ÿ isis ĭ ˘ *area-tag* έ ε ə isis ᴿ
ospf *process-id*	ÿ ospf ĭ ˘ *process-id* έ ε ə ospf ᴿ˘ ↓ ḣ تن' 1-65535
rip	ÿ rip ĭ
static	ÿ ĭ
level-1 | **level-1-2** | **level-2**	↓ ĭ ↓ IS-IS ᴳ ˘ ų level ĭ ↓˘ ↓ ĭ level-2 IS-IS ĭ ↓ Â
match	↓ ĭ ↓ OSPF ᴳ ˘ ų ĭ ↓˘ ĭ OSPF ĭ ↓'
metric *metric-value*	OSPF external 2 LSA metric˘ metric-value metric ˘ ↓ ḣ تن' 0-16777214
metric-type {*1*|*2*}	صر ŭ E-1 E-2
route-map *route-map-name*	ĭ ‡
subnets	↓ ĭ ñ
tag *tag-value*	ĭ ĭ OSPF ą̈ tag ḣ˘ ↓ ḣ تن' 0-4294967295

ą Ю a ĭ Â

ĭ OSPF˘ ‡ ĭ ᴿ صر '

ĭ ISIS˘ ‡ ĭ ᴿ level-2 صر '

è ы ą Ю˘ ĭ صر '

ĭ BGP metric ŭ 1˘ è м صر LSA metric ŭ 20' metric-type ŭ E-2'

a ˘Ω route-map Â

ħυ ϡ

ḥ

ᴳ

ฯ ה ' ¥ ĭ ㄱ OSPF ISIS ˘ ฯ ĭ ㄱ match level ‡˘ Ą route-map ″ Â

R 1' ЛъЮħu ҳ ĭ **ospf** *2* Ո **isis** *isis-001* ĭ OSPF ѫ ѽ'

```
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
```

ш R

R 2' Show run Ю'

```
router ospf 1
redistribute ospf 2 match external 1 internal subnets
redistribute isis isis-001 level-1-2
```

ѽħu ҳ

ħu ҳ	
summary-address	OSPF ѫ Â
default-metric	OSPF ĭ ḣ

ฝ

ħu ҳ ٦ ฝ

ฝ	
-	-

39.1.46 router ospf

… OSPF ώ OSPF ˘ G ѽ ħu ҳ router ospf Â ħu ҳ no ĭ ЊѪ OSPF Â

router ospf

router ospf *process-id* [**vrf** *vrf-name*]

no router ospf *process-id*

ฯ

ฯ	
process-id	OSPF ฝ Â ฝ ˘ 1 Â
vrf-name	ѫ VRF ҥ ҕ è˘ ¥ OSPF VRF

a ҷ OSPF Â

ћu ҷ ѿ Â

G RGOS10.1 ҷ Ѵ ҹ Э ╗ ҁ Ѓ Ѱ ˘ й R OSPF Â a ѯ OSPF R
ҭ ˘ ѯ Л ɔ й ч э ~ Â

w R ЛЬЮ R ˘ ҷ **vrf** *vpn_1* ӫ … OSPF 10 Â
`Ruijie(config)# router ospf 10 vrf vpn_1`

ЎΩћu ҷ

ћu ҷ	
show ip protocols	ґѓ ~ ә Â
show ip ospf	ґѓ ospf ә Â

ѯ

ћu ҷ ї ѯ

Ѓ	
-	-

39.1.47 router-id

ID, G ћu ҷ no ѯ Л Router ID˘ G
Router ID Â

router-id *router-id*

no router-id

Ѱ

Ѱ	
router-id	ID, Л IP ҹ ф

OSPF w ы ^ loopback~ Ѱ IP ҹ ф ɔ й ’
IP ҹ ф ы ^ loopback~ Ѱ˘ ѫ OSPF ѯ Ѱ IP
ҹ ф ɔ й Â

ћu ҷ Â

G ѯ Л · ¡ У э IP ҹ ф ɔ й ˘ Л Ѓ

ر У Â ¥ ل ل˘ ~ ¨ ˛ ṁ ˘ Лυ a ў ل
˘ g ˛ Ї g Â ج LSA ڑ ṁ ˝l
router-id Â

ЛυЮ R ˘ g router-id ṅ 0.0.0.36 Â

ш R

```
Ruijie(config)# router ospf 20
Ruijie(config-router)# router-id 0.0.0.36
```

ΏΩħυ ϡ

ħυ ϡ	
show ip protocols	ṁ Ь Ъ ¨

э LSA Ո- у (LSA age)˘ э LSA LSA
Ո- у ˘ CPU Â и ѫ ¯ CPU ˘ ѽ LSA
У Ո- у ɔ Â

G у ɔ и 4ƚ ˘ ɻՈ ħυ ʒ ɡ ḣ Â ৲ a
Âѩ LSA У ɋЮ˘ ˘ Ɣ ɻ LSA
Â и ѫ ɗ CPU ˘ ʊ LSA a ˘ Ո
LSA ˘ ʊ æ Â ˘ è 10000 LSA˘ ɻՈ æ
˘ ৲ 40˙ 100 ˘ ‡ ɻՈ ƚ 10~20ƚ Â

ՈЮ R ˘ и 120 Â

ѡ R
```
Ruijie(config)#router ospf 20
Ruijie(config-router)#timers lsa-group-pacing 120
```

ḣ† ѝ ЛuЮ ч ϙ'

1 à ﻩ RGOS 10.4 ʒ ϻ˘ a timers throttle spf ћu ҳ Â ḣ ѝ timers spf 5 10

2 à RGOS 10.4 ˘ timers throttle spf ћu ҳ Â ϙ Ю timers spf ћu ҳ a ˘ SPF Л **timers throttle spf** ћu ҳ ѝ ñ˘ ∀ timers throttle spf ћu ҳ Â

ћu ҳ Â

G

spf-delay Ո *spf-holdtime* ˘ OSPF ⊿ ע ≠ ˘ ≠ ˘ Л ˛ ´ CPU Â

timers spf б timers throttle spf ˛ ц Â

~

ЛuЮ R ˘ OSPF Ո ɖ † ⁞ ѝ 3 Ո 9 Â

ѡ R

```
Ruijie(config)# router ospf 20
Ruijie(config-router)# timers spf 3 9
```

ʗћu ҳ

ћu ҳ	
show ip ospf	ospf ʗ ə
timers throttle spf	SPF ˘ ╗ timers spf ╗ ' G timers throttle spf ⊿ ҳ timers spf

⊿

ћu ҳ ٦ ⊿

⁄	
10.1	ћu ҳ ώ

39.1.51 timers throttle spf

OSPF ﻩ † ⊿ ע ə ˘ SPF à ч SPF à ˘ G ћu ҳ **timers throttle spf** Â ћu ҳ no Â

timers throttle spf *spf-delay spf-holdtime spf-max-waittime*

no timers throttle spf

∀

∀	

spf-delay	⊮ SPF ˘ Л∪ ѝ ´ Æ˘ ↓ ḣ ننت 1-600000 ÂOSPF ↑ ↓ ע˘ ↓ SPF ج spf-delay Л Â
spf-holdtime	⊮ ч SPF ڎ ˘ Л∪ ѝ ´ Æ˘ ↓ ḣ ننت 1-600000 Â
spf-max-waittime	⊮ ч SPF ڎ ˘ Л∪ ѝ ´ Æ˘ ↓ ḣ ننت 1-600000 Â

spf-delay' 1000 '

spf-holdtime' 5000 '

spf-max-waittime' 10000 Â

ħυ ϡ Â

spf-delay ÿ ↓ ↓ ע↑ SPF ˘ Â У ↓ SPF
↑ γ ↓ SPF ѝ *spf-holdtime*˘ Л˘ ↓ SPF
ѝ Э У ч˝ ˘ ↑ *spf-max-waittime* ڎ Л˘
a ¨Ą ╗ Â ч SPF ѫ ḣ˘ ѫ SPF
ÿ *spf-holdtime* Â
spf-delay Ո *spf-holdtime* ↓Л∪ ҏЛ∪╗ ' *spf-max-waittime* ↓Л∪
ҏЛ∪ ˝ SPF L ˘ ↓Л∪ ↓ ʊ

G

show ip ospf	ospf ˜Ω ə
timers spf	SPF Â» 10.4 ʒ ɲ RGOS è˘ SPF ħυ ३ Â ɲ G 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 ╟,  ▄ ∖  ⍰  Э  ╗ "BFD is enabled", w ᴿ  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 У Â
RFC1583Compatibility flag	ﻩ RFC1583 ‡ RFC2328 ‡’ ﻩ ∧ ASBR Ո ‡ ׀ 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 ﺭ normal à ABR à ASBR Â
SPF Delay	׀ ৶ ע SPF Â
SPF-holdtime	ч SPF ڑ Â
LsaGroupPacing	LSA ˘ Ո ˘ ע Â
Incomming current DD exchange neighbors	ﻩ Ꮋ ц ˘ incomming ώ exstart Â
Outgoing current DD exchange neighbors	ﻩ Ꮋ ц ˘ outgoing ÿ ﻫ exstart Ꮋ ц Â
Number of external LSA	è ẏ LSA Â
External LSA Checksum Sum	è ẏ LSA Ո Ո Â
Number of opaque LSA	è ẏ opaque-LSA Â
Opaque LSA Checksum Sum	è ẏ opaque-LSA Ո Ո 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 ˜ ȷ̷ ă̋ Ò Ò Ȯ

Number of interfaces in this area	¥ Ш ѩ ∧ Â
Number of fully adjacent neighbors in this area	¥ Ш ѩ Full Â
Number of fully adjacent virtual neighbors through this area	¥ Ш ѩ Full ’ ∧ ج ص Ш ѩ Â
Area authentication	Ш ѩ Â
SPF algorithm last executed	Э SPF ∫ ⁄ή Â
SPF algorithm executed times	SPF Â
Number of LSA	¥ Ш ѩ LSA Â
Checksum Sum	Ш ѩ LSA ∩ ∩ Â
NSSA Translator State	ĭ NSSA LSA ѝ External LSA’ Θ NSSA Ш˘ з ABR OSPF Â
BFD is enabled	ΰ OSPF б BFD ╟

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39.2.2 show ip ospf border-routers

∫ ABR/ASBR OSPF ϕ ˘ G ћυ ϡ **show ip ospf border-routers** Â

show ip ospf [*process-id*] **border-routers**

¶

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process-id	ospf /!

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ħu ʒ˘ ˩ Л∪ ѫ ⁞ ABR ASBR OSPF ⁄ ÂOSPF
⁄ a ˩ ¥ **show ip route** ˘ OSPF ⁄ ѫ ф и OSPF
˘ a Â

Л∪Ю и **show ip ospf border-routers** ħu ʒ '

```
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
```

˥ Ю Â

Codes	ср ʒ Ж Âi Ш ѫ ⁄ ˘ I Ш ѫ ⁄ Â
I	и Ш ѫ ⁄ Â
1.1.1.1	OSPF Â
[2]	⁞ ˆ cost˜ Â
via 10.0.0.1	⁞ Ю У ˜Ω Â
FastEthernet 0/1	⁞ ˥ Â
ABR, ASBR	ср˘ ABR Ո ASBR ч ˘ ˩ Л∪ ˩ ABR Ո ASBR Â
Area 0.0.0.1	¯ ⁞ Ш ѫ Â
select	⁞ ASBR ˘ select ⁄ń 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**]

٩	
area-id	^ ﻝ ˜ Ш ﷺ ﻝ Â
adv-router	^ ﻝ ˜ ‘Ω˜ ə Â
link-state-id	^ ﻝ ˜ ﻝ OSPF ə Â
self-originate	^ ﻝ ˜ ə Â
max-age	^ ﻝ ˜ ˛ ע LSA
router	^ ﻝ ˜ OSPF ə Â
network	^ ﻝ ˜ OSPF ə Â
summary	^ ﻝ ˜ OSPF ə Â
asbr-summary	^ ﻝ ˜ ˜Ω ɣ ASBR ə Â
external	^ ﻝ ˜ OSPF ə Â
nssa-external	^ ﻝ ˜ OSPF Ц ə Â
opaque-area	^ ﻝ ˜ ˉ LSA
opaque-as	^ ﻝ ˜ ˉ У LSA
opaque-link	^ ﻝ ˜ Ç LSA
database-summary	^ ﻝ ˜ OSPF ﻝ LSA ə Â

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G OSPF ˘ ˛ ˉ ˛ Â ﷺ G ҿħυ ҳ˘ ╠ ɣ OSPF Â

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R 1' ЛЮ й **show ip ospf database** ħυ ҳ '

```
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 ћu ҳ л ЮÂ

OSPF Router with ID	OSPF б OSPF л
Router Link States	ЛЬЮ ѫ ѝ ą Â
Net Link States	ЛЬЮ ѫ ѝ ą Â
Summary Net Link States	ЛЬЮ ѫ ѝ ą Â
NSSA-external Link States	ЛЬЮ ѫ ѝ Ц ą
AS External Link States	ЛЬЮ ѫ ѝ ч ą Â

Link ID	Â
ADV Router	˜ Â
Age	ҙ Â
Seq#	/ˇ ¥ LSA Â
Cksum	Ո Â
Link-Count	ą è
Route	LSA ↑ ŭ ą
Tag	Â

R 2' ЛЬЮ ѝ **show ip ospf database asbr-summar**y ћu ҳ '

```
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 ћu ҳ /ı ЮÂ

OSPF Router with ID	ЛЬЮ ą б OSPF /ı
AS Summary Link States	ЛЬЮ AS ą Â
LS age	ҙ Â
Options	Â
LS Type	ص Â
Link State ID	Â
Advertising Router	˜ Â
LS Seq Number	/ı Â
Checksum	Ո Â

Length	˘ Лυ ὴ´ Æ Â
Network Mask	Â
TOS	TOS ḣ˘ ɱṅ ↓ ὴ 0 Â
Metric	ḣ Â

R 3' ЛЬЮ ὴ **show ip ospf database external** ħυ ٶ '

```
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 ћ˘ ⁄ń ۷ ѝ 0 Â
Metric	ћ Â
Forward Address	ĵ ˘ ۷ĵ IP فخسم Â فخسم ѝ 0.0.0.0ґ ‡ ˛ ۷ĵ ң Â
External Route Tag	˘ ə 32 ə ÂOSPF a ᴳ ˘ ج è ĵ OSPF ˛ ĵ Â

ᴿ 4' ЛЮ ѝ **show ip ospf database networ**k ћu ҙ '

```
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 ћu ҙ ⁄ ЮÂ

Checksum

Length	˘ Л∪ ѝ´ Æ Â
Number of Links	˝Ω Â

TOS	TOS ћ˘ ⁄ń ↓ ѝ 0 Â
Metric	ћ Â

R 7' ЛЬЮ ѝ **show ip ospf database nssa-external** ћu ҙ '

```
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 ћu ҙ ⁄ Ю Â

OSPF Router with ID	ЛЬЮ ą б OSPF ⁄ Â
NSSA-external Link States	ЛЬЮ ą ѝ Ц ąą ą Â
LS age	ąć Â
Options	Â
LS Type	ąр Â
Link State ID	Â
Advertising Router	˜ Â
LS Seq Number	⁄ Â
Checksum	Ո Â
Length	˘ Л ѝ ´ Æ Â
Network Mask	Â
Metric Type	ąр Â

TOS	TOS ḣ˘ ɱṁ ৸ ṅ 0Â
Metric	ḣ Â
NSSA:Forward Address	ˆ ˘ ৸ˆ IP ѫ ѣ Â ѫ ѣ ṅ 0.0.0.0ʊ ‡ ˛ ৸ˆ ң Â
External Route Tag	˘ ə 32 ə ÂOSPF a ᴳ ˘ ج ȅ ˆ OSPF ˛ ᵍ Â

LS Seq Number	Л Â
Checksum	Ո Â
Length	˘ Лu ѝ´ Æ Â
Network Mask	Â
Metric Type	ср Â
TOS	TOS ћ˘ ѽ ч ѝ 0 Â
Metric	ћ Â
Forward Address	ѓ ˘ ч ѓ IP ѕѫ ф Â ѕѫ ф ѝ 0.0.0.0 ‡ ˛ ч ѓ н Â
External Route Tag	˘ э 32 э Â OSPF a G ˘ ѫ è ѓ OSPF ˛ ѓ Â

R 9 ЛЬЮ ѝ **show ip ospf database database-summary** ћu ҙ '

```
Ruijie# show ip ospf database database-summary
OSPF process 1:
Router Link States      : 4
Network Link States     : 2
Summary Link States     : 4
ASBR-Summary Link States : 0
AS External Link States  : 4
NSSA-external Link States: 2
```

show ip ospf database database-summary ћu ҙ л Ю Â

OSPF Process	ЛЬЮ ą л
Router Link	ѫ Ш ѕѕ è˘ OSPF LSA Â
Network Link	ѫ Ш ѕѕ è˘ OSPF LSA Â
Summary Link	ѫ Ш ѕѕ è˘ OSPF LSA Â
ASBR-Summary Link	ѫ Ш ѕѕ è˘ OSPFASBR LSA Â
AS External Link	ѫ Ш ѕѕ è˘ OSPF LSA
NSSA-external Link	è ,OSPF NSSA LSA

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39.2.4 show ip ospf interface

б OSPF ˜Ω ✓ ə ˘ G ћu ҳ **show ip ospf interface** Â

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

	✓	
✓	*interface-type*	ˆ ˩ ˜ ✓ ✓ ص Â
	¸ *interface-number*	ˆ ˩ ˜ ✓ ✓ ✓ Â

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ЛыЮ й **show ip ospf interface FastEthernet** *1/0* ћu ҳ '

```
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
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
```

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ฯ ὐ б BFD ΄Ω ˘ ѫ ╗ ЮѲ :

```
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
```

Backup designated router(ID)	٨ BDR
BDR's Interface address	٨ BDR ٨ فذ سم
Time intervals configured	٨ Hellŏ Deaď Waiť Retransmit
Hello due in	Э HELLO ٦
Neighbor count	
Adjacent neighbor count	Full
Crypt Sequence Number	٨ md5 ٨
Hello received send	↑ б ٦ HELLO Â
DD received send	↑ б ٦ DD Â
LS-Req received send	↑ б ٦ LS Â
LS-Upd received send	↑ б ٦ LS Â
LS-Ack received send	↑ б ٦ LS ؛ Â
Discard	x OSPF Â

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39.2.5 show ip ospf neighbor

OSPF ˘ G ЂU ҂ **show ip ospf neighbor** Â

show ip ospf [*process-id*] **neighbor** [[**detail**] | [[*interface-type interface-number*] [*neighbor-id*]]]

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detail	ˆ ٦ ˜ ą Â
interface-type interface-number	ˆ ٦ ˜ ٨ ą Â
neighbor-id	ˆ ٦ ˜ ą Â

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ЛъЮ ѝ **show ip ospf neighbor** ħu ʒ '

```
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
```

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б BFD ˜Ω ˘ ж ф ╗ ѻ Ю ъ ″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 ⁄ '

BDR	w BDR ٨ سم فخ (Hello BDR)
Options	Hello E ϑ ˘ 0 Ш ѫ и STUB’ ˘ Ш ѫ a STUB Ш ѫ Â

count	ﾉ OSPF ə

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G ħu ɜ ¥ OSPF ə ˘ count ¥ OSPF ə 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 ħu ɜ ﾉ ЮЎ

codes	صЛu ﾉ ĵ̃
100.0.0.0/24	ɱ Â
[1]	cost
via	ЮУ б ﾍ

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	-	-

39.2.7 show ip ospf summary-address

OSPF ĵ ˘ G ħu ɜ **show ip ospf summary-address** Â

show ip ospf [*process-id*] **summary-address**

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process-id	OSPF ٨˘ ٩ OSPF

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G ɱ ħu ʒ ٧ ج NSSA ABR Э ˘ ʒ ٧ ج ɯ ṁ ɔ Â

ЛЬЮ й **show ip ospf summary-address** ħu ʒ '

```
Ruijie# show ip ospf summary-address
Summary Address Summary Mask Advertise Status Aggregated subnets
---------- ---------- ---------- ---------- ----------
202.101.0.0    255.255.0.0    advertise      Inactive 0
```

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Summary Address	فذ ɯ
Summary Mask	تن Â

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40.1.2 address-family ipv4 vrf

G ђu ҳ ώ **address-faimly IPv4 VRF** BGP ˘ э vrf ə Ӌ ц ╖ Â G ђu ҳ **no** ˘ ˝Ω б э vrf ə Ӌ ц ╖ Â G **exit-address-family** ђu ҳ BGP ѫ ѯ Â

address-family ipv4 vrf *vrf-name*

no address-family ipv4 vrf *vrf-name*

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vrf-name	vrf ɻ

ђ vrf ѫ ѯ

ђu ҳ BGP Â

G ¯ ђu ҳ ˆ ˜ PE IPE

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unicast	ل ˘ ώ IPv6 ´ فذسم

ħu ɂ BGP

G G ħu ɂ ώʲ vpn ɯ ɦ ЮЎ ïʻ PE ɛ Ӌ ʇɻ vpn ə Â ɯʲ BGP ˘ ɻ Л υ G ħu ɂ **exit-address-family** Â

ɯ R

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family vpnv4
```

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ħu ɂ	
exit-address-family	

ɻ

ħu ɂ ˥ ɻ

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40.1.5 aggregate-address ō IPv4 Ŏ

G ħu ɂ BGP IPv4 ɻ Â G ħu ɂ **no** Ўʊ ╖ Â

aggregate-address *ip-address mask* {**as-set**|**summary-only**}

no aggregate-address *ip-addres mask* {**as-set**|**summary-only**}

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ɳ	
ip-address	ɻ ɯ ɦ ɯ ɦ ɱ Â
mask	ɻ ɯ ɦ Â
as-set	ɖ ɻ ɯ ɦ ɲ ɑ̈ AS ə Â
summary-only	ɻ Ω̂ ɻ ɻ Â

ɻ Â

ħu ɂ BGP ˘ BGP IPv4 ɯ ɦ ˘ BGP IPv4 VRF ɯ ɦ Â

G BGP ɻ Ω̂ ɻ ɱ ɻ ə ˘ ɻ Ω̂ ɻ ɻ ə ˘ G **aggregate-address summary-only** ħu ɂ Â

w R

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# aggregate-address 10.0.0.0 255.0.0.0 as-set
```

ЎΩћu ҳ

ћu ҳ	
router bgp	BGP ˜ Â

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ћu ҳ ˥ ʎ

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40.1.6 aggregate-address ō IPv6 Ŏ

G ћu ҳ BGP IPv6 ʎ Â G ћu ҳ **no** ЎΩ ╖ Â

aggregate-address *ipv6-network/length* {**as-set**|**summary-only**}

no aggregate-address *ipv6-network/length* {**as-set**|**summary-only**}

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ʕ	
ipv6-network	ʎ سم فخ سم ɲή Â
length	ʎ سم فخ سم Â
as-set	ɖ ʎ سم فخ تن ǭ AS ə Â
summary-only	ˬ Ω ʎ ʎ Â

ʎ Â

ћu ҳ

BGP IPv6 فخ سم Â

G

BGP ˬ Ω ʎ ɲή ʎ ə ˘ ˬ Ω ʎ ʎ ə ˘ G
aggregate-address summary-only ћu ҳ Â

w R

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family ipv6
Ruijie(config-router-af)# aggregate-address 2008::/90  as-set
```

ЎΩћu ҳ

ћu ҳ	
router bgp	BGP ˜ Â

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40.1.7 bgp always-compare-med

G ħu ҳ BGP Multi Exit Discriminator MED Â G ħu ҳ **no** Ω ╖ Â

bgp always-compare-med

no bgp always-compare-med

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	ąЮ ل AS E MED Â
ħu ҳ	BGP Â
G	ąЮ ٨ ل У AS E MED ḣ a ل AS ï MED ḣ ħu ҳ Â ↑ ل У ˘ MED ḣ ″I Â a ل ω ل IGP Ո ˘ ǐ ‡ a G ħu ҳ Â
w R	Ruijie(config)# **router bgp** *65000* Ruijie(config-router)# **bgp always-compare-med**

Ωħuҳħuҳ		
	ħu ҳ	
	show ip bgp	BGP Â
	bgp bestpath med confed	w ˘ ï AS ą E MED ḣ Â
	bgp bestpath med missing-as-worst	w ˘ ï MED ″I ѝ æ Â
	bgp deterministic-med	w ˘ ï ل AS E ″I Â

ل

ħu ҳ ٦ ل	
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40.1.8 bgp bestpath as-path ignore

w . ˘ G ħu ɂ a AS Â G ħu ɂ **no** ˝Ω ℸ Â

bgp bestpath as-path ignore

no bgp bestpath as-path ignore

↰	↰	
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	ɑ ЮЎ ҷ . ɷ AS Â
ħu ɂ	BGP Â
G	ñ (RFC1771) ˘ BGP . w a AS Â ת У ɑ ЮЎ AS ˘ . ˝I ˘ Л∪ ъ ҷ . w ɷ AS Â ↓Л∪ ҷ ɑ ҷ w . ĭ AS Â
w R	`Ruijie(config)# router bgp 65000` `Ruijie(config-router)# bgp bestpath as-path ignore`

˝Ωħu ɂ	**ħu ɂ**	
	show ip bgp	BGP

↓

ħu ɂ ˥ ↓	**/↰**	
	-	-

40.1.9 bgp bestpath compare-confed-aspath

w . ˘ ħu ɂ ĭ ↓ ASPATH ˘ ϕ ASPATH ˘ . ˝I Â G ħu ɂ **no** ˝Ω ℸ Â

bgp bestpath compare-confed-aspath

no bgp bestpath compare-confed-aspath

↰	↰	

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ąЮ ӕ . ˘ a ل У э ą̈ ebgp peer ASPATH
è ы ˚ . Â

ħu ҳ BGP Â

G

ąЮ ӕ. ӕ ą̈ EBGP peer ل ą ˘ ų
ASPATH a ˘ ħu ҳ ASPATH Â
ӕ G ħu ҳ ˘ У ŭ ASPATH a
ASPATH Â

w R

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp bestpath compare-confed-aspath
```

ˇΩħu ҳ

ħu ҳ	
show ip bgp	BGP
bgp router-id	BGP Router ID

ل

ħu ҳ ˥ ل

/ſ	
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40.1.10 bgp bestpath compare-routerid

w . ˘ ħu ҳ ї ل router IDˇ router ID ˘ .
˝l Â G ħu ҳ **no** ˇΩ ╖ Â

bgp bestpath compare-routerid

no bgp bestpath compare-routerid

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ąЮ ӕ . ˘ ↑ ч ÿ a ل

ħu ҳ BGP Â

ɑ ЮЎ ج . è˘ ĵ ч ÿ a ⅄ EBGP peers

G

Ruijie(config-router)# **bgp bestpath med confed**

ħυ ϡ	
show ip bgp	BGP Â
bgp bestpath always-compare-med	w ˘ ĭ a ˩ AS ɛ MED ḣ Â
bgp bestpath med missing-as-worst	w ˘ ĭ MED ˝I ѝ æ Â Â
bgp deterministic-med	w ˘ ĭ ˩ AS ɛ ˝I Â

/I	

ћu ҳ	
show ip bgp	BGP Â
bgp bestpath always-compare-med	w . ˘ ĭ a ⅄ AS E MED ḣ Â
bgp bestpath med confed	w . ˘ ĭ AS ḋ E MED ḣ Â
bgp deterministic-med	w . ˘ ĭ ⅄ AS E ˝I Â

⅄

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40.1.13 bgp default route-targe filter

ћu ҳ route-targe ˘ ɣ VPNV4 G route-targe route-targe ḉ E Â G no ћu ҳ ˜Ω ℼ Â

bgp default route-targe filter

no bgp default route-targe filter

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Â

ћu ҳ BGP Â

G BGP ⌡ VPNV4 ⅄˘ G route-target ḉ E " ⌡ ⅃ a ⅄ vrf Â G no ћu ҳ˘ BGP VPNV4 ˘ a ѫ VRF route-targe ĭ ҷ Ҿ VPNV4 Â

BGP ɷ У э PE ⅃ ˘ BGP VPNV4 ѝ a route-targe ˘ ĭ ћu ҳ BGP ѝ У ˘ . a route-targe Â

w R

```
Ruijie(config)# router bgp 65000
```

Ruijie(config-router)# **no bgp default route-targe filter**

ħυ ҳ	
neighbor route-reflector-client	√ Ы и √ Ы

/I	
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40.1.14 bgp client-to-client reflection

ħυ ҳ Ӡ √ ╖ Â G ħυ ҳ **no** ˜Ω Ӡ √ ╖ Â

bgp client-to-client reflection

no bgp client-to-client reflection

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╖ ˘ л √ Â

ħυ ҳ BGP Â

ąʜƟ ą̈ √ Ы Ӡ a ˜Ω ˘ √ Ы √ Ӡ Âỹл ˘ Ģ A = Ї G A

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ђu ҙ ˥ ѵ	ѵ	
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40.1.16 bgp confederation identifier

ћu ҳ AS Â G ћu ҳ **no** è Â

bgp confederation identifier *as-number*

no bgp confederation identifier

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۹	*as-number*	AS Â ىتن 1..65535

Â

ћu ҳ BGP Â

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ﻝ У ˝ ӫ IBGP Е Â
У э ,ǂ ӣ э ˘ У э У ID(AS ﻑ)
ҿ У э Â ˘ э Ӳ ӣ У э AS˝ з ﻝ
AS ﻑ ﻝ Âجـ ӫ ˘ ӫ BGP speakers ӡ Ӳ
ѿ IBGP Е ˘ BGP speaker ӡ EBGP Â جـ
BGP speakers ӡ EBGP ˘ л Ӈ ə ˘ ұ Ю У ӛMED
Лu ﻝ ﺳ. ˝I ə Ӳ ɖ a ﻝ Â

ѡ R

```
Ruijie(config-router)# bgp confederation identifier 65000
```

ћu ҳ	

ipv4-unicast ѳѕ ѳѓ Â

ћu ҳ BGP Â

G ћu ҳ BGP G **address family ѝ ipv4´** ѳѕ ѳѓ Â

w R `Ruijie(config-router)# bgp default ipv4-unicast`

ћu ҳ

ћu ҳ	
address-family ipv4	ώ IPv4 ѳѕ ѳѓ

ѵ

ѵ	**addres08 485.242 1 Tf052 0 286.3r 1**

show ip bgp	BGP Â
bgp bestpath always-compare-med	w ˘ ï a ɹ AS E MED ḣ Â
bgp bestpath medconfed	w ˘ ï AS ą E MED ḣ Â
bgp bestpath med missing-as-worst	w ˘ ï MED . ˝I ѝ æ Â

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ħυ ҳ ˥ ɹ		
	ɻ	
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40.1.20 bgp deterministic-med

ħυ ҳ ɹ AS E . ˝I MED ḣ˘ ąЮ
˘ ˝I Â G **no** ħυ ҳ è ˇΩ Â

bgp deterministic med

no bgp deterministic med

ɻ	**ɻ**	
	-	-

	˥ ˇΩ Â
ħυ ҳ	BGP Â
G	ąЮ˘ w ˘ ↑ ˘ ɹ AS E ˝I ˘ G ħυ ҳ Â
w R	`Ruijie(config-router)# bgp deterministic med`

ˇΩħυ ҳ	**ħυ ҳ**	
	show ip bgp	BGP Â
	bgp bestpath always-compare-med	w ˘ ï a ɹ AS E MED ḣ Â

bgp bestpath med confed	ш . ˘ ĭ AS ᾳ ɛ MED ḣ Â
bgp bestpath med missing-as-worst	ш . ˘ ĭ MED . ″I ѝ æ Â

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ħυ ҳ ˥ ᐣ	ᐢ	
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40.1.21 bgp enforce-first-as

ħυ ҳ ᾐ У ə AS_PATH a AS ᐢ UPDATE Â
ᴳ **no** ħυ ҳ è ″Ω Â

bgp enforce-first-as

no bgp enforce-first-as

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ħυ ҳ	BGP
ɢ	ᾳ ĦŎ ح UPDATE ˘ AS ᐢ ώ è Â
ш ᴿ	`Ruijie(config-router)# bgp enforce-first-as`

″Ωħυ ҳ	ħυ ҳ	
	show ip bgp	BGP

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ħυ ҳ ˥ ᐣ	ᐢ	
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40.1.22 bgp fast-external-fallover

ħu ३ EBGP peer G ∧ ˘ G ħu ३ ˝Ω BGP˛ Â G ħu ३ **no** ˝Ω ╖ Â

bgp fast-external-fallover

no bgp fast-external-fallover

∧	∧	
	-	-

	╖ Â
ħu ३	BGP Â
G	ħu ३ ∨ EBGP Â
w R	`Ruijie(config-router)# bgp faster-external-fallover`

	ħu ३	

BGP G . ŭ ╒˘ a . ŭ˘ ≠ a ɔ ѝ. ŭ ╠ Â

ħu ҳ

BGP

BGP ╒ Open è ╒ ˆ ą ˜ ك˘ ﻫ] è˘ ╒ ˜ ك Â ч ╒ У ˘ ˙ ¡ У a ˘ ˚ GR Â

G

bgp graceful-restart ħu ҳ G GR ╒˘ Open è GR ╒ ˘ GR ╒ ˜ ك˘ ڇ BGP GR˘ ﻫ ч ﻟ G GR ╒ Â ħu ҳ a˚ . ɔ ɣ ℸ BGP ˘ ڇ ֎ BGP . ˜ ك GR ╒˘ ⁸ BGP ŭ G ﻣ б Peer GR ╒ ˜ ك Â

BGP. ŭ ɣ a ч˘ ﻫ BGP ˜ ŭ ɖ BGP ч Â ї ŭ a ч б ˚ ╒ ℁Ω˘ ɱ ч S8600 ң ҏ IPv4´ ﻣ ﻓ Л ч IPv6´ ﻣ ﻓ a ч˘ è ы BGP ﻫ G GR ╒ Ƶ Л ч ɔ ѝ GR Helper ╠ BGP ŭ . ŭ Â

ѡ R

```
Ruijie(config)# router bgp 500
Ruijie(config-router)# bgp graceful-restart
```

ℭħu ҳ

ħu ҳ	
router bgp	BGP ˜
bgp graceful-restart restart-time	BGP. ŭ ŭ

Л

ħu ҳ ٦ Л

Л	
10.4(2)	**ħu ҳ**

40.1.24 bgp graceful-restart restart-time

BGP. ŭ ŭ ˘ G ħu ҳ bgp graceful-restart restart-time Â ħu ҳ no ŭ ѝ ḣ Â

bgp graceful-restart restart-time *restart-time*

no bgp graceful-restart restart-time

٩	
restart-time	GR Restarter GR Helper ج б GR Restarter ڗ ڭ ن ڬ 1ڀ 3600

ڬ 120

ћu ҳ BGP

G ڑ GR Restarter ڑ GR Helperڑ GR Restarter GR Helper ج б GR Restarter ڗ ڭ Â GR Helper ٨ Ÿ б GR Restarter BGP ڀ Established ڑ ‡ ڬ BGP ڑ ڑ BGP Â ḣ ج BGP Open GR ┣ è ڑ ڑ a ڑ ч GR ڑ У ڑ л У Â

w R
```
Ruijie(config)# router bgp 500
Ruijie(config-router)# bgp graceful-restart
Ruijie(config-router)# bgp graceful-restart restart-time 150
Ruijie(config-router)# no bgp graceful-restart restart-time
```

ћu ҳ

ћu ҳ	
bgp graceful-restart	ڑ BGP ڑ ┣

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ћu ҳ ٦ ٨

/١	
10.4(2)	**ћu ҳ**

40.1.25 bgp graceful-restart stalepath-time

BGP ڑ ڑ ╠ ɖ ڑ G ћu ҳ bgp graceful-restart stalepath-time Â ћu ҳ no stalepath-time ڬ ḣ Â

bgp graceful-restart stalepath-time *time*

no bgp graceful-restart stalepath-time

٩	٩	

	time	جھ б GR Л˘ Ÿ ɖ stale Â ن ѝ 1ʲ 3600

ѝ 360

TAxÑ‰QxP)b`ă

ħυ ҳ BGP

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ℸ Â

ħu ϡ BGP Â

G ≠ ⅃Ʌυ G **debug** ħu ϡ BGP ⅃ ע ə Â ת G BGP **debug** ħu ϡ。 Â

ψ R

```
Ruijie(config-router)# bgp log-neighbor-changes
```

ˇΩħu ϡ

ħu ϡ	
router bgp	BGP ˜

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ħu ϡ ˥ ᐯ

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40.1.27 bgp nexthop trigger delay

ħu ϡ BGP nexthop ⅃ ע ÂG ħu ϡ

w R Ruijie(config-router)# **bgp nexthop trigger delay** *30*

ħu ҳ	
bgp nexthop trigger enable	nexthop ↳ ╖

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40.1.28 bgp nexthop trigger enable

ħu ҳ ЮУ ↳ ╖ Â G ħu ҳ **no** ЮУ ↳ ╖ Â

bgp nexthop trigger enable

no bgp nexthop trigger enable

↰	
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╖ Â

BGP ˘ BGP IPv4/IPv6/VPNv4 فخ سه ˘ BGP IPv4 VRF فخ سه Â

G ħu ҳ BGP ˜ ЮУ ↳ ╖ Â

w R Ruijie(config-router)# **bgp nexthop trigger enable**

ħu ҳ	
bgp nexthop trigger delay	ЮУ ↳ ↲ ע Â

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40.1.29 bgp redistribute-internal

ħu ϡ ⁸ BGP ÿ IBGP ĭ ĭ ϯ ϟ IGP ˜ ˇ RIP ãOSPF ãISIS Â

bgp redistribute-internal

no bgp redistribute-internal

ϟ	ϟ	
	-	-

	ąϦO IBGP a ĭ ϯ ϟ IGP ˜ Â
ħu ϡ	BGP ˇ BGP IPv4/IPv6 فخ سه ˇ BGP IPv4 VRF فخ سه Â
G	ħu ϡ ⁸ IBGP ĭ ĭ ϯ ϟ IGP ˜ Â
w R	`Ruijie(config-router)# bgp redistribute-internal`

ĭΩħu ϡ	ħu ϡ	
	redistribute	

ip-address	IP فخ سم Â

route-id Â ج a ى ى ˇ ى ϙ

ħu ϡ BGP Â

G ħu ϡ BGP ˜ G ID Í Í IP فخ سم

w R Ruijie(config-router)# **bgp router-id** *10.0.0.1*

ΩħuϡΩ

ħu ϡ	
show ip bgp dampening dampened-paths	ə
bgp dampening	ˇ ˇ ϙ ╖

ϡ

ħu ϡ ϡ

ϡ	
-	-

˜Ωħu ɮ	ħu ɮ	
	bgp scan-time	BGP

ˬ

ħu ɮ ˥ ˬ	ˬ	
	-	-

40.1.32 bgp scan-time

ħu ɮ BGP ˜ Â

bgp scan-time *time*

no bgp scan-time [*time*]

˄	˄	
	time	' تن' 5..60˝ ´ Æ'

60 Â

ħu ɮ	BGP ˇ BGP IPv4/IPv6/VPNv4 فخ سه ˇ BGP IPv4 VRF فخ سه Â
G	ħu ɮ BGP ˜ ˇ جه bgp scan-rib enable ˜Ω è Â

w R

```
Ruijie(config-router)# bgp scan-time 30
```

˜Ωħu ɮ	ħu ɮ	
	bgp scan-rib enable	BGP

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ħu ɮ ˥ ˬ	ˬ	
	-	-

40.1.33 bgp update-delay

BGP Speaker У ɹ ϟ ɱ ˘ G **bgp update-delay** ħu ϡ Â G ħu ϡ

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ħu ϧ ˥ ᴊ

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40.1.34 clear bgp all

BGP ѫ ϧ Æ Â Æ ϙ ᴊ ᴙ ᾱ Â

clear bgp all [*as-number*|]

clear bgp all peer-group *peer-group-name* [[**soft**] [**in** | **out**]]

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ᴎ	Æ ѫ ϧ HO E
as-number	Æ Ո AS è
peer-group	Æ Э E
peer-group-name	E ᴊ
in	a ╗ ᴙ **soft** Æ E ў ╟
out	a ╗ ᴙ **soft** Æ BGP speaker ў ╟
soft	Æ Ո E ᴙ ə Æ
soft in	Æ ə Æ
soft out	Æ ᴉ ᴙ ə Æ

ħu ϧ Â

G ħu ϧ Æ ѫ ϧ ˘ ≠ ↑ ᴎ Э ѫ è vrf ↑ ü ϧ Â

ᴡ R

ˇΩħu ϧ

ħu ϧ	
clear bgp ipv4 unicast	BGP IPv4 ´ ѫ Æ

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	-	-

40.1.35 clear bgp ipv4 unicast

BGP IPv4 ´ ѫ ƶ Æ Â ƫυ ϗ б **clear ip bgp** ╖ à ϟ ώ У Â

ϟ	ϟ	
	ϟ **clear ip bgp** ƫυ ϗ	ϟ **clear ip bgp** ƫυ ϗ

ϟ **clear ip bgp** ƫυ ϗ

ƫυ ϗ Â

G ϟ **clear ip bgp** ƫυ ϗ

ѡ R

ƫυ ϗ		
clear ip bgp	BGP IPv4 ´ ѫ ƶ Æ

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ƫυ ϗ ϒ ϡ	/ǀ	
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40.1.36 clear bgp ipv4 unicast dampening

G ƫυ ϗ ə Ո G 8 8 Â

clear bgp ipv4 unicast dampening [*address* [*mask*]]

ϟ	ϟ	
	address	IP ѫ ƶ Â
	mask	Â

ħυ ϡ

G ħυ ϡ BGP ə ˘ G 8 8 Â ħυ ϡ ˩ Ʌυ ů ╟ BGP Â

w R

```
Ruijie# clear bgp ipv4 unicast dampening 192.168.0.0 255.255.0.0
```

ħυ ϡ	

ψ R Ruijie# **clear bgp ipv4 unicast external in**

ΩħυϡΩ

ħυ ϡ	
clear ip bgp	Æ BGP˛
show ip bgp neighbors	BGP ə

ϡ

ħυ ϡ ϒ ϡ

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40.1.38 clear bgp ipv4 unicast flap-statistics

G ħυ ϡ ə Â

clear bgp ipv4 unicast flap-statistics [*address*[*mask*]]

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Ϡ	
address	IP فخ سم
mask	

ħυ ϡ Â

G ħυ ϡ ϡ ə ˇ ≠ a˛ Â

ə ə ˇ ϡ Ո G **clear ip bgp dampening** ħυ ϡ Â

ψ R Ruijie# **clear bgp ipv4 unicast flap-statistics**

ΩħυϡΩ

ħυ ϡ	
bgp dampening	˜ Ⅱ ˜ Ϡ
show ip bgp	BGP

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40.1.39 clear bgp ipv4 unicast peer-group

G Ђ ї Æ Ո E è ˜ ˛ Â

clear bgp ipv4 unicast peer-group *peer-group-name* [[**soft**] [**in** | **out**]]

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peer-group-name	E ˩ Â
in	a ╗ ٩ soft˘ Æ E ў ╟ ˛ Â
out	a ╗ ٩ soft˘ Æ BGP speaker ў ╟ ˛ Â
soft	Æ˘ Ո E ٦ ə Æ Â
soft in	Æ˘ ə Æ Â
soft out	Æ˘ ˫ ٦ ə Æ Â

Â

Ђ ї Â

G Ђ ї Æ Ո E è ˜ BGP˛ Â

w R `Ruijie# clear bgp ipv4 unicast peer-group my-group in`

Ђ ї	
clear ip bgp	Æ BGP˛
show ip bgp	BGP

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40.1.40 clear bgp ipv6 unicast

BGP IPv6 ´ فذ سم Æ Â

ħυ ϗ б **clear bgp ipv4 unicast** ╖ ɔ˘ ∢ ɔ ѫѕ فخ a ⊿ Â

∢		
∢	∢ **clear bgp ipv4 unicast** ħυ ϗ Â	∢ **clear bgp ipv4 unicast** ħυ ϗ Â

∢ **clear bgp ipv4 unicast** ħυ ϗ Â

ħυ ϗ Â

G ∢ **clear bgp ipv4 unicast** ħυ ϗ

ѡ R

ħυ ϗ	
clear bgp ipv4 unicast	BGP IPv4 ´ ѫѕ فخ Æ

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ψ R

ΐΩħυ ϛ

ħυ ϛ	
clear bgp ipv4 unicast	BGP IPv4 ´ ففز سم Æ

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40.1.42 clear ip bgp

G ħυ ϛ BGP IPv4 ´ ففز سم Æ Â

clear ip bgp {* | *as number* } [**soft** [**in** | **out**]]

Ϡ

Ϡ	
*	Æ ηή BGP ˛ ˘ ЛυϠ BGP ipv4 unicast ففز سم OVERFLOW Â
address	Æ б peer BGP ˛ Â
as number	Æ Ո AS è ˜ ˛
in	ą Æ Â
out	ĭ Ϟ ą Æ Â
soft	Æ˘ Ո E Ϟ ą Æ Â
soft in	Æ˘ ą Æ Â
soft out	Æ˘ ĭ Ϟ ą Æ Â

ħυ ϛ

G

ϊϊ ϡ Ą˘ Ϟ BGP Ϟ Ͻ˘ k G Â· ΅Ι ΐΩ ΅Ą BGP Лυ ĭ Â ϟϧ ϱ BGP Æ˘ ج a ΐΩ BGP ˛ ϙ Ю˘ Â

ϒ a 9 Ϯ peer˘ ϞЛυ G ħυ ϛ **neighbor soft-reconfiguration inbound** ϊϊ ϶ BGP E ج BGP speaker Э ϥ У` Ι ą Â

ΐΩħυ ϛ

ħυ ϛ	
show ip bgp dampening dampened-paths	ə
bgp dampening	ˇ ╗ ˇ ∤

ϟ

ħυ ϛ ˥ ϟ

∕∤	
-	-

40.1.44 clear ip bgp external

ᴳ ħυ ϛ ᴳ IPv4´ فخ سه EBGP Æ

clear ip bgp external [[**soft**] [**in** | **out**]]

∤

∤	
in	a ╗ ∤ soft˝ Æ ᴇ ў ╟ ˛ Â
out	a ╗ ∤ soft˝ Æ BGP speaker ў ╟ ˛ Â
soft in	Æ˘ ə Æ Â
soft out	Æ˘ ƚ ˩ ə Æ Â

ħυ ϛ Â

G ᴳ ħυ ϛ ᴳ ΠU BGP Æ Â

ψ ᴿ Ruijie# **clear ip bgp external in**

ΐΩħυ ϛ

ħυ ϛ	
clear ip bgp	Æ BGP˛
show ip bgp neighbors	BGP ə

ϟ

ħυ ϛ ˥ ϟ

∕∤	

40.1.45 clear ip bgp flap-statistics

G ħυ ҳ IPv4

out	a ╗ ϒ **softˇ** Æ BGP speaker ў ╟ ˬ Â

G ħu ३ ¥ **table-map** ə Â

w R Ruijie# **clear ip bgp table-map**

ʺΩħu ३

ħu ३	
clear ip bgp	Æ BGP˳
show ip bgp	BGP

ﻝ

ħu ३ ٦ ﻝ

ﻝ	
-	-

40.1.48 clear ip bgp vrf

G ħu ३ Æ ﷺ vrf è ˜ ˳ Â

clear ip bgp vrf *vrf-name* [* | *address*] [[**soft**] [**in** | **out**]]

ﻝ

ﻝ	
vrf-name	vrf ﻝ
*	Æ vrf ЮО BGP˳ Â
address	Æ vrf ЮО б peer BGP˳ Â
in	a ╗ ﻝ **soft˝** Æ E ў ╟ ˳ Â
out	a ╗ ﻝ **soft˝** Æ BGP speaker ў ╟ ˳ Â
soft	Æ˘ Ո E ٤ ə Æ Â
soft in	Æ˘ ə Æ Â
soft out	Æ˘ ٢ ٤ ə Æ Â

Â

ħu ३ Â

G ħu ३ Æ ﷺ vrf è ˜ BGP˳ Â

ẘ ᴿ Ruijie# **clear ip bgp vrf my-vrf in**

ħυ ३	

BGP ħu ҳ

G ћu ҳ ѝ a ⊿ ص BGP a ⊿ Â G **no** ћu ҳ Â

distance bgp *external-distance internal-distance local-distance*

no distance bgp [*external-distance internal-distance local-distance*]

ٱ

ٱ	
external-distance	ÿ EBGP peers ˜ ˚ Â ںت 1..255
internal-distance	ÿ IBGP peers ˜ ˚ Â ںت 1..255
local-distance	ÿ peers ˜ ˚ ˇ л ѝ ج ⊿ Л ÿ IGP ˜ ˚ ˇ ҏ **network** **backdoor** ћu ҳ Â ںت 1..255

⁄ ٱ ḣ Ю'

external-distance´ 20

internal-distance´ 200

local-distance´ 200

ћu ҳ

BGP Â

G

ъ a ⊿ BGP Â ج ˇ У Ю ŭ '

Â У ' external-distance è ы IGP ˜ (OSPF ӕRIP) æ'

Â ү ' internal-distance Ո local-distance è ы IGP ˜ Â

ѡ R

exit-address-family

৭	
-	-

ħυ ३ BGP address-family Â

G ħυ ३ ৲ Ո υ ÿ bgp ৸ **address-family** è ↑ bgp Â

w R Ruijie(config-router-af)# **exit-address-family**

G	˜Ω ¥ ‡ ´ ê IP´ ƒ Ì è Â

w R	Ruijie(config-router)# **ip as-path access-list hsd deny** *^123$*

˜Ωħu ҳ	ħu ҳ	
	neighbor filter-list	ɛ Э as-path ⁸ "
	neighbor distribute-list	ɛ Э ƒ ˩ "

˩

ħu ҳ ˥ ˩	˥	
	-	-

40.1.54 maximum-prefix

ħu ҳ ⁸ ƒ ю ә ɱ Â ᴳ ħu ҳ no ю ƒ ю ә ɱ ḣ Â

maximum-prefix *maximum*

no maximum-prefix

˥	˥	
	Maximum	ƒ ю ә ɱ Â <1 - 4294967295>تن
	No	˙ ḣ Â

a ˩ ƒ ю ә ɱ ḣ a ˩' ipv4/ipv6 multicast ƒ ю ˜ ḣ ˙ 10000.

è ƒ ю ˜ ↑ ipv4/ipv6 unicast˜ vpnv4 unicast, ipv4 vrf ḣ ˙ *memory-limit.* *memory-limit* ḣ ˙ (system-memory/256M)*100000 Â system-memory ˙ ą̈ Â ą̈ ˙ 256M˜ ‡ memory-limit ḣ ˙ 100000 Â

ħu ҳ

BGP ˘ BGP IPv4 ƒ ю ˘ BGP IPv6 ƒ ю ˘ BGP IPv4 VRF ˘ BGP VPNv4 ƒ ю

G

BGP ƒ ю ә ɱ ˩ redistribute ώ ˘ ≠ ˩ ÿ

˝ ώ ˘ a ف ϙ˘ У فخ سم Ю BGP ə ɱή ˚ ˘
فخ سم ə ɱή a Ą , فخ سم table ώ overflow ˘ فخ سم Ю
≠ ώ overflow Â
show bgp <فخ سم > summary ˩ table ˥ Â
bgp˘ G clear bgp <فخ سم > * Æ فخ سم Â

&	فخ سم ώ overflow ˘ a maximum-prefix g Â

ϡ R

R 1' ЛЮw R ϖ ϧ ipv4 multicast 8 BGP ə ɱή Â

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family ipv4 unicast
Ruijie(config-router-af)# maximum-prefix 65535
```

ΩΩħυ ϡ

ħυ ϡ	
clear bgp <*addressfamily*|**all**> *	BGP فخ سم Æ
show bgp < *addressfamily*|**all** > **summary**	BGP فخ سم ə

˩

-

ħυ ϡ ˥ ˩

˩	
10.4	ħυ ϡ

40.1.55 neighbor activate

ħυ ϡ ج ɱή فخ سم Ю E Â G ħυ ϡ **no** ˩ Лυ
ḣ Â

neighbor {*peer-address* | *peer-group-name*} **activate**

no neighbor {*peer-address* | *peer-group-name*} **activate**

˥

˥	
peer-address	E فخ سم˘ Э فخ سم ˩ IPv4 فخ سم˘ ≠ ˩ IPv6 فخ سم Â
peer-group-name	E ˩ Â E ˩ a 32 Â

فخ سم ج ipv4 Ю Â

ħυ ϡ

BGP ˘ BGP IPv4 فخ سم ˘ BGP IPv6 فخ سم ˘ BGP IPv4 VRF ˘ BGP VPNv4 فخ سم Â

G ɣ ipv4 ففسم ɜ ħu ҷ ˘ ɣ ɛ ɨɑ ففسم صر˘ ħu ҷ ə Ĵ Â

w R
```
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
```

ˇΩħu ҷ

ħu ҷ	
router bgp	BGP ˜
neighbor remote-as	BGP ɛ Â

ɻ

ħu ҷ ˥ ɻ

ɻ	
-	-

40.1.56 neighbor advertisement-interval

ħu ҷ ɬ BGP Â G ħu ҷ **no** ɬ ɲ ḣ Â

neighbor {*peer-address* | *peer-group-name*} **advertisement-interval** *seconds*

no neighbor {*peer-address* | *peer-group-name*} **advertisement-interval**

ɬ

ɬ	
peer-address	ɛ ففسم Â
peer-group-name	ɛ ɻ Â ɛ ɻ a 32 Â
seconds	ɬ Â تن: 1..600

IBGP : 15seconds
EBGP : 30seconds

ħu ҷ BGP

G ɷ BGP ɛ ˘ ж ɛ ˜ ħu ҷ Â

ẅ ᴿ

```
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
```

ˇΩħυ ϩ

ħυ ϩ	
router bgp	BGP ˜
neighbor remote-as	BGP ᴇ Â

ᵡ

ħυ ϩ ˥ ᵡ

ᵡ	
-	-

40.1.57 neighbor allowas-in

PE ˇ ᴳ ħυ ϩ PE ïˇ ᵗ ΰ̈ έ Ո PE AS ᵡ Â ᴳ ħυ ϩ **no** ᵡ ᴖυ ḣ Â

neighbor {*peer-address* | *peer-group-name*} **allowas-in number**

no neighbor {[*peer-address* | *peer-group-name*} **allowas-in**

ᵑ

ᵑ	
peer-address	ᴇ فخ سم Â
peer-group-name	ᴇ ᵡ Â ᴇ ᵡ a 32 Â
number	ïˇ AS ᵡ ˇ ḣ ẅ ȝ ᵡ ḣ تن ج [1,10] Â

allowas-in ╖ Â

ħυ ϩ BGP ˇ BGP IPv4 فخ سم ˇ BGP IPv4VRF فخ سم Â

ṋ ص ج spoke_hub ص è˘ ج PE f[(num)8(ber)]TJ /C2_021 Tf 0 Tc 5.979d [<00A1<0723542

ᴳ

```
Ruijie(config-router)# address-family ipv4 vrf vpn1
Ruijie(config-router-af)# neighbor 10.0.0.1 allowas-in
```

ħu ҳ	
router bgp	BGP ˜
neighbor remote-as	BGP е Â

/ſ
-

/ſ	
peer-address	е ﻓﺨ ﺳﻢ Â
peer-group-name	е ﺟ Â е ﺟ a 32 Â

40.1.58 neighbor as-override

G ħu ҳ PE У э AS /ſ ÂG ħu ҳ **no** ﺟ ſU ḣ Â

neighbor {*peer-address* | *peer-group-name*} **as-override**

no neighbor {*peer-address* | *peer-group-name*} **as-override**

ʕΩƫu ɝ

ƫu ɝ	
router bgp	BGP ˜
neighbor remote-as	BGP ɛ Â

ʎ

ƫu ɝ ˥ ʎ

ʎ	
-	-

router bgp	BGP ˜
neighbor remote-as	BGP ε Â

ϡ

ħυ ϗ ϒ ϡ	
ϡ	
-	-

40.1.60 neighbor description

ħυ ϗ ϰ ε ( ) ϡ Â ᴳ ħυ ϗ **no** ϡ Ͻυ ϡ Â

neighbor {*peer-address* | *peer-group-name*} **description** *text*

no neighbor {*peer-address* | *peer-group-name*} **description**

ϡ	
peer-address	ε فخ سم Â
peer-group-name	ε ϳ Â ε ϳ a 32 Â
text	ε ( ) Â تن' 80 ə Â

ϖ

ħυ ϗ BGP Â

ɢ ħυ ϗ ϰ ε ˜ ϖ Â ϡ Ϗυ ╠ τ ε ˜ Ո 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
```

ħυ ϗ	
router bgp	BGP ˜
neighbor remote-as	BGP ε ( )Â

ϡ

ħυ ३ ٦ ٧	٨	
	-	-

40.1.61 neighbor distribute-list

ھ ٧ BGP ɛ ٤ ə ˘ ACL Â ᴳ ħυ ३ **no** ٧ 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	ɛ سم فخ˘ ɔ سم فخ ٤ IPv4 سم فخ˘ ≠ ٤ IPv6 سم فخ Â
	peer-group-name	ɛ ɻ Â ɛ ɻ a 32 Â
	access-list-number	ACL ٨
	in	ACL ¥ ˆ ə Â
	out	ACL ¥ˆ ٤ ٧ ə Â

٦٦ Â

ħυ ३ BGP ˘ BGP IPv4 سم فخ ˘ BGP IPv6 سم فخ ˘ BGP IPv6 0

router bgp	BGP ˜ Â
neighbor remote-as	BGP ɛ Â
ip access-list	… ñ IP ACL IP ACL Â

ﻝ

ħu ҳ ٦ ﻝ	
ﻡ	
-	-

40.1.62 neighbor ebgp-multihop

ħu ҳ ĭ ﻝ EBGP ɛ ǯ BGP Â ᴳ ħu ҳ **no** ﻍ Â

neighbor {*peer-address* | *peer-group-name*} **ebgp-multihop** [*ttl*]

no neighbor {*peer-address* | *peer-group-name*} **ebgp-multihop**

ﻥ	
peer-address	ɛ ﻓﺦ ﺳﻡ ˘ ﻓﺦ ﺳﻡ ﻉ ﻝ ﻓﺦ ﺳﻡ IPv4 ˘ ≠ ﻝ ﻓﺦ ﺳﻡ IPv6 Â Â
peer-group-name	ɛ ﺍ Â ɛ ﺍ a 32 Â
ttl	ĭ Â ﻧﺘ 1..255

ﻍ ĭ б EBGP ɛ BGP Â ebgp-multihop ˘ a ﻥ ˘ ﻣ ttl ᴳ 255 Â

ħu ҳ

BGP ˘ BGP IPv4 ﻓﺦ ﺳﻡ ˘ BGP IPv6 ﻓﺦ ﺳﻡ ˘ BGP IPv4 VRF Â

ᴳ

ﻯ ɷ Ո ˘ BGP EBGP peers ǯ ﺟﺄ Â

ɷ BGP ɛ ˘ ﻣ ɛ ˜ ħu ҳ ˘ л ﻯ ɛ ɔ ˜ ħu ҳ˘ è ﷺ ɣ ɛ Â

ᵂ ᴿ

```
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
```

ƕ ʒ	
router bgp	BGP ˜
neighbor remote-as	BGP ɛ Â

ʃ

ƕ ʒ ˥ ʃ	ʃ	
	-	-

40.1.63 neighbor filter-list

ƕ ʒ ɟ BGP ɛ ˩ ə ˇ G У ɜ Â G ƕ ʒ **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**}

ʅ		
ʅ	*peer-address*	ɛ ɜ فخ سم ˇ ɜ سم فخ ˩ IPv4 سم فخ ˇ ≠ ˩ IPv6 سم فخ Â
	peer-group-name	ɛ ɻ Â ɛ ɻ a 32 Â
	access-list-numbe	as-path list ʃ
	in	as-path list ɣ ˆ ə Â
	out	as-path list ɣˆ ˩ ˥ ə Â

˥ Â

ƕ ʒ	
	BGP ˇ BGP IPv4 سم فخ ˇ BGP IPv6 سم فخ ˇ BGP IPv4 VRF ˇ BGP VPNv4 سم فخ Â

G	
	ɷ BGP ɛ ˇ ж ɛ ˜ ƕ ʒ ˇ ɲ ѝ ɛ ɜ ˜ **neighbor filter-list**˝ ɛ ɯ ɣ ɛ Â ɜ ɯ ɣ سم فخ ˇ ˩ ɅƱ ج a ˩ سم فخ Ɜ a ˩ ˇ ⁸ Â

ɯ R	

	`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

ћu ҳ

BGP ˘ BGP IPv4 فذ سم ˘ BGP IPv6 فذ سم ˘ BGP IPv4 VRF ˘ BGP VPNv4 فذ سم Â

G

Local AS ۷ ج EBGP е Э ˘ ۶ е ۷ ۷ ע EBGP ̀й IBGP EBGP ˘ ̀й е Local AS Лu ۷ ‡ Â Local AS a б BGP AS ۶˘ a б Peer Remote AS ۶˘ ¢ ˘ ‡ a б ID ۶ Â ¢ BGP е ˘ ж е ˜ ћu ҳ ˘ a ´ ̀й е è э ˜ Local AS Â

ш R

```
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
```

˝Ωћu ҳ

ћu ҳ	
router bgp	BGP ˜
neighbor remote-as	BGP е Â

۸

╖ ج 10.4(1) ۷ ۸ Â

ћu ҳ ٦ ۸

⁄۱	
10.4	ώ

40.1.65 neighbor maximum-prefix

ћu ҳ ⁸ ÿ BGP е ⁄ή ÂG ћu ҳ **no** ۷ ⁸ Â

neighbor {*peer-address* | *peer-group-name*} **maximum-prefix** *maximum* [*threshold*] [**warning-only**

threshold	ʜ ˆ Ո ʲ ḣ
warning-only	ə ʲ Э a BGP ˘ У э ə Â

ℸ Â

ħu ʒ

BGP ˘ BGP IPv4 فخ سم ˘ BGP IPv6 فخ سم ˘ BGP IPv4 VRF Â

G

ą ЮЎ ʲ ə Э ˘ ʗΩ BGP Â a ʗΩ ˘ ѫ ⊿ Л∪ warning-only ⁸ Â

ѿ BGP E ˘ ѫ E ˜ ħu ʒ ˘ Л й E э ˜ ħu ʒ˘ è ѫ ұ E Â

ѡ R

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 maximum-prefix 1000
```

ʗΩħu ʒ

ħu ʒ	
router bgp	BGP ˜
neighbor remote-as	BGP E Â

⊿

ħu ʒ ˥ ⊿

/ℓ	
-	-

40.1.66 neighbor next-hop-self

ѧ ⊿ BGP E ʲ ⊣ ˘ G ħu ʒ ə ЮУ й BGP speaker Â G ħu ʒ **no** ⊿ Â

neighbor {*peer-address* | *peer-group-name*} **next-hop-self**

no neighbor {*peer-address* | *peer-group-name*} **next-hop-self**

⊀

⊀	
peer-address	E سم فخ˘ Э سم فخ ⊿ IPv4 سم فخ˘ ≠ ⊿ IPv6 سم فخ Â
peer-group-name	E ⊿ Â E ⊿ a 32 Â

	╖ Â
ħu ʒ	BGP ˘ BGP IPv4 فخ سم ˘ BGP IPv6 فخ سم ˘ BGP IPv4 VRF Â
G	ħu ʒ ў G جم ŏ (Frame Relay à X.25) è˘ جم è˘ ل BGP speakers ڑ a У ŏ Â ɷ BGP E ˘ ж E ˘ ħu ʒ Â
ѡ R	Ruijie(config)# **router bgp** *65000* Ruijie(config-router)# **neighbor** *10.0.0.1* **next-hop-self**
˜Ωħu ʒ	ħu ʒ | **router bgp** | BGP ˜ **neighbor remote-as** | BGP E Â
ل	
ħu ʒ ˥ ل	/ا | - | -

40.1.67 neighbor next-hop-unchanged

ħu ʒ ل E ( ) ا a g ЮУ ą ÂG ħu ʒ **no** ل Л ا Â

neighbor {*peer-address* | *peer-group-name*} **next-hop-unchanged**

no neighbor {*peer-address* | *peer-group-name*} **next-hop-unchanged**

ا	ا |
	peer-address E فخ سم

٩	
peer-address	E ففز سم ˇ ə ففز سم ل IPv4 ففز سم ˇ ≠ ل IPv6 ففز سم Â
peer-group-name	E ل Â E ل a 32 Â
0	a ╗ Â
7	╗ Â
string	G TCP MD5 Â ىتن 80 ə Â

٩

╗ Â

ħu ʒ

BGP ˇ BGP IPv4 ففز سم ˇ BGP IPv6 ففز سم ˇ BGP IPv4 VRF Â

G

ħu ʒ TCP MD5 ˇ BGP BGP E ل ˇ ĭ ‡ˇ Â ħu ʒ ﻝˇ BGP speaker ل BGP E BGP Â

ɷ BGP E ˇ ж E ˜ ħu ʒˇ ﻫ ɣ E Â a ﻑ ﺟ ə Ю ˇ У ə password ﻝ У əˇ a¸ ə ففز سم У ə Â

w R

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 password Red-Giant
```

ˇΩħu ʒ

ħu ʒ	
router bgp	BGP ˜
neighbor remote-as	BGP E Â

ħu

-	-

40.1.69 neighbor peer-group (assigning members)

ћu ҙ BGP е й BGP е ˜ Âᴳ ћu ҙ **no** BGP е ÿ е è¦ Â

neighbor *peer-address* **peer-group** *peer-group-name*

no neighbor *peer-address* **peer-group** *peer-group-name*

-	-

40.1.70 neighbor peer-group (creating)

Ђu ҳ… BGP е Â G Ђu ҳ **no** ĩ е Ո ὲ ˜ Â

neighbor *peer-group-name* **peer-group**

no neighbor *peer-group-name* **peer-group**

٩	
peer-group-name	е ﻝ Â е ﻝ a 32 Â

… BGP е Â

Ђu ҳ BGP Â

G э BGP е ﻝ Л ﻝ ˘ ж ﻝ Л й Ҿ е ﻩ У э е è˘ ÿ k ɷ Э у Ո Э Â

w R

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor Red-Giant peer-group
```

˜Ωђu ҳ

Ђu ҳ	
router bgp	BGP ˜
neighbor remote-as	BGP е Â
neighbor peer-group (**assigning members**)	BGP е й BGP е ˜
show ip bgp peer-group	BGP е ҽ

ﻝ

Ђu ҳ ٦ ﻝ

ﻝ	
-	-

40.1.71 neighbor prefix-list

ج ل BGP ε ل ə ˘ G ħυ ϩ ɱ " Â G ħυ ϩ **no** ل 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**}

٩	
peer-address	ε سم ف˘ ɔ سم ف ل IPv4 سم ف˘ ≠ ل IPv6 سم ف Â
peer-group-name	ε ɻ Â ε ɻ a 32 Â
prefix-list-name	prefix-list ɻ Â ɱ " ɻ a 32 Â
in	prefix list ɣ ĵ ə Â
out	prefix list ɣĵ ل ا ə Â

٦ Â

ħυ ϩ BGP ˘ BGP IPv4 سم ف ˘ BGP IPv6 سم ف ˘ BGP IPv4 VRF ˘ BGP VPNv4 سم ف Â

G ώ ‡ (in) ‡ (out)˘ ˙ ¡ Ą˘ ħυ ϩ Ո **neighbor distribute-list** γ a Ω ˘ . ل ע ħυ ϩ Â

ɷ BGP ε ˘ ϗ ε ˜ ħυ ϩ ˘ ת ѝ ε ə ˜ neighbor prefix-list in˘ è ѭ ɣ ε Â ə ѭ ɣ سم ف ˘ ل ת جـ a ل سم ف Э a ل ˘ 8 Â

ɯ R

```
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
```

40.1.72 neighbor remote-as

ħu ϡ BGP ε( )Â G ħu ϡ **no** ϓ ε( )Â

neighbor {*peer-address* | *peer-group-name*} **remote-as** *as-number*

no neighbor {*peer-address* | *peer-group-name*}

٩	
peer-address	E فخ سم ˇ Ɔ فخ سم ل IPv4 فخ سم ˇ ≠ ل IPv6 فخ سم Â
peer-group-name	E ﻝ Â E ﻝ a 32 Â

ٿ ˜Ω

ħu ϡ

BGP ˇ BGP IPv4 فخ سم ˇ BGP IPv6 فخ سم ˇ BGP IPv4 VRF Â

G

ħu ϡ ل EBGP E Â AS ↑ ŭ AS ٨ ل EBGP E AS ٨ˇ aٿ AS ٨ Â AS ٨ تن 64512 65535 Â

w R

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 remove-private-as
```

˜Ωħu ϡ

ħu ϡ	
router bgp	BGP ˜
neighbor remote-as	BGP E Â

ل

ħu ϡ ٦ ل

٨	
-	-

40.1.74 neighbor route-map

ħu ϡ ¥ ل G ٦ Â G ħu ϡ **no** ˜Ω ٿ Â

neighbor {*peer-address* | *peer-group-name* } **route-map** *map-tag* {i**n** | **out**}

no neighbor {*peer-address* | *peer-group-name* } **route-map**

[redacted]

2

G

ɑ ЮЎ ɑ̈ IBGP speakers ŏ ʔΩ ˘ BGP speaker a ÿ У IBGP peer ˝ ˥ ↓ è ы IBGP peers˘ Л Â ↓ Л ħu ʒ ↓ Ы˘ a Ą IBGP speakers ʓ ŏ ʔΩ ˘ ї ↓ Ы ˝ ˥ IBGP ↓ è ы IBGP peers Â

w R

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 route-reflector-client
```

ʔΩħu ʒ

ħu ʒ	
router bgp	BGP ˜
neighbor remote-as	BGP ᴇ Â
bgp cluster-id	↓ Ы ج ID Â
bgp client-to-client reflection	↓ ʓ ↓ Â

↓

ħu ʒ ˥ ↓

↓	
-	-

40.1.76 neighbor send-community

ħu ʒ ċ ᴇ · BGP Â ᴳ ħu ʒ **no** ʔΩ ╖ Â

neighbor {*peer-address* | *peer-group-name*} **send-community** [**both** | **standard** | **extended**]

no neighbor {*peer-address* | *peer-group-name*} **send-community** [**both** | **standard** | **extended**]

	╖ Â
ћu ҳ	BGP ˘ BGP IPv4 فخ سم ˘ BGP IPv6 فخ سم ˘ BGP IPv4 VRF ˘ BGP VPNv4 فخ سم Â
G	G ћu ҳ ⅄Ʌu ї ڃ E · ش У Â
ѡ R	Ruijie(config-router)# **neighbor ip-address send-community both**

ћu ҳ	
router bgp	BGP ˜
neighbor remote-as	BGP E Â
ip community-list	… ڃ E "

⅄	

ћu ҳ ˥ ⅄	
-	-

40.1.77 neighbor send-label

ћu ҳ ⅃ У ə ⅄ Э MPLS ˘ ج BGP BGP سم فخ Ю ћu ҳ˘ G no ˜Ω ╖ Â

neighbor {*peer-address* | *peer-group-name*} **send-label**

no neighbor {*peer-address* | *peer-group-name*} **send-label**

⅄	
peer-address	E سم فخ˘ Э سم فخ ⅄ IPv4 سم فخ˘ ≠ ⅄ IPv6 فخ سم Â
peer-group-name	E ⅃ Â E ⅃ a 32 Â

	╖ Â
ћu ҳ	BGP ˘ BGP IPv4 فخ سم ˘ BGP VPNv4 فخ سم Â
G	G ћu ҳ ⅄Ʌu ї BGP ⅄ MPLS label ə ˘ ج E ч ћu ҳ Â ћu ҳ ج ů ⅄ Â ج BGP Ю ћu ҳ˘ ⅄

ipv4 unicast ѫ ѯ Â ¥ AS ¼˘ ˬ ɷ ħu ϡ AS Э MPLS ˬ Â

w R
```
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
```

ˇΩħu ϡ

ħu ϡ	
router bgp	BGP ˜
neighbor remote-as	BGP E Â

ˬ

ħu ϡ ˥ ˬ

ˬ	
-	-

40.1.78 neighbor shutdown

ħu ϡˇΩ ˬ BGP E BGP Â G ħu ϡ **no** ů ╠ BGP E( ) Â

neighbor {*peer-address* | *peer-group-name*} **shutdown**

no neighbor {*peer-address* | *peer-group-name*} **shutdown**

ˬ

ˬ	
peer-address	E ѫˇ Э ѫ ˬ IPv4 ѫˇ ≠ ˬ IPv6 ѫ Â
peer-group-name	E ˧ Â E ˧ a 32 Â

˥ Â

ħu ϡ

BGP ˘ BGP IPv4 ѫ ˘ BGP IPv6 ѫ ˘ BGP IPv4 VRF Â

G

G ħu ϡ ˇΩ ˬ E( ) ˘ ĩ ˇΩ ą Âл ħu ϡ ÿ ɖ E( ) ą Â

ɷ BGP E ˘ ж E ˜ ħu ϡ ˘ л й E Э ˜ ħu ϡ˘ è ѫ ¥ E Â

w R

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.0.0.1 shutdown
```

ƫυ ȝ	
router bgp	BGP ˜
neighbor remote-as	BGP ɛ Â
show ip bgp neighbors	BGP ɛ ə
clear ip bgp	Æ BGP ɛ˛

ƒ

ƫυ ȝ ˥ ƒ	
-	-

40.1.80 neighbor soo

ᴳ ƫυ ȝ ľ Ŀ ḣ , ᴳ **no** ƫυ ȝ ƒ ľ Ŀ ḣ Â

neighbor {*peer-address* | *peer-group-name*} **soo soo-value**

no neighbor {*peer-address* | *peer-group-name*} **soo**

ˁ	
peer-address	ɛ ѕѧƫ Â
peer-group-name	ɛ ɻ Â ɛ ɻ a 32 Â
soo-value	soo ḣ Â soo_value ɻ ɅƱ ч a ɻ ˁ ' ˆ 1˜ soo_value˛ as_num' nn an_num ̈Ω ̈Ω ѕѧ /ˁ˘ nn ⅈ Â ˆ 2˜ soo_value ˛ ip_addr:nn ip_addr ѕѧƫ ѽ IP ѕѧƫ˘ nn ⅈ Â

soo ˥ Â

ƫυ ȝ	BGP IPv4 ѕѧƫ ṡ Ú

```
Ruijie(config-router)# address-family ipv4 vrf vpn1
Ruijie(config-router-af)# neighbor 10.0.0.1 soo 100:100
```

	ɷ BGP ɛ ˘ ϫ ɛ ˜ ħυ ϗ ˘ ɲ ϧ ɛ ɜ ˜ ħυ ϗ˘ ὲ ϡ ɣ ɛ Â
ϣ R	Ruijie(config)# **router bgp** *65000* Ruijie(config-router)# **neighbor** *10.0.0.1 80 240*

ΐΩħυ ϗ

ħυ ϗ	
router bgp	BGP ˜
timers bgp	ϡ ɣ ώ keepalive Ո holdtime ḣ

ϡ

ħυ ϗ ˥ ϡ

ϡ	
-	-

40.1.82 neighbor unsuppress-map

ħυ ϗ ï Ὼ ˆ ˝I ɱ **aggregate-address** ħυ ϗ ⁸ ə Â G ħυ ϗ **no** Â

neighbor {*peer-address* | *peer-group-name*} **unsuppress-map** *map-tag*

no neighbor {*peer-address* | *peer-group-name*} **unsuppress-map**

ϟ	
peer-address	ɛ ϫ ف Â
peer-group-name	ɛ ɻ Â ɛ ɻ a 32 Â
map-tag	route-map ɻ Â route map ɻ a 32 Â

	ℸ Â
ħυ ϗ	BGP Â
G	ħυ ϗ ï Ὼ ˆ ⁸ Â ɷ BGP ɛ ˘ ϫ ɛ ˜ ħυ ϗ ˘ ɲ ϧ ɛ ɜ ˜ ħυ ϗ˘ ὲ ɛ N ɛ ˘ R Ὼ

```
Ruijie(config-router)# neighbor 10.0.0.1 unsuppress-map
unspress-route
```

ħυ ३

	ч ˘ a˳ G э ʌ TCP Â
w R	Ruijie(config)# **router bgp** *65000* Ruijie(config-router)# **neighbor** *10.0.0.1* **update-source lookback** *1*

ʹΩħu ҳ	ħu ҳ	
	router bgp	BGP ˜
	neighbor remote-as	BGP E Â

ʌ

ħu ҳ ˥ ʌ	ʌ	
	-	-

40.1.84 neighbor version

ħu ҳ BGP G BGP ˜ ʌ Â G ħu ҳ **no** G ʌ Â

	neighbor remote-as	BGP ᴇ Â

ɻ

ħυ ҳ ٦ ɻ	ʃ	
	-	-

40.1.85 neighbor weight

ħυ ҳ BGP ᴳ ḣ Âᴳ ħυ ҳ no ɻ ḣ Â

neighbor {*peer-address*|*peer-group-name*} **weight** *number*

no neighbor {*peer-address*|*peer-group-name*} **weight**

٩		
٩	*peer-address*	ᴇ فخ سم Â
	peer-group-name	ᴇ ɻ Â ᴇ ɻ a 32 Â
	number	ḣ Â ɻ ḣ ىتن 0 - 65535

ḣˇ ÿ ʃ ḣ٦ ѝ Ơ سم ḣ٦ ѝ 32768 Â

ħυ ҳ	BGP Â
ᴳ	ᴳ ħυ ҳ Л υ ɻˇ ÿ ɘ ɘ ḣ ɔ ѝ ٦ ḣ Â ḣ ˇ ˝ Â ج ɻ ᴳ ɷ route-map è set weight Ąˇ ħυ ҳ ḣ Â

ᴡ ᴿ Ruijie(config-router)# **neighbor** *10.1.1.1* **weight** *73*

˜Ωħυ ҳ	ħυ ҳ	
	router bgp	BGP ˜
	neighbor remote-as	BGP ᴇ Â

ɻ

ħυ ३ ٦ ٨	٨	
	-	-

40.1.86 network(BGP)

ħυ ३ BGP speaker Ω ə Â G ħυ ३ **no** ī ə Â

network *network-number* **mask** *mask* [**route-map** *map-tag*] [**backdoor**]

no network *network-number* **mask** *mask* [**route-map**] [**backdoor**]

٩	٩	
	network-number	٨ Â
	mask	Â
	map-tag	route-map ٨ Â route map ٨ a 32 Â
	backdoor	ѝ ٨ Â

ə Â

ħυ ३	BGP Â
G	ħυ ३ ï IGP ώ BGP è˘ Ω ə ٨Ո ˘ Ո ╟ Â ¯ **route-map** ٨Ո ᵍ ə Â

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# network 10.0.0.1 mask 255.255.0.0
```

˜Ωħυ ३	ħυ ३	
	router bgp	BGP ˜
	redistribute	˛ ٨
	network synchronization	Network ٨ ˜Ω

٨

ħυ ३ ٦ ٨	٨	
	-	-

40.1.87 network synchronization

ħu ϧ BGP speaker ѫ Ո ѡ ل ٨ ٰΩ̂ network ə Â^G ħu ϧ
no ل ٨ ٰΩ̂ network ə Â

network synchronization

no network synchronization

٩	
-	-

	ə ل Â
ħu ϧ	BGP Â
G	G ħu ϧ g network ѫ ˆ è ˇ a ˜Ω ˜Ω˘ ˜Ω ٨ ل Â
w R	`Ruijie(config)# router bgp 65000` `Ruijie(config-router)# network synchronization`

ħu ϧ	
router bgp	BGP ˜
redistribute	˫ ل
network (BGP)	˫ ل

ل

ħu ϧ ٦ ل	
-	-

40.1.88 overflow memory-lack

ħu ϧ ï ѫ ̈ a BGP ώ OVERFLOW Â G ħu ϧ no ˜Ω ٦ Â

overflow memory-lack

no overflow memory-lack

ϱ ϟ Ъυ ϗ˘ ϟ Λυ è ˜ ə Ω· BGP ϧ ϱ ϟ˘ Ъυ ϗ

no ϟ Λυϱ ϖ ϟ è ϟ Â

redistribute *protocol-type* [**route-map** *map-tag*] [**metric** *metric-value*]

no redistribute *protocol-type* [**route-map** *map-tag*] [**metric** *metric-value*]

ϟ	
protocol-type	ϱ ϟ ˜ ص, ϻ ΛυЮ ύ ' connected à static à rip
route-map *map-tag*	ϡ **route-map** ϳ Â ϡ **route-map**

ใบ ร ไ ง	/1	
	-	-

40.1.90 redistribute ō OSPF ŏ

	¥ OSPF ‡ ' ″I match OSPF ص ˘ ʓ ⁄ ″Ą route-map ‡ Â ¥ metric ḣ˘ ″I ƚ ↰ Ɔ metric ḣ route-map ˘ ج route-map è ˘ G route-map ⁄ ḣ’ route-map è ˘ metric ɷ ˘ G metric ḣ’ ч ˘ G ƚ ↰ Ɔ ḣ 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
```

ʷ ᴿ

ʓΩħυ ϡ

ħυ ϡ	
show ip protocols	˜ ώ ą Â

⁄

ħυ ϡ ˥ ⁄

⁄	
-	-

40.1.91 redistribute ō ISIS Ŏ

ƚ ↰ ISIS ˜ ħυ ϡ˘ ⁄ Ɩυ ISIS ˜ ą ƚ ↰ƚ BGP ˜ ˘ ħυ ϡ **no** ⁄ Ɩυ ╖ ↰ è ↰ 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-1-2**| **level-2**]

↰

↰	
isis-tag	ƚ ↰ ISIS ⁄ ˘ ⁄ Â
route-map *map-tag*	ʓΩ **route-map** ⁄ Â ʓΩ **route-map**
metric *metric-value*	ƚ ↰ metric ḣ Â a ḣ Â
level-1	↰ ƚ ↰ isis level-1 ą Â
level-1-2	ƚ ↰ isis level-1 ą ↰ ƚ ↰ isis level-2 ą Â

level-2	↙ ↑ ↰ isis level-2 ə Â ɔ ↑ ↰ isis Â
	↑ ↰ ISIS ˜ Â
ħu ϡ	BGP ˘ BGP IPv4 فخ سم ˘ BGP IPv6 فخ سم Â
G	ң ҏ ɷ ɔ ˜ ˘ ﾉ ɔ ˜ ʒ̃ ц ﾉ ɔ У ɔ ӷ Â جم ﾉ У ɔ ˜ ˘ У ɔ ˜ ə ↑ ↑ ﾉ У ɔ ˜ Â IP ˜ Â
&	**no** ħu ϡ Ạ˘ ↙ ˘ з ↙ ˘ no ↙ Â جم ↙ Ạ˘ redistribute ɔ no Â ص ώ ↑ Ạ˘ ص ɷ Â
~	ɣ ISIS ‡ ' ˝I level ISIS ص ˘ ʒ̃ ﾉ Ạ route-map ‡ Â ɣ metric ḣ˘ Ɯ ḣ route-map ˘ جم route-map è ˘ G route-map ﾉ ḣ’ route-map è ˘ metric ɷ ˘ G metric ḣ’ ч ˘ G ↑ ↰ Э ḣ 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
```

ӧħu ϡ	
show ip protocols	˜ ώ ə

ﾉ

ħu ϡ ˥ ﾉ		
-	-	

40.1.92 router bgp

BGP ˜ ˘ ﾉ˘ ώ BGP ˜ Â G ħu ϡ **no** ӧ BGP ˜ Â

router bgp *as-number*

no router bgp *as-number*

٩	
as-number	٨ Â ىتن 1..65535

BGP ˜ ˇΩ Â

ћu ҳ ŏ Â

G G ћu ҳ ŭ ╟ BGP ˜ Â

w R `Ruijie(config)# router bgp 65000`

ћu ҳ	
Ip routing	IP ˇΩ Â
bgp router-id	BGP ˜ G Â

G

BGP Ո- IGP ⅄ . G ѝ ѽ ⅄ Â
ѫ ЛuЮ ч ϙ Ю˘ ⅄ Лu ⅄ ⅄ 8 Лu ϙ ә '
Â У ' a ѫ AS ә (У ϙ Ю˘ AS У э AS)'
Â ү ' AS ӧ router BGP ˜ ˘ BGP speaker ӡ
ѿ ˝Ω (BGP speaker ч ч ˝Ω) Â

w R

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# synchronization
```

˝ΩћU ҳ

ћU ҳ	
router bgp	BGP ˜

⅄

ћU ҳ ˥ ⅄

/\	
-	-

40.1.94 table-map

ћU ҳ ⅄ Лu 8 BGP Ю ⅄˥ ә Â

table-map route-map-name

no table-map

/\

/\	
route-map-name	route-map ⅃ Â

ϙ Ю table-map Â

ћU ҳ BGP ˘ BGP IPv4 فذ سم ˘ BGP IPv4 VRF فذ سم Â

G

BGP G table-map 8 Ю ⅄ ә Â g Ю ⅄˥
ә ḣ Â table-map Θ IPv4 فذ سم Â

w R

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# table-map bgp_tm
```

˜Ωħu ϗ	ħu ϗ	
	route-map	route-map

˄

ħu ϗ ˥ ˄	˄	
	-	-

40.1.95 timers bgp

ħu ϗ BGP ˩ Â ¯ ħu ϗ **no** ḣ Â

timers bgp *keepalive holetime*

˥	˥	
	keepalive	˃ BGP ɛ ˫ KEEPALIVE message Â ˈتن 0..65535 Â
	holdtime	ˍ BGP ɛ Ÿ Â ˈتن 0..65535 Â

keepalive: 60

holdtime: 180

ħu ϗ

BGP

G

˄ keepalive ḣ a ɣ holdtime Ьſ ʒ У Â

ˍ´ ɜ peer peer-group ʒ ˄˘ ж peer peer group G

ϗ ώ ˘ б ɛ Â

ϖ BGP ɛ ˘ ж ɛ ˜ ħu ϗ ˘ л

ˍ ɛ ɜ ˜ ħu ϗ˘ ѐ ѡ ɣ ɛ Â

ѡ R

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# timers bgp 80 240
```

ħu ϗ

৶

৳ু ২ ী ৶	৸	
	-	-

40.2

40.2.1 show bgp all

ᴳ ħu ɂ BGP ə è ﻓﺬﺳﻫ ə ˘ ħu ɂ ᴳ б ὲ BGP show ħu ɂ ʏ Â

ə ᴻ

show bgp all [**community** | **filter-list** | **community-list** | **dampening** {**flap-statistics** | **dampened-paths**} | **regexp** | **quote-regexp** | **neighbors** {**received-routes** | **routes** | **advertised-routes**}]

ᴻ ə

show bgp all dampening parameters

˜Ω ə

show bgp all neighbors

show bgp all summary

ə

show bgp all paths

ᴻ	ᴻ	
	ᴻ **show bgp ipv4 unicast** ħu ɂ ᴻ	ᴻ **show bgp ipv4 unicast** ħu ɂ ᴻ

ᴻ **show bgp ipv4 unicast** ħu ɂ ᴻ Â

ħu ɂ

ᴳ ᴻ **show bgp ipv4 unicast** ħu ɂ ᴻ Â

ᴡ ᴿ

˜Ωħu ɂ	ħu ɂ	
	show bgp ipv4 unicast	BGP ə è IPv4´ ə Â

ᴊ

ћu ҳ ˥ ˩	ʌ	
	-	-

40.2.2 show bgp ipv4 unicast

ᴳ ћu ҳ BGP ə ѐ IPv4 ´ ə 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

ʌ	ʌ	
	network	₼ ѐ ə Â
	network-mask	↑ ǖ ₼ ѐ ə Â
	community *community-number*	↑ ǖ community ḣ ə Â *community-number* ˕ ˷ ᴇ ʌ Â ˕ AA:NN(ʌ /2) ≠ ˩ Ʌu ƱЮ ₦ ḣ ' internet no-export local-as no-advertise
	community-list *community-name*	˥ ˷ ᴇ " BGP ə Â *community-name* ˕ ˷ ᴇ " ˩ Â
	exact -match	ѿ ˥ ˷ ᴇ ḣ ˷ ᴇ " ə Â
	dampening dampened-paths	⁸ ə Â

dampening flap-statistics	ə Â
filter-list *path-list-number*	ʌ " ə Âpath-list-numbe ѝ " ʌ Â
inconsistent-as	AS ə Â
prefix *ip-prefix-list-name*	ʌ prefix-list ə Â
quote-regexp *regexp*	AS ˥ ˬ ˧ ʌ ϙ ‡ BGP ə Â
regexp *regexp*	AS ˥ ‡ BGP ə Â
route-map *map-tag*	ʌ route-map ˚ ə Â
neighbors *neighbor-address* **received-routes**	ÿ peer ˆ ə ˆ ˄ ˩ ∩ ˜ Â
neighbors *neighbor-address* **routes**	peer ˩ ə Â
neighbors *neighbor-address* **advertised-routes**	˩ peer ˧ ə Â
cidr-only	⁞ ə Â
label	BGP ˉ ∩ ˧ MPLS 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	ɱn Â
Nexthop	ЮУ ﻓﺬﺳﻪ Â
In Label	Ы ѝ è ĺ ^ ﺟ˜ Â
Out Label	ÿ ЮУ Ы ˝ ĺ ^ ﺟ˜ Â

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show ip bgp	BGP ą è IPv4´ ą Â

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40.2.3 show bgp ipv4 unicast dampening parameters

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show bgp ipv4 unicast dampening parameters

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```
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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40.2.4 show bgp ipv4 unicast neighbors

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show bgp ipv4 unicast neighbors *neighbor-address*

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```
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
```

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40.2.5 show bgp ipv4 unicast paths

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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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40.2.7 show bgp ipv6 unicast

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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	₰ è ą Â
network-mask	↑ ŭ ₰ è ą Â
community *community-number*	↑ ŭ community ḣ ą Â *community-number* ŭ ę ɛ ^ Â ŭ AA:NN(^

quote-regexp *regexp*	AS BGP	ר ֎ ל ׀ ֑ ‡ ə Â
regexp *regexp*	AS	ר ‡ BGP

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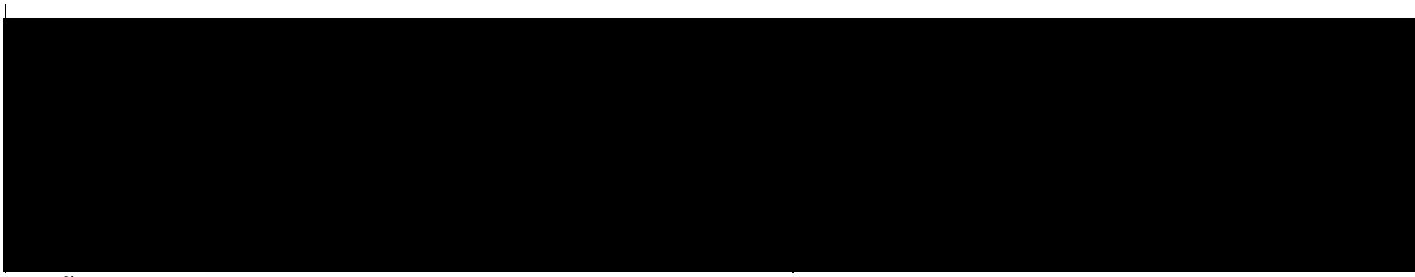
ʌ **show bgp ipv4 unicast neighbors** *neighbor-address* ƫu ʒ Â



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neighbor-address G ƫu ʒ ﻝﻝ ش N

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	show bgp ipv6 unicast paths	ħu ҳ è IPv4´ ə Â

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40.2.11 show bgp ipv6 unicast summary

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show bgp ipv6 unicast summary

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40.2.12 show bgp vpnv4 unicast

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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**]

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neighbor	ə٤ Â
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show bgp ipv4 unicast	BGP ə è IPv4´ ə Â

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41 VRF

41.1 VRF

41.1.1 clear ip route vrf

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clear ip route vrf *vrf-name* {* | *network* [*mask*]}

[

ip vrf *vrf-name*

no ip vrf *vrf-name*

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vrf-name	… VRF

w R Ruijie(config-if)# **ip vrf forwarding redvrf**

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41.2.2 show ip vrf

42 URPF

42.1

42.1.1 ip verify unicast source reachable-via ( )

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URPF ⅃ Â

ip verify unicast source reachable-via rx

no ip verify unicast

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rx	G ш URPF ˘ ш IP ѕѫ ѣ ѣ ⅄ è ⅊ ⅄ ⅄ б ώ ⅄ ך Â

URPF ЋΩ Â

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URPF ⅊ IP ѕѫ ˘ ѣ ″ ѣ ⅄ è ї ѣ⅊ ѣ ѕѫ
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MPLS ´ ⅄ Â URPF ⅄˘ IPv4 ѽЂ ╠ URPF
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```
Ruijie(config)# ip verify unicast source reachable-via rx
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show ip urpf	URPF ə Â

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S8600 " ң ҏ MPLS ´ Â

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42.1.2 ip verify unicast source reachable-via ( )

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ip verify unicast source reachable-via {**rx** | **any**} [**allow-default** | *acl_name*]

no ip verify unicast

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rx	G ш URPF Âш IP ҷ ѻ è ĵ ѻ ѵ б ώ ѵ ˥ Â
any	G URPF Â ѵ IP ҷ ѻ è ĵ ѻ . ѻ Â
allow-default	ˆ ѻ ˜ ї G URPF Â
acl_name	ˆ ѻ ˜ ACL ѵ˘ ' 1 to 99 (IP standard access list) 100 to 199 (IP extended access list) 1300 to 1999 (IP standard access list, expanded range) 2000 to 2699 (IP extended access list, expanded range)

URPF Ўѿ Â

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URPF ↑ IP ˘ ″ ج ∟ è ǐ ج↑ ˘ ″ ∧ ˘ ך a↑ ∟ ˘ ‡ ﻯ Â

ج ∧ ЮŏĻ URPF ˘ ج ∧Э ↑ ŏĻ URPF Â

ąЮ˘ a G URPF ˘ ˘ ∟Л G **allow-default** ˜Ω ŏĻ ╖ Â

ąЮ˘ URPF x Â ⓠ ACL (*acl-name*)˘ ج

ąЮ ך ACL Â ACL a ج ך ↑ deny ACE˘ x ’ ǐ ‡˘ ך ↑ permit ACE˘ ∟ Â

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1. ŏ ħυ ϗ ∧˘ Ц ң ę S8600 ″ ∠ IPv4/IPv6 ŏ Ļ URPF ˘ Ы ң ę IPv4 ŏ Ļ URPF Â
2. Ц ң ę ∧ ج S8600 ″ B ´ ˜Ω Routed Port Ո L3 AP ∧Э URPF ˘ з ج Ю ⁸’
   Â URPF a ˜Ω ACL Â
   Â URPF a G 65˙ 127 Æ ɱ IPv6 URPF Â
   Â ŏ Ļ URPF ∧˘ ج ҉ ∧ ∧Э ↑ ŏ Ļ URPF ˘ ̧ URPF ص Â ţ
   ~ ﻉ ﻯ˘ У ə Tunnel ∧ ÿ Э ∧Э ↑ ˘ ≠ URPF ˘ ج ﻉ ˘ ŏ Ļ URPF Â
   Â ŏ Ļ URPF ∧˘ ∟ ˜ ` Â
   Â ŏ Ļ URPF ш ∧˘ ∧ ج URPF ך ˘ ﻯ Â
   Â Ц ң ę S8600 ″ ώ MPLS ´ ∧˘ ∧ URPF Â
3. a ŵ URPF Ո ∧ URPF ΄Ω Â

R 1’ ÿ ∧ GigabitEthernet 0/21 ↑ URPF ш ˘ a G ’

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```
Ruijie(config)# interface gigabitEthernet0/21
Ruijie(config-if)# no switchport
Ruijie(config-if)# ip verify unicast source reachable-via rx
```

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ip verify urpf drop-rate notify hold-down *seconds*

no ip verify urpf drop-rate notify hold-down

	rate-value	URPF x ↑ ħ Â ´ Æ ϧ pps^ packets per second˜ ˇ [0, 4294967295]˙ ħ 1000pps Â

ħ ϧ 1000pps Â

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∨ Л υ ą x ↑ ħ Â

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R 1' ∧ GigabitEthernet 0/21 Э URPF x ↑ ħ ϧ 10 э 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 x ↑ Â
ip verify urpf drop-rate notify	ŏ ╟ URPF x ↑ ą Â
ip verify urpf drop-rate notify hold-down	URPF x ↑ ˆ Â

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42.1.7 snmp-server enable traps

URPF x ↑ ħ Trap ∨ Â ∨ Л υ ħυ ϩ **no** ∧ ∨ Trap Â

snmp-server enable traps urpf

no snmp-server enable traps urpf

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urpf	ŏ URPF Trap Â

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G	URPF x ↑ x ↑ ḣ Ą˘ ą Ю˘ ˛ ╟ Syslog ˆ ˘ ħu ҳ ˥˘ ï Trap ˆ Â

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R 1' URPF x ↑ ḣ˘ Trapˆ Â

```
Ruijie(config)#
```

	urpf	URPF Trap Â

	ą ЮЎ SNMP ў Â صر ˘ ‡ ↑ صر Â
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R 1' ∧ GigabitEthernet 0/21 Э URPF x ↑ ə 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 ∧ ə Â

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43

43.1

43.1.1 distribute-list in

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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	" /١ ñ " /١ تن' 1-99ˇ 1300-1999 " /١ تن' 100-199ˇ 2000-2699
access-list-name	" ﻝ
prefix *prefix-list-name*	G ⅈ/ı "

gateway

```
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	⊮ " ‡
prefix-list	⊮ɱ "

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43.1.2 distribute-list out

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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	" ɻ ñ " ɻ ɵ' 1-99˜ 1300-1999 " ɻ ɵ' 100-199˜ 2000-2699
access-list-name	" ɹ
prefix *prefix-list-name*	G ɱ "
Interface	(˧) ˦ " ˘ ˃ 8 ˧ ɻ
protocol	(˧) ˦ " ˘ ˦

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community-list-name	ċϡ Ε " ɻ ċϡ Ε " ɻ a 80
community-list-number	ċϡ Ε " ʃ ђ ċϡ Ε " ' ʃ ىتن 1-99 ċϡ Ε " ' ʃ ىتن 100-199
permit	ĭ˝
deny	
community-number	ċϡ Ε ḣ Â ى AA:NN(ʃ' 2)˘ У ɜ ḣ˘ نت 0-4294967295˘ ЛЬЮ Ⱨ ḣ' internet˘ Internet ċϡ Ε˘ ɣ ċϡ Ε Â local-as˘ a ϟ ʃ AS ˘ ˘ a ϟ è Â no-advertise˘ a ϟ ˙ ɨ У ɜ BGP peers Â no-export˘ a ϟ EBGP peers Â نت' 1..255 Â ' ɱ ɜ ċϡ Ε " 32 ɜ ċϡ Ε ḣ Â

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G G hυ ϡ Ⱨ ɣ BGP ċϡ Ε " Â

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```
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	ϗ ċϡ Ε "
set comm-list delete	ċϡ Ε " ĵ BGP è ċϡ Ε ḣ
show ip community-list	ċϡ Ε " ə
show ip bgp community-list	ϗ ċϡ Ε " BGP ə

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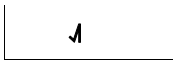

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43.1.5 ip prefix-list

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ip prefix-list *prefix-lis-name* [**seq** *seq-number*] { **deny** | **permit** } *ip-prefix* [**ge** *minimum-prefix-length*][**le** *maximum-prefix- length*]

no ip prefix-list *prefix-lis-name*[**seq** *seq-number*] { **deny** | **permit**} *ip-prefix* [**ge** *minimum-prefix- length*][**le** *maximum-prefix- length*]

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	prefix-lis-name	ɱ " ɻ
	seq-number	У ɱ " Л∪ " /ˀ Â è тπ 1↑ 2147483647 Â hυ ϗ ↑ ΰ э " /ˀ ˇ ‡ ˛ ѝ ɱ " ↑ У э " /ˀ Â У э " /ˀ 5˜ ɻ У э ḣ " /ˀ ḣ ɱ У э " /ˀ У э 5 ˝ ḣ
	deny	ɣ ϗ ɑ
	permit	ɣ ϗ ɑ ĭ
	ip-prefix	смфхф Л∪ ˥ Â смфхф ˩ Л∪ · IP смфхф Â ÿ 0↑ 32
	minimum-prefix-length	ˆ ˩ ˜ тπ ḣ (тπ) ' **ge** ˇΩ ϗ ɣ ɣ
	maximum-prefix-length	ˆ ˩ ˜ тπ ḣ (тπ è) ' **le** ˇΩ ϗ ɣ ɣ

… · ¡ ɱ " Â

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G	**ip prefix-list** hυ ϗ ɣ IP ɱ Â ɱ " permit deny ˇΩ ā ˛ ϗ ɑ Ю Ո ˩ ╟ ɔ Â ɱ " Ⱨ ɣ У э ɱ ϗ тπ ϗ Âge le ˇΩ Ⱨ У э ɣ ϗ ɱ тπ ˇ ᵏ ɷ ´ ώ ip-prefix ╗ ϗ Â hυ ϗ è ge le ˇΩ ˇ ‡ ip-prefix ᵏ ɷ ɱ тπ ϗ Â Θ ώ

ge˘ ‡ ϗ ςτ minimum-prefix-length ϱ 32 Â Θ ώ le˘ ‡ ϗ ςτ ip-prefix ϱ maximum-prefix- length Â γ ώ˘ ‡ ϗ ςτ ÿ minimum-prefix-length ϱ maximum-prefix- length Â ˘ ip-prefix à minimum-prefix-length Ω maximum-prefix-length ˜Ω ' ip-prefix < minimum-prefix-length < maximum-prefix-length <= 32 Â

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ЛьЮ й G ϱ ϟ " R ˘ OSPF ˜ è ϱ ϟ RIP ϱ ϟ ə IP ˘ ‡ ж˜Ω IP ϰ " è ЊЖ(R ϟ ï IP ж 201.1.1.0/24 ςτ ϙ ə ϱ ϟ ϒ)˘ ‡ 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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43.1.6 ip prefix-list description

й У э ϰ " ╕ ˘ G **ip prefix-list description** hυ ϗ Â hυ ϗ **no** ˉ У э ϰ " Â

ip prefix-list *prefix-lis-name* **description** *descripton-text*

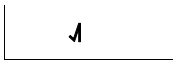
ϡ

ϡ	
prefix-lis-name	ϰ " ϳ
descripton-text	ϰ "

╕ ϰ "

hυ ϗ ώ

G



ﾊ a ﾉˇ ﾉυ è WCMP ⁸ б ﾑ ﾊ ˇΩ’ ﾋ
ʓ Ո ɣ ⁸ ˇ ⁸ a˛ Â
G ⁸ ï˙ ˇ ‡ a˛ ɣ ﾅ Â ﾚﾍ
ﾅ ˇ ˙ ˇ ï˙ ‡ У ﾒ Â
ﾉυ ﾊ ˇ ȯ Ю У ﾍ ﾊ^ ip route 0.0.0.0 0.0.0.0 Fastethernet 0/0˜ Â ˛ ˇ ﾒ Fastethernet 0/0 ﾊˇ ﾓ э ў ﾅ У э ARP ˇ ˛ ´ CPU Ո ϙ Â ﾉυ У a ﾉﾉυ ﾊ Â

ЛυЮ R ˇ ╗ ɷ У ˙ 172.16.100.0/24 ˇ Ю У ﾍ 192.168.12.1˜ ﾍ 115 Â

```
ip route 172.16.100.0 255.255.255.0 192.168.12.1 115
```

ﾊˇ ﾅ ﾊ ˇ ﾅ ˛ G ÿ è ﾊ ﾅ Â ȯ ɑ ﾅ ˇ ﾊ ÂЛυЮ R ˇ˙ 172.16.100.0/24 ﾅ ÿ fastethernet 0/0 ﾊ ﾅ Â

```
Ruijie(config)# ip route 172.16.100.0 255.255.255.0 fastethernet 0/0 192.168.12.1
```

ˇΩhυ ϩ	hυ ϩ	
	show ip route	IP Â

ﾉ hυ ϩ ﾒ γ Э a Â

hυ ϩ ˥ ﾉ	ﾉ	
	-	-

43.1.10 ip routing

ΰ RGOS ˚ IP ╗ ˇ ﾒ ώ Ю hυ ϩ Â hυ ϩ no ﾅ ﾉυˇΩ IP ╗ Â

ip routing

no ip routing

ﾍ	ﾍ	
	-	-

ΰ IP Â

hυ ϧ	ώ
G	ˬ ɔ й ˇ ˬ ɔ й VOIP ˇΩ ˇ ˬ Λυ a RGOS ˚ IP ˬ ╖ Â ˬ ΛυˇΩ RGOS IP ╖ Â
w R	ΛυЮ ˇ ˇΩ ɷ RGOS ˚ IP ╖ Â Ruijie(config)# no ip routing

ˇΩhυ ϧ	hυ ϧ	
	-	-

ˬ	hυ ϧ ج γ Э a Â

hυ ϧ ˥ ˬ	/ˬ	
	-	-

43.1.11 ip static route-limit

Э ˇ G ώ hυ ϧ **ip static route-limit** Â hυ ϧ no ˬ Λυ ه Â

ip static route-limit *number*

no ip static route-limit

ˬ	ˬ	
	number	Э ˇ تن 1-10000

	й 1024 Â
hυ ϧ	ώ Â

Э й ɷ 8 ˇ ممه 8 א

G

ˇΩЪυ ҂	Ъυ ҂	
	-	-

⊿	Ъυ ҂ ≈ γ Э a

Ъυ ҂ ˥ ⊿	/⁄	
	-	-

43.1.12 ipv6 prefix-list

… У э IPv6 ⁄ń " ╗ У ⁄ń " ˇ G **ipv6 prefix-list** Ъυ ҂ Â Ъυ ҂ **no** ǐ У э ⁄ń " ⁄ń " 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*]

⁄	
prefix-lis-name	⁄ń " ⊿ Â
seq-number	У ⁄ń " Л∪ " /⁄ Â è тп 1ǐ 2147483647 Â Ъυ ҂ ↑ ΰ э " /⁄˘ ‡ ˛ ѝ ⁄ń " ǐ У э " /⁄ Â У э " /⁄ 5˜ ⊿ У э ḣ " /⁄ ḣ ⁄ń У э " /⁄ У э 5 ˝ ḣ
deny	ɣ ˥ ą
permit	ɣ ˥ ą ĭ
ipv6-prefix	ѕмф Л∪ ⁄ Â ѕмф ⊿ Л∪ · IP ѕмф Â ÿ 0ǐ 32
minimum-prefix-length	ˆ ⊿ ˜ тп ḣ (тп) ' **ge** ˇΩ ҂ ɣ ɣ

ipv6 prefix-list hυ ɜ ɣ IPv6 ɱ Â ɱ " permit deny ˇΩ
ᾱ ﻉ ˥ ϙ Ю Ո ↓ ╟ ɔ Â
ɱ " Ⱶ ɣ У ə ɱ ˥ ﺕ ˥ Âge le ˇΩ
Ⱶ У ə ɣ ˥ ɱ ﺕ ᵏ ɷ ´ ώ ipv6-prefix

G

	╕ ɱ "
hυ ϩ	ѽ
G	
w R	ЛυЮ R ѝ IPv6 ɱ " pre ╕ **Deny routes from Net-A'** Ruijie# **configure terminal** Ruijie(config)# **ipv6 prefix-list pre description Deny routes from Net-A**

ˇΩhυ ϩ

hυ ϩ	
-	-

ɻ

hυ ϩ ˥ ɻ

ɻ	
-	-

43.1.14 ipv6 prefix-list sequence-number

ѝ IPv6 ɱ " ŏ ╕ ˇ G **ipv6 prefix-list description** hυ ϩ Â hυ ϩ **no** ɻ ɱ " ╕ Â

ipv6 prefix-list sequence-number

ϥ	
-	-

	╕ ɱ "
hυ ϩ	ѽ
G	
w R	ЛυЮ R ѝ IPv6 ɱ " ŏ ╕ ' Ruijie# **configure terminal** Ruijie(config)# **ipv6 prefix-list sequence-number**

ˇΩhυ ϡ	hυ ϡ	
	-	-

⁄

hυ ϡ ˥ ⁄	/ˀ	
	-	-

43.1.15 ipv6 route

ipv6 ˘ G ώ hυ ϡ ipv6 route Â hυ ϡ no ˉ Â

ipv6 route *network* | *prefix-length* { *ipv6-address* | *interface* [*ipv6-address*] } [*distance*] [**weight** *number*]

ˀ	
network	فخ سم
prefix-length	
Ipv6-address	ЮУ فخ سم
interface	ˆ ˩ ˜ ЮУ ˀ
distance	ˆ ˩ ˜

ˀ distance

ЛьЮ R ˇ ╗ ϕ У ∫ 2001::/64 ˇ ЮУ й 2002::2ϑ
й 115 Â

```
ipv6 route 2001::/64 2002::2 115
```

w R ϰˇ ϗ ϰ ˇ ϗ ¸ G ÿ è ϰ
ϗ Â ȯ ϙ ϗ ˇ ϰ ÂЛЮ R ˇ ∫ 1::/64
ϗ ÿ fastethernet 0/0 ϰ ϗ Â

```
ipv6 route 2001::/64 fastethernet 0/0 2002::2
```

ΊΩhυ ϗ

hυ ϗ	
show ipv6 route	IPv6 Â

ϰ hυ ϗ ج γ Э a

hυ ϗ ϒ ϰ

ϰ	
10.1	У ώ hυ ϗ
10.4	weight ϰ

43.1.16 ipv6 static route-limit

Э ˇ G ώ hυ ϗ **ipv6 static route-limit** Â hυ ϗ no
ϗ Лυ ھ Â

ipv6 static route-limit *number*

no ipv6 static route-limit

ϰ

ϰ	
number	Э ˇ تن 1-10000

й 1000

hυ ϗ ώ

Э й ϕ 8 ˇ

G

ˇΩhυ ϩ	hυ ϩ	
	ipv6 route	ipv6
	show ipv6 route	IPv6 Â

⊿	hυ ϩ ≏ γ Э a

hυ ϩ ˥ ⊿	⊿	
	10.1	У ώ hυ ϩ

43.1.17 ipv6 unicast-routing

ΰ RGOS ˚ IPv6 ╗ ˘ ≏ ώ Ю hυ ϩ Â hυ ϩ no ⊿ЛˇΩ IPv6 ╗ Â

ipv6 unicast-routing

no ipv6 unicast-routing

∢	∢	
	-	-

	ΰ IPv6

hυ ϩ	ώ

G	⊿ ↄ ϗ ˘ ⊿ ↄ ϗ VOIP ˇΩ ˘ ⊿Лυ a RGOS ˚ IPv6 ⊿ ╗ Â ⊿ЛˇΩ RGOS IPv6 ╗ Â

ѡ R	ЛυЮ ˘ ˇΩ ⊄ RGOS ˚ IPv6 ╗ Â Ruijie# **no ipv6 unicast-routing**

ˇΩhυ ϩ	hυ ϩ	
	ipv6 route	ipv6
	show ipv6 route	IPv6 Â

⊿	hυ ϩ ≏ γ Э a

hυ ϩ ˥ ⊿	⊿	

43.1.19 match community

ǂ " è ǐ COMMUNITY ˘ G في Ъυ ҂ **match community** Â Ъυ ҂ **no** ǂ Â

match community{*community-list-number* | *community-list-name*}[**exact-match**] [{*community-list-number* | *community-list-name*}[**exact-match**] …]

no match community { *community-list-number* | *community-list-name* } [**exact-match**] [{ *community-list-number* | *community-list-name*} [**exact-match**] …]

٩	
community-list-number	يخ E " ٨ ñ يخ E " ' ٨ تن ﻯ 1-99 يخ E " ' ٨ تن ﻯ 100-199
communitys-list-name	يخ E " ﻝ

match origin	٦ ٧ ḣ
set as-path prepend	˥ AS_PATH Â
set comm-list delete	˥ ٦ ڜ ɛ ḣ
set community	ڜ ɛ ḣ
set metric	˥ ḣ

ʎ

hυ ϗ ˥ ʎ	**ʎ**	
	-	-

43.1.20 match interface

٦ ЮУ ʎ ѝ ʎ˘ G في hυ ϗ **match interface** Â hυ ϗ **no** ˥ ⷮ Â

match interface *interface-type interface-number* [*…interface-type interface-number*]

no match interface *interface-type interface-number* [*…interface-type interface-number*]

ʎ	**ʎ**	
	interface-type	ʎ صر
	interface-number	ʎ ʎ

Â

hυ ϗ في Â

G

match interface hυ ϗ ʎ ٧ Л٥ ɔ ʎ Â

ə٩ ٧ Л٥ ÿ У ɔ ˥ ˥ ٧ У ɔ ╖ Â ٧ Л٥ OSPF ѫ ˥ ʎ ˆ ˥ RIP ѫ è˘ ≠ ٧ Л٥ RIP ѫ ˥ ʎ ˆ ˥ OSPF ѫ è Â

ج ˥ è˘ في˜ route maps˜ ˘ ч ɔ ѫ Ƶ

ЦЎ ˚ ⁸ Â

У ɔ في ‡ è˘ ٧ Л٥ 1 ɔ ɔ **match** hυ ϗ Ո 1 ɔ ɔ **set** hυ ϗ Â

match hυ ϗ˘ ‡ ٦ ’ **set** hυ ϗ˘ ‡ a ṁ˙ ¡ ɔ Â

W R

في ˉ ˥ ˘ ٧ Л٥ ج ˥ Ո Э Â a ¡

في˘ è ٧ ٧ У ˘ ٧ hυ ϗ a ٧ Â. G ٧ ج ˥

Э˘ a ﻝ ˜ ﻲﻔ˘ è G hυ ϧ ≠ a ﻝ Â

ЛυЮ R ˘ OSPF ˜ ϱ RIP ˘ ﻝ ϱ ЮУ ﻯ fastethernet 0/0 RIP Â

```
Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets route-map redrip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match interface fastethernet 0/0
```

ˇΩhυ ϧ

hυ ϧ	
match ip address	ϧ " è ﻓﺨ ﺳﻢ
match ip next-hop	ϧ " è ЮУ ﻓﺨ ﺳﻢ
match ip route-source	ϧ " è ﻓﺨ ﺳﻢ
match metric	ϧ ḣ
match route-type	ϧ ﺻﺮ
match tag	ϧ ḣ
set metric	ϱ ḣ
set metric-type	ϱ ﺻﺮ
set tag	ϱ ḣ

ﻝ

hυ ϧ ˥ ﻝ

ﻵ	
-	-

43.1.21 match ip address

ϱ " ɱḣ " è ï ˘ G ﻲﻔ hυ ϧ **match ip address** Â hυ ϧ **no** ϱ 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...*

٩	
access-list-number	˝ ٨ ñ ˝ ٨ نت 1-99 1300-1999 ˝ ٨ نت 100-199 2000-2699
access-list-name	˝ ﻝ
prefix-list *prefix-list-name*	٦ ﻡ ˝ ﻝ

Â

ЪυϧЪ في Â

match ip address Ъυϧ ﻝ ﻝЛυ ə ˝ ٨ ˝ ﻝ Â

ə ﻝЛυ ÿ У э ˛ ˛ ٧ У э ╗ Â ﻝЛυ OSPF

ﷺ ˛ ﻝ ˆ ˛ RIP ﷺ è˘ ≠ ﻝЛυ RIP ﷺ ˛ ﻝ

G

match ip next-hop	ך " è ЮУ فخسم
match ip route-source	ך " è فخسم
match metric	ך ḣ
match route-type	ך صر
match tag	ך ḣ
set metric	⁑ ḣ
set metric-type	⁑ صر
set tag	⁑ ḣ

match ip next-hop hυ ɤ ɻ ɻЛυ э "
ə ɻЛυ ÿ У э ʃ ʃ ɻ У э
ᵴᵴ ʃ ʃ ɻ У э ╖ Â
ɻ ˆ ʃ RIP ᵴᵴ è˘ ≠ ɻЛυ RIP ᵴᵴ
G ʈɻ ʃ ɻЛυ ᵭ IP ˜ ʓ
ᵭ ʃ è˘ ي ˆ route maps˜
ʈɻʃ ˚ ⁸ Â
У э ي ‡ è˘ ɻЛυ 1 э э ı
match hυ ɤ˘ ‡ ٦ ' **s**

ЛυЮ R ˘ OSPF ˜ ʃ RIP
" 10 20ʊ OSPF ï è ʃ Â

```
Ruijie(config)# router ospf
Ruijie(config-router)# redistribute
Ruijie(config-router)# network 192.1
Ruijie(config-router)# exit
Ruijie(config)# access-list 10 permi
Ruijie(config)# access-list 20 permi
Ruijie(config)# route-map redrip per
Ruijie(config-route-map)# match ip next-hop 10 20
```

W R

43.1.23 match ip route-source

ǂ IP ѫ فخ ﾉ " ⅿ " ‡ ˘ في ЪυϗΑ

match ip route-source Â ЪυϗΑ **no** ǂ Â

match ip route-source {*access-list-number* [*access-list-number...* |*access-list-name...*] |*access-list-name* [*access-list-number...*| *access-list-name*] | **prefix-list** *prefix-list-name* [*prefix-list-name...*]}

no match ip route-source {*access-list-number* [*access-list-number...* | *access-list-name...*] | *access-list-name* [*access-list-number...*| *access-list-name*] | **prefix-list** *prefix-list-name* [*prefix-list-name...*]}

ﾍ

ﾍ	
access-list-number	" ﾉ
access-list-name	" ﾚ
prefix-list *prefix-list-name*	┐ ⅿ " ﾚ

Â

ЪυϗΑ في Â

G

match ip route-source ЪυϗΑ ﾉ ﾚЛυ ə " ﾉ Â

ə ęﾚЛυ ÿ У э ǂ ǂ ﾍ У э ╗ Â ﾚЛυ OSPF ѫ ǂ ﾉ ˆ ǂ RIP ѫ è˘ ≠ ﾚЛυ RIP ѫ ǂ ﾉ ˆ ǂ OSPF ѫ è Â ц ǂ ﾚЛυ جـ IP ˜ ʒ Â جـ ǂ è˘ في route maps˜ ˘ ч э ѫ ʒ цǂ ˚ ⁸ Â

У э في ‡ è˘ ﾚЛυ 1 э э **match** ЪυϗΩ 1 э э **set** ЪυϗΑ Â **match** ЪυϗΑ˘ ‡ ┐ ’ **set** ЪυϗΑ˘ ‡ a ṁ˙ ¡ ɔ Â

ш R

ЛυЮ R ˘ OSPF ˜ ǂ RIP Â ﾍ RIP IP ѫ فخ ﾉ " 5˜ OSPF ï è ǂ Â

```
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
```

ˇΩhυ ϶

hυ ϶	
access-list	Hπ " ‡
match ip address	ϧ " è فخ سم
match interface	ϧ ЮУ ∧
match ip next-hop	ϧ " è ЮУ فخ سم
match metric	ϧ ḣ
match route-type	ϧ صر
match tag	ϧ ḣ
set metric	ϡ ḣ
set metric-type	ϡ صر
set tag	ϡ ḣ

∧

hυ ϶ ˥ ∧

∧	
-	-

match ipv6 route-source	ך IPv6 " è فخ سم
match metric	ך ḣ
match route-type	ך صر
match tag	ך ḣ
set metric	ǂ ḣ
set metric-type	ǂ صر
set tag	ǂ ḣ
set ipv6 default next-hop	↓ ЮУ فخ سم Â
set ipv6 next-hop	↓ ЮУ فخ سم Â
show ipv6 policy	ɱń ɑ Â

↓ا

hu ҳ ך ↓ا	ا	
	-	-

43.1.25 match ipv6 next-hop

ǂ ЮУ IPv6 فخ سم ↓ " ɱń " ‡ ˘ G في

hu ҳ **match ipv6 address** Â hu ҳ **no** ǂ Â

match ipv6 next-hop { *access-list-name* | **prefix-list** *prefix-list-name* }

no match ipv6 next-hop

ا		
ا	*access-list-name*	" ɻ
	prefix-list *prefix-list-name*	ך IPv6 ɱń " ɻ

Â

hu ҳ في Â

У э ففي ‡ è˘ ⊿Л 1 э э **match** Ъυ ҳ Ո 1 э э **set** Ъυ ҳ Â
match Ъυ ҳ˘ ‡ ר ’ **set** Ъυ ҳ˘ ‡ a ṁ˙ ¡ ɔ Â

ففي ˉ ˚ ˘ ⊿Л جھ ˚ Ո Э Â a ¡
ففي˘ è \l У ˘ ⊿ Ъυ ҳ a ⊿ Â¸ G ⊿ جھ ˚
Э˘ a ⊿ ˜ ففي˘ è G Ъυ ҳ ≠ a ⊿ Â
ЛЬЮ R ˘ OSPF ˜ ˚ RIP ˘ ⊿ ˚ ⊿ " 10
RIP ˘ جھ OSPF ھھ è˘ صر ﻯ type-1˘ ˥ ḣ ﻯ 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 2720::/64 any
Ruijie(config-ipv6-acl)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match ipv6 next-hop v6acl
Ruijie(config-route-map)# set metric 40
```

Ъυ ҳ	
ipv6 access-list	Ⱨ IPv6 " ‡

ˆ ЮУ IPv6 فخسم ﾉ " ɱ " ‡ ˘ G في
hυ ҳ **match ipv6 address** Â hυ ҳ **no** ˆ Â

match ipv6 route-source { *access-list-name* | **prefix-list** *prefix-list-name* }

no match ipv6 route-source

٩	
access-list-name	" ﾉ
prefix-list *prefix-list-name*	٦ IPv6 ɱ " ﾉ

Â

hυ ҳ في Â

ə ﾉ Л υ ÿ У э ˆ ˆ ﾉ У э ╗ Â ﾉ Л υ OSPF
ѩ ˆ ﾉ ˆ RIP ѩ è˘ ≠ ﾉ Л υ RIP ѩ ˆ ﾉ
ˆ ˆ OSPF ѩ è Â ҷ ˆ ﾉ Л υ جم IP ˜ ڑ Â
G جم ˆ è˘ في route maps˜ ˘ ч э ѩ ڑ
ҷˆ ˚ ⁸ Â
У э في ‡ è˘ ﾉ Л υ 1 э э **match** hυ ҳ Ո 1 э э **set** hυ ҳ Â
match hυ ҳ˘ ‡ ٦ ' **set** hυ ҳ˘ ‡ a ṁ ¡ ɔ Â

في ˉ ˆ ˘ ﾉ Л υ جم ˆ Ո Э Â a ¡
في˘ è ﾚ У ˘ ﾉ hυ ҳ a ﾉ Â G ﾉ جم ˆ

W R

match ipv6 address	ϗ IPv6 " è ЮУ فخ سم
match ipv6 route-source	ϗ IPv6 " è فخ سم
match metric	ϗ ḣ
match route-type	ϗ صر
match tag	ϗ ḣ
set metric	ϡ ḣ
set metric-type	ϡ صر
set tag	ϡ ḣ

ϡ

hυ ϗ ϧ ϡ	/ſ	
	-	-

43.1.27 match length

ϟϟ ϒ IP ˆ ˘ G في hυ ϗ **match length** Â hυ ϗ

no

ɔ Â

metric	ḣ ﻝ ḣ ﻥ 0-4294967295

Â

hυ ɂ ﻓﻲ Â

ə ﻝ Л υ ÿ У э ǂ ǂ ﻟ У э ╖ Â ﻝ Л υ OSPF
ﻣﻦ ǂ ﻟ ˆ ǂ RIP ﻣﻦ è˘ ≠ ﻝ Л υ RIP ﻣﻦ ǂ ﻟ
ˆ ǂ OSPF ﻣﻦ è Â ц ǂ ﻝ Л υ جﻣ IP ˜ ﻕ Â

G جﻣ ǂ è˘ ﻓﻲˆ route maps˜ ˘ ч э ﻣﻦ ﻕ
ц ǂ ˚ ⁸ Â
У э ﻓﻲ ‡ è˘ ﻝ Л υ 1 э э **match** hυ ɂ Ո 1 э э **set** hυ ɂ Â
match hυ ɂ˘ ‡ ˥ ' **set** hυ ɂ˘ ‡ a ṁ ¦ ɔ Â

Л υ Ю ᴿ ˘ OSPF ˜ ǂ RIP Âﻝ ḣ ﻯ 10 RIP ˘ OSPF
˚ ǂ Â

ɯ ᴿ

```
Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets route-map redist-rip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redist-rip permit 10
Ruijie(config-route-map)# match metric 10 Ruijie(config-route-map)#
```

ϟ

hυ ϗ ˥ ϟ	ϟ	
	-	-

43.1.29 match origin

ǰ " è ǐ ˘ G في hυ ϗ **match origin** Â hυ ϗ **no** ǰ Â

match origin {**egp** | **igp** | **incomplete**}

no match origin {**egp** | **igp** | **incomplete|**}

ϟ	ϟ	
	egp	EGP
	igp	سم IGP
	Incomplete	a صر

Â

hυ ϗ	في Â
G	ϟ ϩ У ˘ a ˩ ϩ صر Â hυ ϗ ϩ ˚ Â

```
Ruijie(config)# route-map MY_MAP 10 permit
Ruijie(config-route-map)# match origin egp
Ruijie(config-route-map)# set community 109
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
```

ˇΩhυ ϗ	hυ ϗ	
	match as-path	ϩ AS_PATH ḣ
	match metric	ϩ ḣ
	match origin	ϩ ˥ ḣ

set as-path prepend	ʃ AS_PATH
set metric	ʃ ḣ
set origin	ʃ صر

ﻝ

hυ ɜ ʔ ﻝ	**ﻝ**	
	-	-

43.1.30 match route-type

ʔ صر˘ G في hυ ɜ **match route-type** Â hυ ɜ **no** ʃ Â

match route-type {**local | internal | external** [**type-1 | type-2**] **| level-1 | level-2**}

no match route-type {**local | internal | external** [**type-1 | type-2**] **| level-1 | level-2**}

ﻥ	**ﻥ**	
	local	ﺳﻣ
	Internal	OSPF ϕ̈
	external	(BGP OSPF)
	type-1 | **type-2**	OSPF صر 1 صر 2
	level-1 | **level-2**	ISIS 1 2

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hυ ɜ في Â

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ə ﻝ Лυ ÿ У э ʃ ʃ ﻝ У э ℸ Â ﻝ Лυ OSPF ﻣﻣ ʃ ﻝ ˆ ʃ RIP ﻣﻣ è˘ ≠ ﻝ Лυ RIP ﻣﻣ ʃ ﻝ ˆ ʃ OSPF ﻣﻣ è Â ʇɻ ʃ ﻝ Лυ جم IP ˜ ʓ Â جم ʃ è˘ في route maps˜ ˘ ч э ﻣﻣ ʓ ʇɻʃ ˚ ⁸ Â

У э في ‡ è˘ ﻝ Лυ 1 э э **match** hυ ɜ ∩ 1 э э **set** hυ ɜ Â **match** hυ ɜ˘ ‡ ʔ ’ **set** hυ ɜ˘ ‡ a ṁ ¡ ɔ Â

ɯ R ЛυЮ R ˘

```
Ruijie(config)# router rip
Ruijie(config-router)# redistribute ospf route-map redrip
Ruijie(config-router)# network 192.168.12.0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match route-type internal
```

ˆΩhυ ϟ

hυ ϟ	
access-list	Hπ " ‡
match ip address	ϟ " è فخسم
match interface	ϟ ЮУ ٨
match ip next-hop	ϟ " è ЮУ فخسم
match ip route-source	ϟ " è فخسم
match metric	ϟ ḣ
match tag	ϟ ḣ
set metric	ϯ ḣ
set metric-type	ϯ صر
set tag	ϯ ḣ

٨

hυ ϟ ˇ ٨

٨	
-	-

43.1.31 match tag

ϟ ˘ G في hυ ϟ **match tag** Â hυ ϟ **no** ϯ Â

match tag *tag* [*…tag*]

no match tag *tag* [*…tag*]

٩

٩	
tag	ḣ

Â

hυ ϟ في Â

G

match tag hυ ϗ ⅄ ⅃Ω ə tagÂ

əϥ ⅃Ω ÿ У э ˆ ˆ ⅄ У э Â ⅃Ω OSPF ˎˎ

ˆ ⅄ ˜ ˆ RIP ˎˎ è˘ ≠ ⅃Ω RIP ˎˎ ˆ ⅄ ˜ ˆ

OSPF ˎˎ è Â ϯ ˆ ⅃Ωˎˎ IP ˜ ϶ Â

ˎˎ ˆ è˘ ڤي route maps˜ ˘ ч э ˎˎ ϶

ϯˆ ˚ ⁸ Â

У э ڤي ‡ è˘ ⅃Ω 1 э э **match** hυ ϗ Ո 1 э э **set** hυ ϗ Â

match hυ ϗ˘ ‡ ㄱ ’ **set** hυ ϗ˘ ‡ a ṁ ¡ ɔ Â

ꟻ

ꟻЮ R ˘ RIP ˜ ˆ OSPF ÂRIP ⅄ ˆ OSPF ˎˎ è

ṅ 50 Ո 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
```

ˇΩhυ ϗ

hυ ϗ	
access-list	Ⱨ " ‡
match ip address	ㄱ " è فخ سم
match interface	ㄱ Ю У ⅄
match ip route-source	ㄱ " è فخ سم
match metric	ㄱ ṁ
match ip next-hop	ㄱ " è Ю У فخ سم
match route-type	ㄱ صر
set metric	ˆ ṁ
set metric-type	ˆ صر
set tag	ˆ ṁ

⅄

hυ ϗ ˥ ⅄

⅄	
-	-

43.1.32 maximum-paths

ˈ ˘ G ώ ЂU ҳ **maximum-paths** Â ЂU ҳ no ⅄ Л∪
ы ˈ Â

maximum-paths *number*

no maximum-paths

¶	
number	ˈ ˘ тп 1-32

Ы й 32ʼ Ц б έ е ср /! ˇΩ Â

route-map *route-map-name* [**permit** | **deny**] [*sequence-number*]

no route-map *route-map-name* [**permit** | **deny**] [*sequence-number*]

٩	
route-map-name	ڧفي ⊮ж У э ғ ¥ ل Â ˚ hυ ϗ ل ڧفي Â У э ڧفي ل Л∪ ⊮ж э ڧفي ˘ У э ڧفي У э /ٰ
permit	ˆ ل ˜ ⊮ж ѡ permit ˜Ω ˘ ٩ ل match ⊮ж ך ‡ Â‡ set hυ ϗ ˚ ⁸' ¥ ˘ set hυ ϗ ˆ ل ⁸ Â ڧفي ɔ Â ⊮ж ѡ permit ˜Ω ˘ a ل match ⊮ж ך ‡ Â ‡ ώ γ э ڧفي ɔ Â ˚ ѡ set hυ ϗ
deny	ˆ ل ˜ ⊮ж ѡ deny ˜Ω ˘ ٩ ل match ⊮ж ך ‡ Â ‡ a˛ ˙ ¡ ɔ˘ ڧفي a ï ˚ ˘ ȝ ڧفي ɔ Â ⊮ж ѡ deny ˜Ω ˘ a ل match ⊮ж ך ‡ Â ‡ ώЮ У э ڧفي ɔ Â ˚ ѡ set hυ ϗ Â
sequence-number	ڧفي /ٰ Â æ /ٰ . ˝I ˚ G ˘ ڃ /ٰ Â

ڧفي Â

hυ ϗ ŏ Â

G

ɱ RGIOS ˚ ڧفي ў ⊯ ч э ѕѫ ' ˝ ˜ ˚ ⁸' ˘ ˜ Â ˝ ˜ ˚ ⁸

ə ل Л∪ ÿ У э ˚ ˚ ل У э ╖ Â ل Л∪ OSPF ѫ ˚ ل ˆ ˚ RIP ѫ è˘ ≠ ل Л∪ RIP ѫ ˚ ل ˆ ˚ OSPF ѫ è Â ц ˚ ل Л∪⊯ IP ˜ ڎ Â ⊯ ˚ è˘ ڧفي route maps˜ ˘ ч э ѫ ڎ ц˚ ˚ ⁸ Â

У э ڧفي ‡ è˘ ل Л∪ 1 э э **match** hυ ϗ Л 1 э э **set** hυ ϗ Â **match** hυ ϗ˘ ‡ ך ' **set** hυ ϗ˘ ‡ a ɱ˙ ¡ ɔ Â ڧفي ˘ ڧفي /ٰ G ЛЮ ŭ '

Â … У э ڧفي ˘ *sequence-numbeř* ѝ 10ʼ

Â ﻝ جم У э ﻓﻲ ˘ *sequence-numbeř* a¸ … ﻓﻲ ˘
ώ ﻓﻲ ,
Â جم э ﻓﻲ ˘ ɔ Л˘ ĭ ‡ Â

ЛЬЮ R ˘ OSPF ˜ ĵ RIP ˘ ﻝ ĵ ѝ 4 RIP
˘ جم OSPF ﷺ è˘ ﺭﺻ ѝ type-1˘] ḣ ѝ 40˘
ḣ ѝ 40 Â

w R

```
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
```

G!Qñ SdXB HG!Qò < Y•- < SR uP È ³ Ú ×

hυ ϩ	في Â
G	hυ ϩ جه BGP è G ˘ ﾉ Â hυ ϩ ﾍ ﾍ У ^ as,ip-addr˜ ˘ a ﾍ ﾍ

w R

```
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
```

˝Ωhυ ϩ

hυ ϩ	
match as-path	ה AS_PATH ḣ
match community	ה ڃ E ḣ
match metric	ה ḣ
match origin	ה ﾍ ḣ
set community	ǂ COMMUNITY
set metric	ǂ ḣ
set metric-type	ǂ صر

ﾍ

hυ ϩ ˥ ﾍ

ﾉ	
-	-

43.1.35 set as-path prepend

ה match ‡ ╗ AS_PATH ḣ˘ G في hυ ϩ **set as-path prepend** Â hυ ϩ **no** ǂ Â hυ ϩ Θ ¥ Â

set as-path prepend *as-number*

no set as-path prepend [*as-number*]

ﾍ

ﾍ	
as-number	ñ ╗ ώ AS_PATH AS ﾉ

Â

ƕ ɂ في

G ƕ ɂ ɳ ˆ ╗ ñ AS_PATH ˘ У ɻ Лυ جـ as-path è ╗ 15 ɔ asÂ

w R
```
Ruijie(config)# route-map set-as-path
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set as-path prepend 100 101 102
```

ˇΩƕ ɂ

ƕ ɂ	
match as-path	ɳ AS_PATH ḣ
match community	ɳ ڀ ɛ ḣ
match metric	ɳ ḣ
match origin	ɳ ɻ ḣ
set community	ɨ COMMUNITY
set metric	ɨ ḣ
set metric-type	ɨ صر

ɻ

ƕ ɂ ˥ ɻ

ɻ	
-	-

43.1.36 set comm-list delete

ɳ match ‡ ɨ COMMUNITY_LIST è community ḣ˘ G في ƕ ɂ **set comm-list delete** Â ƕ ɂ **no** ɨ Â ƕ ɂ Θ ɣ Â

set comm-list *community-list-number* | *community-list-name* **delete**

no comm-list *community-list-number* | *community-list-name* **delete**

ɳ

ɳ	
community-list-number	ڀ ɛ " ɻ ñ ڀ ɛ " ' ɻ تن ﻯ 1-99 ڀ ɛ " ' ɻ تن ﻯ 100-199

community-list-name	ċ E " ɻ ċ E " ɻ a 80

hυ ϗ ˥ ˩	˥	
	-	-

43.1.37 set community

˥ match ‡ COMMUNITY ḣ˘ G في hυ ϗ **set community** Â hυ ϗ **no** ˆ

set community {*community-number*[*community-number …*] **additive** | **none**}

no set community { *community-number*[*community-number …*] **additive** | **none**}

ˤ	ˤ	
ˤ	*community-number*	ϡ ɛ ḣ Â ϧ AA:NN(˥:2 ʖ˘ У ə ḣ˘ تن 0-4294967295˜ ЛЬЮ ḦЖ ḣ' internet˜ Internet ϡ ɛ˘ ¥ ϡ ɛ Â local-as˘ a ˩ ˆ AS ˘ ˘ a ˩ ὲ Â no-advertise˜ a ˩ ˙ ¡ У ə BGP peers Â no-export˜ a ˩ EBGP peers Â
	additive	ج ˩ community ϡ Э ╗
	none	ϡ ɛ ϧ

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hυ ϗ	في Â
G	G hυ ϗ ˆ ϡ ɛ Â

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```
Ruijie(config)# route-map SET_COMMUNITY 10 permit
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set community 109:10
Ruijie(config-route-map)# exit
Ruijie(config)# route-map SET_COMMUNITY 20 permit
Ruijie(config-route-map)# match as-path 2
```

Ruijie(config-route-map)# **set community no-export**

ٌΩhυ ٪

hυ ٪	
match as-path	٦ AS_PATH ḣ
match community	٦ ڇ ɛ ḣ
match metric	٦ ḣ
match origin	٦ ٤ ḣ
set as-path prepend	٭ AS_PATH
set origin	٭
set metric-type	٭ ص

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hυ ϡ	ف Â
G	G hυ ϩ ˦ ˥ ϰ Â

w R

```
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
```

˝Ωhυ ϡ

hυ ϡ	
match as-path	ϩ AS_PATH ḣ
match community	ϩ ڀ E ḣ
match metric	ϩ ḣ
match origin	ϩ ϟ ḣ
set as-path prepend	˥ AS_PATH
set metric	˥ ḣ
set local-preference	˥ ˮ.ىس

ϡ

hυ ϡ ˥ ϡ

ϰ	
-	-

43.1.39 set extcommunity

ϩ match ‡ ڀ E ḣ ˘ G ف hυ ϡ **set extcommunity** Â hυ ϡ **no** ˥ Â hυ ϡ Θ ¥ Â

set extcommunity {**rt** *extend-community-value* | **soo** *extend-community-value*}

no set extcommunity {**rt** | **soo**}

ϰ

ϰ	
rt	RT ḣ
soo	SOO ḣ
extend-community-value	ڀ E ḣ

Â

hυ ϗ ففي Â

set hυ ϗ ч ' WCMP ⅄ ˘ WCMP ⅄ Â
ж ɲή У Ю˘ ώ weight ḣ WCMP ⅄ Â
set ip default next-hop hυ ϗ ⅄ ⅃Ω э IP سمفخ˘ a 32 э Â
ж ip address ⅄ ╗ weight ḣ˘ ‡ ⅃Ω a 4 э nexthop سمفخ Â

ж˙ ¡ У э next-hop ⅄ weight ḣ˘ G set hυ ϗ
╟╽ й WCMP ⅄ Â ж WCMP ⅄
Ю˘ ɣ ف⊖ weight nexthop سمفخ˘ è weight
й 1 Â

---

set ip next-hop Ω **set ip default next-hop** hυ ϗ Ш ⁞ ж ɣ' ɷ **set ip next-hop**
hυ ϗ ж ⅃ . ˝I G ' ɷ **set ip default next-hop** ˬ ж
⅃ . ˝I G ⅃ Â
G hυ ϗ й k У ⁸ ╗ Â ˘ Э й ⅃
╽ ⅃ ˘ ‡ ⅃╽ hυ ϗ Ю У (nexthop) Э Â
˘ G ففي˘ з … ففي Â У э ففي
˘ э ћ ɷ 1 э э ⅂ ‡ Ω ↄ Â У э ∧
⅄˘ ∧ ╽ ↑ ˘ a ⅄ ففي˙ ¡ ↑
⅃ ˘ ⅄ set⊜setG`VE⅄_T Z ¾

```
Ruijie(config- route-map)#set default interface null 0
```

hu ٤	
route-map	hX في
match ip address	

ˇΩhυ ϧ

hυ ϧ	
route-map	⊮ ففي
match ip address	¬ " è فخ سم
set default interface	↑ ∧˘ è
set default interface	↑ ∧˘ è
set interface	↑ ∧
set ip default next-hop	↑ ЮУ IP فخ سم˘ è
set ip precedence	↑ IP ˙ ˝I ḣ

∧ ¥ S8600 "˘ ¢ M8600-MPLS´ ǔ MPLS ╖ ˘ ‡ a ╖ Â

hυ ϧ ˥ ∧

∧	
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43.1.42 set ip next-hop

¬ match ‡ ↑ ЮУ IP فخ سم˘ G ففي hυ ϧ **set ip next-hop** Â
hυ ϧ **no** ╕ Â hυ ϧ Θ ¥ Â

set ip next-hop *ip-address* [*weight*] [*…ip-address* [*weight*]]

no set ip next-hop *ip-address* [*weight*] [*…ip-address* [*weight*]]

∧		
∧	*ip-address*	ЮУ IP فخ سم
	weight	ЮУ

Â

hυ ϧ ففي Â

	جھ ¦ У э next-hop ʌ weight ḣ˘ G **set** hυ ʒ
~	╟ŕ й WCMP ⅄ Â جھ WCMP ⅄
	Ю˘ ɣ ف℮ weight nexthop سم فخ˘ è weight
	й 1 Â

У ѫ ɣ ╗ ˆ ↳ ⁸ Â ɷ

˘ في ᾱ ¦ ˆ ˘ في ᾱ ɷ У э

ˆ Ю У ↳ Â

˘ G ˘في з … في Â У э في

˘ э ₩ɷ 1 э э ٦ ‡ Ո ɔ Â У э ∧

ʌ˘ ∧ ∫ ˆ ˘ a ʌ ˙في ¦ ˆ

↳ ˘ ʌ في è э ˆ è ₩

ɔ Â

У э في è ↳Л э set ɔ Â

ЛЮ R ˘ جھ serial 1/0 Э ŭ Â ∧ ∫ سم فخ جھ 10.0.0.0/8

تن ¨ˆ ˆ ˘ ↳ ∫ 192.168.100.1’ й 172.16.0.0/16 تن ¨ˆ

ˆ ˘ ↳ ∫ 172.16.100.1’ è м ώ x Â

```
Ruijie(config)#interface serial 1/0
Ruijie(config-if)#ip policy route-map load-balance
Ruijie(config)#access-list 10 permit 10.0.0.0 0.255.255.255
Ruijie(config)#access-list 20 permit 172.16.0.0 0.0.255.255
Ruijie(config)#route-map load-balance permit 10
Ruijie(config-route-map)#match ip address 10
Ruijie(config-route-map)#set ip next-hop 192.168.100.1
Ruijie(config)#route-map load-balance
```

set ip default next-hop

```
Ruijie(config--route-map)#match ip address 20
Ruijie(config-route-map)#set ip  next-hop 172.16.100.1
Ruijie(config)#route-map load-balance permit 30
Ruijie(config-route-map)#set interface Null 0
```

ˇΩhυ ϗ

hυ ϗ	
route-map	hѫ ڧي
match ip address	ϧ " è فخ سم
set default interface	↑ ٨ˇ è
set default interface	↑ ٨ˇ è
set interface	↑ ٨
set ip default next-hop	↑ ЮУ IP فخ سمˇ è
set ip precedence	↑ IP . ˝I ḣ

٨

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43.1.44 set ip precedence

ϧ match ‡ IP . ˝I , ᴳ ڧي hυ ϗ **set ip precedence** Â hυ ϗ **no** ˘ . ˝I ḣ˥ Â

set ip precedence {<

G

IP è . ″I h G IP a ل . ″I · Â
جم في ‡ è˘ لU ə **set ip precedence** hU ع˘ ת ل لU ə
˘ ع ل ך IP ˚ . ″I Â

ЛUЮ R ˘ ÿ ل FastEthernet 0/0 فخ سم ى 192.168.217.68
precedence ى 4 Â

W R

```
Ruijie(config)#access-list 1 permit 192.168.217.68 0.0.0.0
Ruijie(config)#route-map name
Ruijie(config-route-map)#match ip address 1
Ruijie(config-route-map)#set ip precedence 4
Ruijie(config)#interface FastEthernet 0/0
Ruijie(config-if)#ip policy route-map name
```

hU ع	
match interface	ך ЮУ ل
match ip address	ך ″ è فخ سم
match ip next-hop	ך ″ è ЮУ فخ سم
match ip route-source	ך ″ è فخ سم D3 Tm/TT0 1 Tf10.05

set ip tos {*<0-15>* | *max-reliability* | *max-throughput* |

⁄

ЮҲ ҳ ˥ ⁄	⁄	
	-	-

43.1.46 set ipv6 default next-hop

˥ match ‡ IPv6 ЮУ IPv6 فخ سم ˇ G في ЮҲ ҳ **set ipv6 default next-hop** Â ЮҲ ҳ no ˥ Â ЮҲ ҳ Θ ¥ Â

set ipv6 default next-hop *global-ipv6-address* [*weight*] [*global-ipv6-address* [*weight*]...]

no set ipv6 default next-hop global-ipv6-address [*weight*] [*global-ipv6-address* [*weight*]...]

⁄	⁄	
	global-ipv6-address	˩ ЮУ IPv6 فخ سم Â ЮУ ⅄ Â
	weight	⅄ ЮО ˇ 1˙ 8.

ЮҲ ҳ	في Â

ھ ⁄ Э Л∪ ⁄ˇ ¥ ˥ ‡ IPv6 ˇ è a ھ فخ سم ˆ . ˜˘ ‡ ˩˥ **set ipv6 default nexthop** ЮУ ˇ ˝ ‡ ˩ Â match ‡ IPv6 ˜Ω ‡ Â

G

```
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
```

ˇΩhυ ϟ

hυ ϟ	
match ipv6 address	Ⱨ ϗ ‡
ipv6 policy route-map	ج ϟ Э
set ipv6 next-hop	Ю У

ϟ ¥ S86 ˝ˇ ɑ M8600-MPLS´ ὖ MPLS ╖ ˇ ‡ a ╖ Â

hυ ϟ ˥ ϟ

ϟ	
RGOS 10.4	RGOS 10.4 hυ ϟ Â

43.1.47 set ipv6 next-hop

ϗ match ‡ IPv6 Ю У IPv6 فذسه˘ G في hυ ϟ **set ipv6 next-hop** Â hυ ϟ no ╕ Â hυ ϟ Θ ¥ 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*]...]

ϟ	

~	جہ ¡ У э ЮУ سمفخ ٨ weight ḣ˘ G set hυ ҳ ╟ŕ й WCMP кЗ Â جہ WCMP кЗ Ю˘ ұ ف֊ weight nexthop سمفخ˘ è weight й 1 Â

جہ б è ٨ ˘ Ю . ″I '

Â set ipv6 next-hop

Â ^ . ~

Â set ipv6 default next-hop

Â

ЛυЮ R ˘ ÿ ٨ fastEthernet 0/0 سمفخ й
2001:0db8:2001:1760::/64 Ю У й 2002:0db8:2003:1::95 Â

w R

no set ipv6 next-hop verify-availability [*global-ipv6-address* [*weight*] **bfd** *interface-type interface-number gateway*]

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ٴ	
global-ipv6-address	(ٮ)ЮУ IPv6 فخ سه
bfd	(ٮ) BFD
weight	(ٮ)ЮУ ḣ
interface-type interface-number	(ٮ) ٴ صر Ո- ٴ ٴ
gateway	(ٮ) ʗΩ˘ . ѝ BFD IPv6 فخ سه Â

a ʗΩ BFD ╖

hu ҂ في

G

~	hu ҂ б set ipv6 nexthop ٮ جه ˘ hu ҂. ʺl ' ʺl ɖ IPv6 ٴ BFD ٴ '

G ʗΩ BFD ˘ BFD б 2002::2 ٮ

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# route-map Example1 permit 10
Ruijie(config-route-map)# match ipv6 address 1
Ruijie(config-route-map)# set ipv6 precedence priority
Ruijie(config-route-map)# set ipv6 next-hop 2002::2
Ruijie(config-route-map)#set ipv6 next-hop verify-availability
2002::2 bfd FastEthernet 0/1 2002::2
Ruijie(config-route-map)#end
```

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bfd	BFD ٴ Â

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10.4	hυ ϗ

43.1.49 set ipv6 precedence

ϩ match ‡ IPv6 . ˝I ˘ G في hυ ϗ set ipv6 precedence Â hυ ϗ no ˘ . ˝I ḣ╕ Â

set ipv6 precedence {*<0-7>* | *critical* | *flash* | *flash-override* | *immediate* | *internet* | *network* | *priority* | *routine* }

no set ipv6 precedence {*<0-7>* | *critical* | *flash* | *flash-override* | *immediate* | *internet* | *network* | *priority* | *routine* }

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Critical à flash à flash-override à immediate à internet à network à priority à routine	IPv6 . ˝I ḣ Â
0~7	0~7

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hυ ϗ في Â

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ḣ	ŏ ⅿ
0	routine
1	priority
2	network
3	internet
4	immediate
5	flash-override
6	flash
7	critical

ɯ ᴿ	ᴿ 1ʻ ᵍ IPV6 . ˝I ӥ 3Â ¸ ˜Ω ACL6 Ruijie(config)#ipv6 access-list aaa Ruijie(config-ipv6-acl)#permit ipv6 2003:1000::10/80 2001:100::/64 ¸ route-map Ruijie(config)#route-map pbr-aaa permit 10 Ruijie(config-route-map)#set ipv6 next-hop 2001:1234::2 ¸ ᵍ . ˝I ╖ Ruijie(config-route-map)# set ipv6 precedence 3 Or Ruijie(config-route-map)# set ipv6 precedence immediate

˜Ωƕ ʢ

ƕ ʢ	
match ipv6 address	IPv6 PBR è ɏ ˥ ACL Â
route-map	ﻓﻲ Â
set default interface	Ю У ˦ Â
set interface	Ю У ˦ Â
set ipv6 default next-hop	˧ Ю У ﻓﺨﺴ Â
set ipv6 next-hop	˧ Ю У ﻓﺨﺴ Â
show ipv6 policy	ɱ ą Â
show route-map	ɱ ﻓﻲ ą Â

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10.4	ƕ ʢ

43.1.50 set level

˥ match ‡ ὼ ɯ ﻌﻤ ﺻﺮ˘ ᴳ ﻓﻲ ƕ ʢ **set level** Â ƕ ʢ **no** ˀ Â

set level {**level 1**| **level 2** | **level 1-2** | **stub-area** | **backbone**}

no set level

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set local-preference *number*

no set local-preference

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ך match ‡ ḣ˘ G ﻓﻲ Ъυ ҳ **set metric** Â Ъυ ҳ **no** ╕ Â

set metric [+ *metric-value* | **-** *metric-value* | *metric-value*]

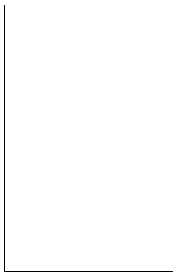
no set metric

ٰ۱

match ip route-source	٦ " è فخ سم

```
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# set metric-type type-1
```

Ьυ ҳ	
match interface	ר Ю У ٨
match ip address	ר " è فخ سم
match ip next-hop	ר " è Ю У فخ سم
match ip route-source	ר " è فخ سم
match metric	ר ḣ
match route-type	ר صر



ϰϰ ˆ ϳ ˆ RIP ϰϰ è˘ ≠ ϟ Ո RIP ϰϰ ˆ ϳ
ˆ OSPF ϰϰ è Â ϶ ˆ ϟ Ոجه IP ˜ ϷϷ Â
جه ˆ è˘ ففي route maps˜ ˘ ч э ϰϰ ϷϷ
϶ˆ ˚ ⁸ Â
У э ففي ‡ è˘ ϟ Ո 1 э э **match** hυ ϗ Ո 1 э э **set** hυ ϗ Â
match hυ ϗ˘ ‡ ר ’ **set** hυ ϗ˘ ‡ a ṁ ị ɔ Â

egp	EGP

set originator-id *ip-addr*

no originator-id [*ip-addr*]

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ϟ	*ip-addr*	ϟ فخ سم

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G	hυ ϟ ϧ ϟ 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
```

ˇΩhυ ϟ	hυ ϟ	
	match as-path	ϧ AS_PATH ḣ
	match metric	ϧ ḣ
	match origin	ϧ ϟ ḣ
	set as-path prepend	ϯ AS_PATH
	set metric	ϯ ḣ
	set local-preference	ϯ سم. ˝I

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43.1.57 set tag

ϧ match ‡ ˘ G في hυ ϟ **set tag** Â hυ ϟ **no** ϯ Â

set tag *tag*

no set tag

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tag

43.1.58 set weight

ר match ‡ BGP ḣ˘ G في Ъυ ҳ **set weight** Â Ъυ ҳ **no** ĩ Â

set weight *number*

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43.2

43.2.1 show ip community-list

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show ip community-list [*community-list-number*|*community-list-name*]

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community-list-number	ə ċ E " ϡ ñ ċ E " ' ϡ ت ϧ 1-99 ċ E " ' ϡ ت ϧ 100-199
community-list-name	ə ċ E " ɻ ċ E " ɻ a 80

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G G hυ ϡ ċ E " ə

w R

```
Ruijie# show ip community-list
Community-list standard local
permit local-AS
Community-list standard Red-Giant
permit 0:10
deny 0:20
```

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hυ ϡ	
match community	˥ ċ E "
set comm-list delete	ċ E " ĵ BGP è ċ E ḣ

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43.2.2 show ip prefix-list

ɱ " ə ɱ " ə ˘ G **show ip prefix-list** hu ɂ Â

show ip prefix-list [*prefix-name*]

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	prefix-name	ɱ " ɹ
	ɱ " ə Â	
hu ɂ	à ώ à ɻ à ˜ à ﻲ Â	
G	ɱ " ɹ ˘ ˚ ɱ " ə ˘ ǐ ‡ ɻ ɱ " ə Â	
w R	Ruijie# **show ip prefix-list** ip prefix-list pre: 2 entries seq 5 permit 192.168.64.0/24 seq 10 permit 192.2.2.0/24	

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43.2.3 show ip route

IP ə ˘ G **show ip route** hu ɂ Â

show ip route [[**vrf** *vrf_name*] [*network* [*mask*] | **count** | **protocol** [*process-id*] | **weight**]]

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vrf *vrf_name*	ˆ ˩ ˜ ٩ VRF ə
network	ˆ ˩ ˜ ٩ ˆ ə
mask	ˆ ˩ ˜ ٩
count	ˆ ˩ ˜ ɱ
protocol	ˆ ˩ ˜ ˜ ˇΩ ' **connected**, **static**' ˜ ˘ G ЮO ˇΩ ' **bgp**, **isis**, **ospf**, **rip**
process-id	ˆ ˩ ˜ ˜ /٩
weight	ˆ ˩ ˜ ٩

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```
Ruijie# show ip route
Codes:  C - connected, S - static, R - RIP, B - BGP
O - OSPF, IA - OSPF inter area
N1-OSPF NSSA external type 1,N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2
i - IS-IS,su - IS-IS summary,L1 - IS-IS level-1,L2 - IS-IS level-2
ia - IS-IS inter area, * - candidate default
Gateway of last resort is no set
S    20.0.0.0/8 is directly connected, VLAN 1
S    22.0.0.0/8 [1/0] via 20.0.0.1
O E2 30.0.0.0/8 [110/20] via 192.1.1.1, 00:00:06, VLAN 1
R    40.0.0.0/8 [120/20] via 192.1.1.2, 00:00:23, VLAN 1
B    50.0.0.0/8 [120/0] via 192.1.1.3, 00:00:41
C    192.1.1.0/24 is directly connected, VLAN 1
```

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	˜ Â ↵ ↵ ḣ ὴ'
	C' '
	S' '
O	R' RIP '
	B' BGP '
	O' OSPF '
	ï' IS-IS Â
	صر Â ↵ ↵ ḣ ὴ'
	E1' OSPF صر˝ '
	E2' OSPF صر˘ '
	E2
E2	

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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43.2.4 show ipv6 prefix-list

IPv6 ɱń " ə ɱń " ə ˘ G **show ipv6 prefix-list** hυ ҂ Â

show ipv6 prefix-list [*prefix-name*]

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prefix-name	IPv6 ɱń " ɻ

IPv6 ɱń " ə Â

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w R
```
Ruijie# show ipv6 prefix-list
ipv6 prefix-list p6: 2 entries
permit 13::/20
permit 14::/20
```

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43.2.5 show ipv6 route

IPv6 ə˛ ˇ G **show ipv6 route** hυ ҳ Â

show ipv6 route [[*network/prefix-length* | y 1 T f 0

O	˜ Â ˩ ˩ ḣ ˥' C' ' L' ɯ ў ' S' ' R' RIP ' B' BGP ' O' OSPF ' ï' IS-IS Â
E2	ɾ Â Ẍ ˩ ˩ ḣ ˥' E1' OSPF ɾ˝ ' E2' OSPF ɾ˘ ' N1' OSPF NSSA ɾ 1' N2' OSPF NSSA ɾ 2' IA' OSPF ɯ ậ ' su' IS-IS L1' IS-IS 1 ' L2' IS-IS 2 ' ia' IS-IS ɯ ậ Â
20::/64	ɯ ڂ Ո
[1/0]	ˀ ḣ
Via 10::4	Ю У IP ɯ ڂ
00:00:06	˜
VLAN 1	Ю У ˩ ˥

ʖΩhυ ɂ

hυ ɂ	
ipv6 route	**ipv6**

˥ hυ ɂ ɥ ɣ Э a

hυ ɂ ˥ ˩

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10.1	У ώ hυ ɂ

43.2.6 show route-map

ﻓﻲ ə ˘ G hυ ɜ **show route-map** Â

show route-map - *route-map-name*

44

44.1

44.1.1 ip local policy route-map

ـسم ل ˘ G ħυ ϗ **ip local policy route-map** Â ħυ ϗ **no** ˜Ω Â

ip local policy route-map *route-map*

no ip local policy route-map

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route-map	ـفي ل Â

˜Ω Â

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ħυ ϗ ل ـسم ل ١ ١ IP ˘ ل ـسم IP a ل
ħυ ϗ 8 Â ـسم ١· é ϗ ل

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Ruijie(config-route-map)#**exit**

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Ruijie(config)#**ip local policy route-map** *lab1*

Ъu ҙ	
access-list	Ьѫ " ‡
route-map	Ьѫ في
set vrf	Ьѫ IP VRF R
set ip next-hop	Ьѫ Ю У
set ip default next-hop	Ьѫ Ю У
set interface	Ьѫ ∕
set default interface	Ьѫ ∕
set ip tos	IP è TOS
set ip dscp	IP DSCP
set ip precedence	IP è ″I
match ip address	‡
match length	٦

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Ъu ҙ ٦ Ѵ	Ѵ	
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44.1.2 ip policy

set ip [**default**] **nexthop** э Ю У ӈ м ` ѯ ˇ ج

ώ Ю G **ip policy** Â Ъu ҙ **no** ч Â

ip policy {**load-balance | redundance**}

no ip policy

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	**load-balance	redundance**	ѯ ӈ м `

ӈ м ` Â

Ъυ ϡ ώ Â

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ج في è **set ip next-hop** ˘ ⊣ Л υ э Ю У ˘ Л ф ӈ м ` ˘
⊣ У э ⊣ Л υ Ю У ɔ ' ф ⅄ ˘ э
Ю У ɔ ˘ WCMP ⊣ Л υ 8 э Ю У ˘ ECMP ⊣ Л υ 32 э Ю У
Â Ю У Ю У ˝ ĵ ARP ə ϛ ARP MAC ج
MAC سم ف ≠ ج Â

Л υ Ю R è˘ في è ф э nexthop, ج ώ Ю ф ӈ м ` Л˘
‡ ج **FastEthernet** 0/0 Э э في ⊣ У э nexthop ɔ Â
R 1' ך IP ACL config)#L access-listCL

ѡ R

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44.1.3 ip policy route-map

جھ У э ٨ ˘ G Ъυ ҳ **ip policy route-map** ˘ G Ъυ ҳ **no** ˜Ω ٨ Э Â

ip policy route-map *route-map*

no ip policy route-map

٨	**٨**	
	route-map	في ل Â
	˜Ω Â	
Ъυ ҳ	٨ Â	
G	جھ ٨ Э ˘ ٧ ٨ ˆ ˆ ˘ ¥ ٨ ٧ ٧ ˆ a˛ Â ˘ G في˘ з … في Â У э في ˘ э Ъ 1 э э ٦ ‡ Ո ɔ Â У э ٨ ˆ ˆ ˘ a ٨ في˙ ! ˆ ˆ ˘ ٨ في è э ˆ è Ъ ɔ Â	
~		Э У э ٨ ٧ У э في˘ جھ ل У э ٨ Э في˘ ٨ في ˝I ɱ في Â

ЛЪЮ R è˘ Лъ ٨ FastEthernet 0/0 ˆ ˘ سھ فخ й 10.0.0.1˘ ‡ ЮУ й 196.168.4.6˘ سھ فخ й 20.0.0.1 ‡ ЮУ й 196.168.5.6˘ ї ‡ ٧ Â

R 1' ٦ IP ACL

```
Ruijie(config)#access-list 1 permit 10.0.0.1
Ruijie(config)#access-list 2 permit 20.0.0.1
```

R 2' Ъ في

```
Ruijie(config)#route-map lab1 permit 10
Ruijie (config-route-map)#match ip address 1
Ruijie(config-route-map)#set ip next-hop 196.168.4.6
Ruijie(config-route-map)#exit
Ruijie(config)#route-map lab1 permit 20
```

```
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
R З" جم ٨ Э في
Ruijie(config)#interface FastEthernet 0/0
Ruijie(config-if)#ip policy route-map lab1
Ruijie(config-if)#exit
```

ЎЬU ҳ

ЬU ҳ	
access-list	Ьѫ " ‡ Â
route-map	Ьѫ في Â
set vrf	Ьѫ IP VRF R
set ip next-hop	Ьѫ Ю У
set ip default next-hop	Ьѫ Ю У
set interface	Ьѫ ٨
set default interface	Ьѫ ٨
set ip tos	IP è TOS
set ip dscp	IP DSCP
set ip precedence	IP è ˙ ˝I
match ip address	‡
match length	٦

٨

ЬU ҳ ٦ ٨	/٨	
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44.1.4 ipv6 local policy route-map

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ѕш ٦ ⁸ ╗ Â

ipv6 local policy route-map *route-map-name*

no ipv6 local policy route-map

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route-map-p	**map** ħυ ϗ Â
no	⁸ Â

ϔΩ Â

ħυ ϗ ώ Â

Â IPv6 ħυ ϗ pi

Â … Â у ϗ

G ! Â

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set ipv6 precedence	IPv6 ˝I ḣ Â
show ipv6 policy	ɱṁ ɑ Â
show route-map	ɱṁ ﻲﻓ ɑ Â

ﻝ Â

Ъυ ҳ ٦ ﻝ	ﻝ	
	10.4	Ъυ ҳ

44.1.5 ipv6 policy

set next-hop ӷ̈ м ` ⱪ ˘ ҷ ѽ Ю G ipv6 policy .

ipv6 policy {**load-balance** | **redundance**}

no ipv6 policy

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	load-balance	ѝ ⱪ
	redundance	ѝ ӷ̈ м `

ɔ ҷ ӷ̈ м ` Â

Ъυ ҳ ѽ Â

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set default interface	ЮУ ∧ Â
set interface	ЮУ ∧ Â
set ipv6 default next-hop	↓ ЮУ ѕм ф Â
set ipv6 next-hop	↓ ЮУ ѕм ф Â
show ipv6 policy	⁄ń ą Â

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Ъu ҳ ↑ ∧

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10.4	Ъu ҳ

44.1.6 ipv6 policy route-map

ж У э ∧ ŭ ˘ G ∧ Ъu ҳ ipv6 policy route-map Â Ъu ҳ no ˇΩ Â

ipv6 policy route-map *route-map-name*

no ipv6 policy route-map

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route-map-name	¥ ѕм ф ˘ ↓ **route-map** Ъu ҳ Â

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Ъu ҳ

∧ Â

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¥ ∧ ↓ ↓ ↑ a¸ Â
Â ˘ G ф˘ з … ф Â У э
ф ˘ э Ъ ф 1 э э ↑ ‡ Ո ↄ Â У э
∧ ∧˘ ∧ ↑ ˘ a ∧ ф˙ !
↑ ↓ ˘ ∧ ф è э ↑
è Ъ ↄ

~ Э У э ∧ ∧ У э ф˘ ж ↓ У э ∧ Э
ф˘ ∧ ф ″I ⁄ń ф Â

w R

R 1' ∧ Â ¥ ∧ GigabitEthernet 1/38 Э ↑ ˘
ÿ 2003:1000::10/80 ↓ 2001:100::/64 ˘ ↑ AAA IPV6 ACL

ч 2003:1001::2 Â

¸ ˜Ω 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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G ȕ ɷ ɱȕ ˇ ɻ ɅƱ G ƫ ȝ Â

ɱȕ ɑ Â

```
Ruijie#show ip policy
Banlance Mode' redundance
Interface           Route map
local               test
FastEthernet 0/0    test
```

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ip policy route-map	ʌ Ɔ Â
ip local policy route-map	ɯ ʌ Â

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44.2.2 show ipv6 policy

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show ipv6 policy [*route-map-name*]

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route-map-name	ل في

ƫ ȝ Â

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```
Ruijie#show ipv6 policy
```

```
Banlance Mode: redundance
Interface                Route map
VLAN 1                   RM_for_Vlan_1
VLAN 2                   RM_for_Vlan_2
```

Banlance Mode	ɱ Â
Interface	ɑ ٨ ɻ Â
Route map	ɻ في ٨ Ɔ ɻ Â

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ƙU ɾ	
show route-map	ɱ في Â

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45 IGMP

45.1

45.1.1 ip igmp access-group

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ip igmp access-group *access-list*

no ip igmp access-group

٨		
٨	*access-list*	⁸ " ٫ ˘ تن<1-199>|<1300-2699> | WORD

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ħυ ϗ ٨

ў ج У э è У ҽ ٨ è ٦ Л٥ ╗ ώ У ҽ ˘ ҽ ٦ Л٥ **ip igmp access-group** ⁸ Â

G

ج ὖ IGMPv3 ˘ ⁸ ħυ ϗ ̃Ω ACL Â

ˆ MLD report ə ˆ S1,S2,S3…Sn,G˜ ˘ ħυ ϗ (0,G)

~ ə G ACL ٦ Â Л٥ G ħυ ϗ˘ ACL У (0, G)˘ ٦ Л٥

ˆ S1,S2,S3…Sn,G˜ Â

ʀ 1' ج Ю ʀ è˘ ў ㄴ ج ٨ Eth0 ٨ ╗ ώ 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
```

ʀ 2' ج Ю ʀ è˘ ج ٨ Eth0 ⁸ " ̃Ω ACL˘ ٨ ٨ سفذ ѝ 1.1.1.1, سفذ ѝ 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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45.1.2 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	ᔦ Ɜ ` . R Λ

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45.1.4 ip igmp last-member-query-count

last-member-query-count ˥ leave ˩˘ ˩ Â
ħu ҷ **last-member-query-count** ḣ Â ᴳ no ħu ҷ ḣ Â

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

no ip igmp last-member-query-count

˥	˥	
	number	˩ ˘ ḣ , ىت ѝ <2-7> Â

last member query count ḣ ѝ 2 Â

ħu ҷ ˥ Â

ᴳ ˥ ˥ ˥ У э IGMPv2 ˘ **ip igmp last-member-query-count** ˟ ╗ Э У ` ˘ ҹ ˥ ˘ ˆ ˘ ҹ ˥˥ ˘ ҽ Â

˩ ˘ ḣ ѝ 3 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	ḣ تن ѝ <1-255>ˇ ´ Æ ѝ 0.1s
	1s	
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G	٨ ĵ У э IGMPv2 ˇ **ip igmp last-member-query-count** ╗ Э У ` ˇ ҽ ӫ ĵ ˜ ˆ ˇ ҽ ٨ĵ ˜ ҷ Â	
w R	ЛъЮ R ҭ ҷ 20 ' 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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45.1.6 ip igmp limit ( )

G ћu ҳ ҽ ٨ igmp states э Â ٨ ˇ G no Â

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

no ip igmp limit

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	number	IGMP ї э ˇ تن Ո ɛ ɛ ˜Ω Â

except	^ ⅃ ~ G access-list è a ٧ б ˘ a ↓ limit э ⁸ Â
access-list	^ ⅃ ~ " ⅄ Â

ḣ ӣ 1024 Â

ħu ҳ ٧ Â

G G ħu ҳ ŏ IGMP ˜ ⁸˘ ˜ ج ⁸ ĭ a˛ IGMP ˘ a Â

G ħu ҳ ⅃Л э ٧ ˘ ٧ Ո ŏ ⅃Л ˘ ˜ ҁ ٧ ŏ Â

w R ЛЬЮ R ҁ ⁸ э ӣ 300′

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

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45.1.7 ip igmp limit ( )

G ħu ҳ ŏ ⅃Л igmp э Â ↓ ˘ G no Â

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

no ip igmp limit *number* [*except access-list*]

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number	IGMP ĭ э ˘ تن Ո έ E ˜Ω Â
except	^ ⅃ ~ G access-list è a ٧ б ˘ a ↓ limit э ⁸ Â
access-list	^ ⅃ ~ " ⅄ Â

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G G ħυ ϡ ŏ IGMP 8 ˘ ˜ ج 8 ǂ a
IGMP ˘ a ϟ Â
G ħυ ϡ ϟ Л э ϰ ˘ ϰ Ո ŏ ϟ Л ˘ ˜
ϖ ϰ ŏ Â

w R ЛЬЮ R ϖ 8 э и 300
Ruijie^ config~ # **ip igmp limit** *300*

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45.1.8 ip igmp mroute-proxy

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ip igmp mroute-proxy *interfname*

no ip igmp mroute-proxy

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interfname	Э ϰ ϡ

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ħυ ϡ ϰ Â

G Э ϰ и proxy-service ϰ ϡ˘ ϰ ϟ Л ϟ è ˜ ϟ
gmp ~ Â

w R ϰ mroute-proxy ϰ

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

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45.1.9 ip igmp proxy-service

Ћu ҳ ŭ ╟ Ю mroute-proxy Л ┗╗ Â Л Э Ћu ҳ˘ Л
й mroute-proxy Э Л˘ ˜Ω Ю Л˘ Ю Л ˆ Э ą Â

ip igmp proxy-service

no ip igmp proxy-service

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Л a й proxy-service Â

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ɱ э Ћu ҳ ┘ э ṁ ɷ ⁸˘ Л ĭ 32 э Â ŭ IGMP Proxy
╗ Л э ┘ ¥ Л э Â Л ĵ ˇ
proxy-service Л ˜ ą ˘ ɔ Â proxy-service Л
˜ ą ÿ mroute-proxy Л è Â ˘ ɷ
proxy-service˘ ¥ Л Л ɷ ў й˘ a Ы й.
Л Л switchport ɔ˘ ˜Ω Ю Л **ip igmp mroute-proxy**
interface Ћu ҳ ╟˜ Â

w R Л й proxy-service ɔ
Ruijie(config-if)# **ip igmp proxy-service**

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45.1.10 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˘ ḣ 1˙ 18000

	125 Â
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G	⊿Ʊ ˜ ˘ ⊿ ⊀ Â

w R	R 1' ⋵ ⊀ Ethernet 0 ˘ ˜ ϶ 120s Â Ruijie(config-if)# **ip igmp query-interval** *120* R 2' ⋵ ⊀ Ethernet 0 ˘ ˜ ϶ ḣ Â Ruijie(config-if)# **no ip igmp query-interval**

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

no ip igmp query-max-response-time

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seconds	: ˘ ´ Æ s˘ ḣ 1˙ 25

10s

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G э Ђu ҳ ⅄ IGMPv2 Â э Ђu ҳ ⁸ ح ⁋ ə ɱ : ə Â

ᴿ 1' ح ٨ Ethernet 0 ˘ : ѝ 20s Â

```
Ruijie(config-if)# ip igmp query-max-response-time 20
```

ᴿ 2' ح ٨ Ethernet 0 ˘ : ѝ ḣ Â

```
Ruijie(config-if)# no ip igmp query-max-response-time
```

	255s
ħu ҳ	ʌ
G	ħu ҳ IGMPv2 Â ą Ю˜ ч‴ **ip igmp query-interval** ˘ ҷ Ruijie Ю ḣ ѝ 255s Â ҷ ą̈˘ ˛ ˘ ѝ Â

ѡ R	R 1' ҷ ʌ Ethernet 0 ˘ è Ы 200s Â
	`Ruijie(config-if)# **ip igmp query-timeout** *200*`
	R 2' ҷ ʌ Ethernet 0 ˘ è Ы ѝ ḣ Â
	`Ruijie(config-if)# **no ip igmp query-timeout**`

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

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45.1.14 ip igmp ssm-map enable

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ip igmp ssm-map enable

no ip igmp ssm-map enable

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45.1.15 ip igmp ssm-map static

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

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

^\		
^\	*access-list*	Acl ˩ Ђ тп й <1-99> |<1300-1999> |WORD
	a.b.c.d	´ фѣ ѕм

фѣ ѕм

Ђu ҳ ѿ

G Ђu ҳ б **ip igmp ssm-map enable** ˥ G ˘ Ђu ҳ ˥˘ ĵ v3 ЛЪЮ Э è Â

W R ACL й 11 Э фѣ ѕм 192.168.2.2 Ђu ҳ й'

```
Ruijie(config)# ip igmp ssm-map static 11 192.168.2.2.
```

Ruiji2A(co8j12<09DW* 6048 579.26 mh8 0.4812<09D -22356p s812<38 579ef0.852 g297.18 558

no ip igmp static-group *group-address*

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group-address	५ Э ╗ فذ سم Â

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ج Ю R è˘ Ӈ ५ Eth0 ╗ ώ 236.6.6.6

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G	¥ igmp ʌ˘ ʌ˘ igmp˛ ů ╟ Â
ѡ R	ЛυЮ R ɷ ʌ ѝ 2' Ruijie# **configure terminal** Ruijie(config)# **interface ethernet** *0* Ruijie(config-if)# **ip igmp version** *2*

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45.2

45.2.1 clear ip igmp group

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clear ip igmp group[*group-address*

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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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45.2.3 show ip igmp groups

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show ip igmp groups [*group-address* | *interface-type interface-number*] [*detail*]

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	group-address	32 ə Æ IP ѫ ڤ D ѫ ڤ˘ 8 Æ У ˘ ЛЏ ⁸ ˘ ڑ Â
	interface-type	˜Ω ʅ ص Â
	interface-number	˜Ω ʅ /ʅ Â
	detail	ą Â
		ώ ą Â

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```
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
```

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```
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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45.2.5 show ip igmp ssm-mapping

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show ip igmp ssm-mapping (*A.B.C.D*)

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A.B.C.D	فخ سم

IGMP ssm-map ə Â

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```
Ruijie# sh ip igmp ssm-mapping
```

SSM Mapping : Enabled
Database : Static mappings configured
ᴿ 2′ 233.3.3.3 ə
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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46 PIM-DM

46.1 PIM-DM

46.1.1 ip pim dense-mode

æ ɱń ㄴ Э ǔ PIM-DM΄ G **ip pim dense-mode** ħu ϗ Â G ħu ϗ no æ ɱń ㄴ Э PIM-DM Â

ip pim dense-mode

no ip pim dense-mode

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	PIM-DM Â
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G	æ ǔ ╠ PIM-DM ɱń˘ æ ώ Юǔ ╠ ㄣ ╗ ˘ ΐ ‡. G ǔ ╠ ϖ PIM-DM΄ ≠ a ㄣ Â æ ǔ ╠ PIM-DM ㄹ ˘ IGMP æ ㄱ ɜ ㄴ Э† ⋮ ╠ ǔ ╠˘ a ╠ Â ħu ϗ Ą˘ ľ Failed to enable PIM-DM on < ㄴ ㄹ >, resource temporarily unavailable, please try again Ŀ˘ Ą̈ ħu ϗ Â ħu ϗ Ą˘ ľ PIM-DM Configure failed! VIF limit exceeded in NSM!!! Ŀ˘ ɱń ㄴ † ㄹ ㄴ Э Â ÿ æ ㄴ ЮǔPIM-DM ˘ † У Ҿ a PIM-DM PIM-SM DVMRP ㄴ Â a æ ㄹ У ㄱ Э a ㄹ ㄴ a ㄹ v4 ~ Â
ѡ R	Ruijie# **configure terminal** Ruijie(config)# **interface fastethernet** *0/1* Ruijie(config-if)# **ip pim dense-mode**

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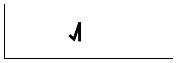

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46.1.3 ip pim override-interval

hello override-interval ḣ˘ G **ip pim override-interval** ћu ҳ Â

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ip pim override-interval *interval-milliseconds*

no ip pim override-interval

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interval-milliseconds	˩ ḣ تن<1-65535>˘ ´ Æ и

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46.1.4 ip pim query-interval

hello interval ḣ˘ G **ip pim query-interval** ħυ ϡ Â

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ip pim query-interval *interval-seconds*

no ip pim query-interval

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↰	*interval-seconds*	↲ ḣ تن ϧ <1-65535>˘ ´ Æ ϧ

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G ɷ hello intervaľ hello holdtime ḣ¸ ϧ hello interval 3.5˝ Â

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```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim query-interval 123
```

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46.1.5 ip pim propagation-delay

hello propagation-delay ḣ˘ G **ip pim propagation-delay** ħυ ϡ Â

ħυ ϡ no ↲ ΠυG hello propagation-delay ḣ Â

ip pim propagation-delay *interval-milliseconds*

no ip pim propagation-delay

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	interval-milliseconds	↓ ḣ تن<1-32767>˘ ´ Æ ѝ
	500	
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G	↑ propagation-delay. ↑ · Â	
ѡ R	Ю R ↑ 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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46.1.6 ip pim state-refresh disable

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ip pim state-refresh disable

no ip pim state-refresh disable

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	ip pim state-refresh disable ћu ҳ '
~	ЋΩ 9 ℼ ⅃ ˛ PIM-DM ⅃ ˇ a Ո- ˇ ЛЬ У ą Ю a ЋΩ 9 ℼ Â

	ЛЬЮ R PIM-DM 9 Â
ш R	Ruijie# **configure terminal** Ruijie(config)# **ip pim state-refresh disable**

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46.1.7 ip pim state-refresh origination-interval

PIM-DM 9 ⅃ ˇ G **ip pim state-refresh origination-interval** ћu ҳ Â ⅃ ч э 9 ⅀ ℸ Â ћu ҳ no ⅃ Лu G ⅃ й ḣ Â

ip pim state-refresh origination-interval *interval-seconds*

no ip pim state-refresh origination-interval

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	interval-seconds	⅃ ḣ تن<1-100>ˇ ´ Æ й

	60
ћu ҳ	⅄
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ш R	Ruijie# **configure terminal** Ruijie(config)# **interface fastethernet** *0/1* Ruijie(config-if)# **ip pim state-refresh**

origination-interval *65*

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46.2 PIM-DM

46.2.1 show ip pim dense-mode interface

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ЛЬЮ й **ip pim dense-mode interface** ħu ҳ '

```
Ruijie# B.6w ip pim dense-mode interface
    Interface        VIFIndex  Ver/   Nbr
```

w R

VIF Index	VIF ˆ ID˜
Ver/Mode	PIM /
Nbr Count	PIM-DM ʌ

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show ip pim dense-mode neighbor	PIM-DM ʌ ə

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46.2.2 show ip pim dense-mode mroute

PIM-DM ə ˇ G show ip pim dense-mode mroute ħu ɜ 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	فخ سم ∩ فخ سم
summary	ə

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ЛυЮħu ɜ PIM-DM ə '

```
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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46.2.3 show ip pim dense-mode neighbor

PIM-DM ə ˘ G **show ip pim dense-mode neighbor** ћu ҳ Â

show ip pim dense-mode neighbor [*interface-type interface-number*]

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interface-type interface-number	ᴎ صΩ ᴎ ᴎ

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ЛЬЮ й **show ip pim dense-mode neighbor** ћu ҳ '

```
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 ᴎ

Uptime/Expires	Л ч ы
Ver	PIM

Metric	
Pref	. ″I

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46.2.5 show ip pim dense-mode track

PIM-DM ˜ ə ˇ G show ip pim dense-mode track ћu ҙ Â

show ip pim dense-mode track

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ˇ clear ip pim dense-mode track ˇ ˛
PIM Ы Â

Ю **show ip pim dense-mode track** У э R

```
Ruijie# show ip pim dense-mode track
              PIM packet counters
Elapsed time since counters cleared: 00:04:03
                        received    sent
Valid PIMDM packets:      1           8
Hello:                    1           8
Join/Prune:               0           0
Graft:                    0           0
Graft-Ack:                0           0
```

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

ħu ३

dense-mode_trk0 Tf0 Tc 0.012 0 Td<[<1879>6<1B5B34B3417505B5>6<1643>TJ/TT0 1 Tf05988 0 Td<

ħu ३	
show ip pim dense-mode track	PIM ə

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47 PIM-SM

47.1 PIM-SM

47.1.1 clear ip mroute

clear ip mroute {* | *group_address* [*source_address*] }

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*	╕ pimsm Â
group_address	╕ pimsm Â
group_address source_address	╕ pimsm Â

a╕

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G ╟╕ pimsm

```
Ruijie# clear ip mroute *
Ruijie# clear ip mroute 224.2.2.2
Ruijie# clear ip mroute 224.2.2.2 2.2.2.2
```

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*	╕ pimsm Â
group_address	╕ pimsm Â
group_address source_address	╕ pimsm Â

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G ╟╕ pimsm ə٤

```
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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47.1.3 clear ip pim sparse-mode bsr rp-set

clear ip pim sparse-mode bsr rp-set *

५	
*	rp-set Â

a╕ rp-set Â

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G ╟╕ ╟ ˝ ╵ RP ə٤ Â

w R Ruijie# **clear ip pim sparse-mode bsr rp-set** *

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47.1.4 clear ip pim sparse-mode track

clear ip pim sparse-mode track

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a à a PIM ᵡ

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G ˘ PIM ᵡ

w R Ruijie# **clear ip pim sparse-mode track**

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show ip pim sparse-mode track	-

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47.1.5 ip multicast-routing

ip multicast-routing

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G ŭ ╟ ˘ ħυ ३ Â ॐ ५ Ə ŭ ╟ pimsm ˘ ≠ ħυ ३˘ ĭ ‡˘ ¢ **ip pim sparse-mode** ħυ ३˘ Л pimsm ŭ ╟ Â

ш R Ruijie (config)# **ip multicast-routing**

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ip pim accept-crp-with-null-group

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	ح BSR Э a prefix-count ѝ 0 C-RP-ADV Â
ћu ϗ	ѿ
G	ح Ạ BSR Э ћu ϗ˘ Ạ BSR ѝ BSR ˘ prefix-count ѝ 0 C-RP-ADV ˘ з ѝ C-RP Â

w R	Ruijie# **configure terminal** Ruijie(config)# **ip pim accept-crp-with-null-group**

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ћu ϗ ٦ ٨	٨	
	-	-10.4(1) ώ ћu ϗ

47.1.9 ip pim accept-register list

ip pim accept-register list *access-list*

٩		
access-list	access-list˙	تن<100ϖ 199> ā تن

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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ћu ҳ	
access-list	-

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47.1.10 ip pim bsr-candidate

ip pim bsr-candidate *interface-type interface-number* [*hash-mask-length*] [*priority-value*]

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ӀӀ	
interface-type interface-number	Ӏ
hash-mask-length	Ӌ ˇ Ӌ ћ тп й <0-32> ˇ й RP ш ⁸ HASH ˇ ћ 10
priority-value	Ӌ ˇ Ӌ ћ тп й <0-255> ˇ Ą BSR . ″I Ӏ ˇ ћ 64

ˇ a ћu ҳˇ . a Ą BSR

ћu ҳ ѽ

G

ҷ У э PIM-SM ѫ èˇ ҷ У э ҏ У ш Ӆ BSR Â BSR ҷ RP ә Â э Ą BSR ш ш ң ҏ У Ѽ BSR Â ҷ BSR ә Ѯ ӎˇ C-BSR й BSRˇ т ҷ PIM-SM ѫ è Л ѳ 224.0.0.13 ҵ ш ˇ ↑ Ѽ BSR ѳ Ո. ″I Â

G ћu ҳ ҵ Л ћ ∫ BSR ѳ ҵ У э ш ә PIM ˇ э Ӆ ″I BSR ә ҵ ∫ ш ә ˇ ҵ ∫ ш . ˇ ɖ э ш è ѳ ф э й BSR ѳˇ ҵ ш ә ’ ї ‡ x ә Â ӎ Ą BSR й BSRˇ ∫ ÿ Ӏ У э Ą BSR è ∫ У э . ш ә ˇ ˆ Ӏ У э Ą BSR У э . ″I ћˆ У . ″I ћˇ л IP ѳ˜ Â

w R

```
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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47.1.11 ip pim bsr-border

ip pim bsr-border

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ћu ҙ ℵ

G й ₡ ⁸ BSM ˇ ℐ Л ح ℵ Э BSR ˇ э ℵ ⌡ BSM ℳ ˛ . x ˇ BSM ≠ a˛ ÿ э ℵ ℐ Â

w R ح 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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47.1.12 ip pim dr-priority

ip pim dr-priority *priority-value*

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٧	*priority-value*	. ″I ḣ˘ ḣ ˘ . ″I Â تن ؤ' <0-4294967294>˘ ḣ ؤ' 1 Â

˘ DR . ″I ḣ ؤ 1

ħυ ३ ٧

У ə DR ˘ Ю Ű ą '

Â ⊿ У ﷺ è hello . ″I ٧ ˘ ﷺ جھ DR ˘ ″I . ″I ˘ . ″I ˘ ؤ DR' ə ⊿ . ″I ˘ ﷺ˘ IP فخ سم ˘ DR Â

Â ⊿ У ﷺ è ə جھ hello è . ″I ٧ ˘ ﷺ ə ﷺ è DR ѡ è˘ 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 è rp . ˝l
ħυ ३	ώ
G	ﻉ rp ˘ rp . ˝l ˘ G ħυ ३
w R	Ruijie# **configure terminal** Ruijie(config)# **ip pim ignore-rp-set-priority**

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47.1.14 ip pim jp-timer

ip pim jp-timer interval-seconds

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	Interval-seconds	↙ ḣ تن<1-65535>˘ ´ Æ ѝ

˘ ↰ join/prune 60s
ħυ ३ ώ
G ↰ join/prune
w R Ruijie# **configure terminal** Ruijie(config)# **ip pim jp-timer** *50*

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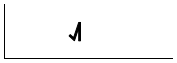

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PIM ŭ ˇ k ⁸ Â ʌ "

G ˇ ‡ PIM-SM a˛ б ^ peering˜ ˜Ω ˇ è 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 ˘ ſ Ю ΰ э ˘ . Â
ѡ R	Ю R ∧ ╗ ώ 8 Ғ 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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47.1.18 ip pim override-interval

ip pim override-interval *interval-milliseconds*

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	∧	
	interval-milliseconds	∧ ḣ تن<1-65535>˘ ´ Æ ѝ

	˘ Hello Override-Interval ḣ 2500
ħu ҳ	∧

G	
~	∧ Override-Interval Â g · g ⅔ ĭ ᾱ ˘ ˛ ⁝⌉ J/P-override-interval Â ˜ Э J/P-override-interval ɣ Join-Prune holdtime˘ ĭ ‡ ˩ Â У ˘ ɖ Â

ѡ R	
	Ю R ∧ Override-Interval ѝ 3000 Ruijie# **configure terminal** Ruijie(config)# **interface** g*0/3* Ruijie(config-if)# **ip pim override-interval** *3000*

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ip pim propagation-delay-	-

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47.1.19 ip pim propagation-delay

ip pim propagation-delay *interval-milliseconds*

interval-milliseconds	˩ ḣ ت<1-32767>˘ ´ Æ ѝ

˘ Hello Propagation_Delay ḣ 500

ћu ҳ ʌ

ʌ propagation-delay. · Â

g · g ⅔ ĭ ᾱ ˘ ˛ :⎫

J/P-override-interval Â ˜ Э J/P-override-interval ¥

Join-Prune holdtime˘ ĭ ‡ ˩ Â У ˘

ɖ Â

Ю R ʌ 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 ϟ ħ 30s

ħυ ϡ ϰ

G

Hello ϟ ˘ Hello ɖ ≠˳ ЛЮ ‡ ʒ ' Hello ɖ ϰ 3.5˝ ' Hello ϟ * 3.5 > 65535˝ з Hello ϟ ⁸ ϰ 18725 Â

ѡ R

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim query-interval 123
```

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47.1.22 ip pim register-decapsulate-forward

ip pim register-decapsulate-forward

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RP a Ą ϟ ε è Â

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~ ϟ Ą ɑ Ю˝ ϖ ℸ ˘ ˳	
cpu ' a ħυ ϡ Â	

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```
Ruijie# configure terminal
Ruijie(config)# ip pim register-decapsulate-forward
```

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47.1.23 ip pim register-checksum-wholepkt

ip pim register-checksum-wholepkt [**group-list** *access-list*]

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access-list	access-list <1˜ 99> å <1300˜ 1999>˘ ħu ɹ acl Â group-list access-list Â

˘ ¨Ą Ո pim Ո ¨Ą ˘ ɔ pim
Â

ħu ʒ ŏ

G ʃ ң ʗ ¨Ą Ո ŭ ɔ pim ˜ ŭ ɛ è
˘ ´ ¨Ą pim Â ŭ ɷ ò ɕ ˘ ώ ɷ ħu ʒ Â

w R

```
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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-	-

47.1.24 ip pim register-rate-limit

ip pim register-rate-limit *rate*

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rate	ĭ ᔦ ə register ˘ ᴊ ḣ تن <1-65535>

˘ a Ạ

ħu ҳ ŏ

G ə^ S˜ G˜ Ạ ᔦ ˘ a ə Ạ ᔦ Â ů ╟ ħu ҳ æ DR Ո RP ˘ a ⁸ Ạ ᔦ Â

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```
Ruijie# configure terminal
Ruijie(config)# ip pim register-rate-limit 3000
```

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47.1.25 ip pim register-rp-reachability

ip pim register-rp-reachability

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˘ ↓ Ą ˘ a RP ĭ ↓

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G ↓ Ą ⁄ń˘ ″ RP ĭ ↓ ˘ ↓Λυ G ħυ ϡ Â a ↓ ˘ ‡ a ↓ Ą Â

ψ R

```
Ruijie# configure terminal
Ruijie(config)# ip pim register-rp-reachability
```

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47.1.26 ip pim register-source

ip pim register-source {*local_address* | *interface-type interface-number*}

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local_address	Ą ip ϡ
interface-type interface-number	ə ↓ ip ɔ ϧ Ą ip ϡ

˘ Ą è IP G б DR ↓ ϡ Â

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Ą è IP ϡ Â

ϡ ↓ Â RP ↓ Register-Stop ə ˘ ɔ

↓ Â Λυ ↓ ϡ ˘ ת ≠ ↓Λυ è ϡ Â

~ a PIM ů ╟ Â

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ip pim rp-address *rp-address* [*access_list*]

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rp-address	RP ip فخ سم
access_list	ل ˘ access-listť acl تن ﻯ <1-99> ầ <1300-1999>’ ≠ ħυ ﻝ acl Â ˘ ï Â

˘ rp فخ سم

ħυ ϡ ώ

RP˝ ≠ RP Ո BSR ⁸ ﻝ Â ᴳ ħυ ϡ ЮΟ ΰ ˈ

Â BSR ⁸ Ո RP ﻝ ˘ . ˝I ᴳ ╟ Â

Â ᴳ " RP سم فخ ﻝ Л υ ə ɲ υ ï ə

G

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PIM-SM ħu ३

47.1.30 ip pim rp-register-kat

ip pim rp-register-kat *seconds*

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	ᴂ ŭ ╟ PIM-SM ɱń˘ ᴂ ѽ Юŭ ╟ ㄴ ╖ ˘ ĭ ‡. ᴳ ŭ ╟ ⍵ PIM-SM˘ ≠ a ㄴ Â ᴂ ŭ ╟ PIM-SM ⊿ ˘ IGMP ᴂ ㅅ ɜ ㅀ Ɜ⍐ ⁞ ╟ ŭ ╟˘ a ╟ Â
&	ħu ҳ Ą˘ ˬ Ⅰ' Failed to enable PIM-SM on < ㅀ ⊿ >, resource temporarily unavailable, please try again Ŀ˘ ΫĄ ħu ҳ Â
	ħu ҳ Ą˘ ˬ Ⅰ' PIM-SM Configure failed! VIF limit exceeded in NSM!!! Ŀ˘ ɱń ĭ ㅀ ㅀ Ɜ ˘ ⍐ У ⍜ a PIM-DM DVMRP ㅀ Â a ᴂ ⊿ У ㅅ Ɜ a ⊿ ㅀ a ⊿ v4 ~

w R

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim sparse-mode
```

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47.1.32 ip pim spt-threshold

ip pim spt-threshold [**group-list** *access-list*]

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access-list	⊿ ˘ access-list˙ acl تن ѝ 1-99 à 1300-1999˙ ≠ ħu ⊿ acl Â group-list access-list ˘ ĭ SPT⍐ Â

˘ a ŭ ╟ SPT⍐

ħu ҳ ѽ

G

rp spt ↓ ╖ ˘ ћu ҳ'
↓ ĭ ת G SPT ˘ ‡ Э group-list
a G group-list ˘ ĭ G SPT Â

w R

```
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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47.1.33 ip pim ssm

ip pim ssm { **default** | **range** *access_list*}

↑

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default	ת й' 232/8
access_list	ת acl ת й 1-99' ≠ ћu ↓ acl

SSM

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ŭ ╟ pim ssm ⊖ ŭ ╟ pim ssm˘ G ћuҳ Â

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R 1' Ю ћuҳ ת 232/8 Â

```
Ruijie# configure terminal
Ruijie(config)# ip pim SSM default
```

R 2' Ю ћuҳ ! " فخسم й 10 Â

```
Ruijie(config)# ip pim SSM range 10
Ruijie(config)# access-list 10 permit 232.0.0.1 0.0.0.255
```

ЎΩћu ҙ	ћu ҙ	
	access-list	-

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47.1.34 ip pim triggered-hello-delay

ip pim triggered-hello-delay *interval-seconds*

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	interval-seconds	۷ ḣ تن<1-5>˘ ´ Æ ̀

	˘ Triggered-Hello-Delay 5s Â

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G	۸ Triggered-Hello-Delay ḣ Â ۸ • ŭ ╟ ۸ ˚ ˘ ˛ G Triggered-Hello-Delay ң У э ˘ ج э ˙˘ ۸ ˛ ۷ hello Â

w R	Ю R ۸ Triggered-Hello-Delay ḣ ̀ 3s Â
	`Ruijie# configure terminal`
	`Ruijie(config)# interface g 0/3`
	`Ruijie(config-if)# ip pim triggered-hello-delay 3`

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47.2 PIM-SM

47.2.1 show debugging

show debugging

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Ruijie #**show debugging**

Ю show debugging У э R

w R Ruijie #**show debugging**

ip packet debug:

ip packet debug debugging is on, acl: 0

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G	BSR ҽ G

```
Ruijie# show ip pim sparse-mode bsr-router
```

Ю **show ip pim sparse-mode bsr-router** У э R

```
Ruijie# show ip pim sparse-mode bsr-router
```

w R

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G	PIM SM ᴎ ə ˘ ЛЬЮ Ь ћu ҳ 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** У э R

```
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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47.2.4 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	ᴊ ˘ ᴎ ˘ ћu ҳ ᴎ

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G PIM SM ᴎ Э ѕм IGMP ə Â

```
Ruijie# show ip pim local-members
Ruijie# show ip pim local-members g 0/3
Ю sh ip pim sparse-mode local-members У э R
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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47.2.5 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 ѕм фѓ Â
source_address	A.B.C.D ѕм фѓ Â
	a Ѓ E ѕм фѓ ѕм фѓ˘ (˘)

a

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G ə G Â ᴎ У э ѕм фѓ˘ У э ѕм фѓ˘ У э ѕм фѓ Ո У э ѕм фѓ˘ a Ѓ E ѕм фѓ ѕм фѓ Â a ᴎ ч э ѕм фѓ ч э ѕм фѓ Â

w R

```
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
Ю          sh ip pim sparse-mode mroute    У э R
Ruijie (config-if)#sh ip pim sparse-mode mroute
```

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47.2.7 show ip pim sparse-mode nexthop

show ip pim sparse-mode nexthop

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G ЮУ ˜Ω ą ˇ ↑ ЮУ ⅈ /ⅈˇ ⅇⅆⅈˇ metric Â

ѡ R Ruijie# **show ip pim sparse-mode nexthop**

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47.2.8 show ip pim sparse-mode rp mapping

show ip pim sparse-mode rp mapping

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```
Ruijie #show ip pim sparse-mode rp mapping
Ю У э R
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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47.2.9 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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Ruijie# **show ip pim sparse-mode rp-hash** *225.1.1.1*

Ю У э R

w R 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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47.2.10 show ip pim sparse-mode track

show ip pim sparse-mode track

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У ˘ clear ip pim sparse-mode track ˘ ˚

PIM Ы Â

Ю **show ip pim sparse-mode track** У э R

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```
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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48 IPv4

48.1 IPv4

48.1.1 clear ip mroute

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clear ip mroute {* | *group-address* [*source -address*]}

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group-address	ѫ Â
source -address	ѫ Â

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```
Ruijie# clear ip mroute 230.0.0.1
```

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show ip mroute	ϟ ə Â

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48.1.2 clear ip mroute statistics

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clear ip mroute statistics {***** | *group-address* [*source -address*]}

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*	è ۷ Â
group-address	ѫ فخ Â
source -address	ѫ فخ Â

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```
Ruijie# clear ip mroute statistics 230.0.0.1
```

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show ip mroute	-

rpf-address	ώ ∧
interface-type interface-number	∧ صر Ω ∧ /ا
distance	˘ ā ΐ G RPF Â ḣ ὶ ϑ ∨ ḣ تن ὶ <0-255>

a *Distance*˘ *Distance* ḣ ὶ 0

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Â . ″l ɣ ÿ´ ˜ ˜ ˆ Â
∧ ЮУ ip˘ ж ∧ ὶ صر Â
G rpf ‡ ' ÿ è У э . ˘ ⊿ جھ bgp Ω
˘ ‡ . ″l’ ÿ´ è У э . ´ ’ γ
˘ ὶ rpf ’ ⊿ distance˘ distance
ὶ rpf ’ distance ⊿˘ ὶ rpf

w R ЛЬЮ R У э ϙ ⊿ 172.30.10.13ϑ

```
Ruijie(config)# ip mroute 172.16.0.0 255.255.0.0 172.30.10.13
```

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48.1.4 ip multicast boundary

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ip multicast boundary *access-list*

no ip multicast boundary *access-list*

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access-list	IP access-list ὶ ϑΩ ACL

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IP تن IP Â ħυ ϩ ̃Ω ACL ٦ Л υ ñ ACL ̆ ≠ ٦ Л υ
ACL ̆ Л ¥ ACL ٨ ٦ فخسم ̆ a ٦ فخسم Â

~	ħυ ϩ ٦ Л υ Ո IP تن ̃Ω IGMP à PIMSM ̃ ̆ a ̧ ÿ ٨ ώ Ո Â

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svi1 ὶ 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 Ђ и 1024

threshold Ђ и 2147483647

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```
Ruijie(config)# ip multicast route-limit 500
```

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48.1.6 ip multicast-routing

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ip multicast-routing

no ip multicast-routing

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	ŭ ╠ IPv4 ╖ ˘ ђu ҳ Â ╖ Ո IGMP snooping
~	╖ ц ˘ ŭ ╠ ⓒ IGMP snooping ╖ ˘ ѫ ђu ҳ a Â
&	a ѯ ⊿ У ⊿ Э a ⊿ ∧ a ⊿ v4 ~

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```
Ruijie(config)# ip multicast-rounting
```

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48.1.7 ip multicast static

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ip multicast static *source-address group-address interface-type interface-number*

no ip multicast static *source-address group-address interface-type interface-number*

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∧	
source -address	ѕѕ ƒ Â
group-address	ѕѕ ƒ Â
interface-type interface-number	ĭ ⊣ γ ∧

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ϣ R ЛЬЮ R (192.168.43.4 225.1.1.5) ϟ ï ÿ GigabitEthernet 2/6 Ո FastEthernet 3/2 ϟ 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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48.1.8 ip multicast ttl-threshold

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ip multicast ttl-threshold *ttl-value*

no ip multicast ttl-threshold

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ttl-value	ϟ TTL ḣ , ϟ ىن 0~255 Â

ttl-value ḣ ϧ 0 Â

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G ϟ Лυ ϧ ə ϟ ɖ У э TTL ḣ Â TTL ɣ ϟ ḣ ˇ ‡ ϟ Лυ ϟ ˇ ĭ ‡ x ÂTTL ḣ Θ ˇ ϟ ϑ Ь ϟ Э Â

ϣ R ЛЬЮ R ϟ Э TTL ḣ ϧ 5

```
Ruijie(config-if)# ip multicast ttl-threshold 5
```

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48.1.9 ip multicast rpf longest-match

RPF ‡† ⁞ ÿ ằMBGP ằ´ è ϻ ϻ ɣ RPF
ằMBGP Ո´ Â

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ħυ ϗ˘ ÿ Ь è ϖ ’ τ . ″ι ϻ˘ ‡
ằMBGP ằ´ Â

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’ τ . ″ι ϻ˘ ‡ ằMBGP ằ´
Â

ip multicast rpf longest-match

no ip multicast rpf longest-match

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RPF ‡† ⁞ ÿ ằMBGP ằ´ è ϻ ϻ ɣ RPF
ằMBGP Ո´ Â ÿ Ь è . ″ι

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48.2 IP

48.2.1 show ip mroute

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show ip mroute [*group-address*] [*source-address*] [**dense**][**sparse**] [**summary**] [**count**]

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group-address	ѫ ڧ Â
source-address	ѫ ڧ Â
dense	PIMDM
sparse	PIMSM
summary	ǝ Â

FastEthernet 1/3

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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

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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

Flags	I- . T- F- ĵ ч
Timers:Uptime/Stat Expiry	… ˘ ע
Interface State	٨
Owner	˘ ч ə ~
Incoming interface	ώ ٨˘ ώ ٨ б ڗ a ˘ x
Outgoing interface list	٨ " ˘ ج è ٨ Э ч Ы
Forwarding Counts' Pkt count/Byte count,	ч ' ч /
Other Counts: Wrong If pkts	ĵ ώ ٨

Ђu ҳ	
ip multicast-routing	ŭ ╟ ч
ip pim dense-mode	ج ٨ Э ŭ ╟ PIM-DM
ip pim sparse-mode	ج ٨ Э ŭ ╟ PIM-SM

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```
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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48.2.4 show ip mvif

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show ip mvif { *interface-type interface-number* }

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interface-type interface-number	ʃ

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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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48.3 IP

48.3.1 debug nsm mcast all

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debug nsm mcast all

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```
Ruijie# debug nsm mcast all
```

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48.3.2 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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48.3.3 debug nsm mcast register

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debug nsm mcast register

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```
Ruijie# debug nsm mcast register
```

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48.3.4 debug nsm mcast stats

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debug nsm mcast stats

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G ˇΩ˝ ˩ ΠυΩ ˇΩ ¥ ∧ Ո ə Â

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```
Ruijie# debug nsm mcast stats
```

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48.3.5 debug nsm mcast vif

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debug nsm mcast vif

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w R	΅Ω ¥ ϰ Ruijie# **debug nsm mcast vif**

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49 IPv6

49.1

49.1.1 ping ipv6

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ping ipv6 [*ipv6-address*]

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ipv6-addres	*s* فذ سم

sgv7v0 1005 T10 r 2004 1245 25-3 8122 0 58 (6) 74 5A 80 C E T 1 0 6 7 7 1 9 D 0 6 2 F A 1 B D 1 C 2 F A 0 1 9 7 C B 1 1 9 8 9 F 0 1 6 4

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49.1.2 ipv6 address

й ⊀ У э IPV6 ѕѧ ѳ, G ђu ҙ no ⅂ ѕѧ ѳ Â

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

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

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

no ipv6 address

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

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

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

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ipv6-address	IPV6 ѕѧ ѳ˘ RFC4291 ⊢ѫ ѕѧ ѳ ˘ э ѕѧ ѳ ѕѧ ѳ ⅀ ṇ ⊀ ˘ э ѧ´ 16 ˘ ˉ ˽Ω ⁸ .
ipv6-prefix	IPV6 ѕѧ ѳ ⊓⊀ ˘ RFC4291 ⊢ѫ ѕѧ ѳ ˘ э ? э ѧ È 6²)G ”p $Å˜€Õ AÒ

У э IPV6 ∧ … з ѝ UP ѫ ѝ ∧ ╟ ѕмѕм ғѣ Â

∧ IPv6 ѕм ғѣ ≠ ⊿ Л υ G ɱѝ ⁸ Â ѐ ⁸ IPv6 ѕм ғѣ = Ľ ɱѝ Ŀ + Ľ ɱѝ Ŀ + Ľ ў Ŀ Â ɱѝ ⊿ Л υ G **ipv6 general-prefix** ħυ ҙ ˇ ≠ ⊿ DHCPv6 PD ɱѝ ∨ ˜ ╗ ˝ ĺ ˆ ∧ Ľ DHCPv6 Ŀ˜ Â Ľ ɱѝ Ŀ + Ľ ў Ŀ G ħυ ҙ *sub-bits/prefix-length* ∧ Â

G **no ipv6 address** a ĺ Ѐ ѕм ғѣ˘ ѫ ĺ ѕм ғѣ Â

G **no ipv6 address** *ipv6-prefix*/*prefix-length* **eui-64** ⊿ Л ĺ G ħυ ҙ **ipv6 address** *ipv6-prefix*/*prefix-length* **eui-64** ѕм ғѣ Â

~	S8600 " Ђ ∧ IPv6 ѕм ғѣ ɱѝ тп a ⊿ ⁸˘ Л Ђ ɱѝ тп [65,127] IPv6 У Ѿ ѝ 512 Â

R 1' Ю R IPv6 ѕм ғѣ Â

```
Ruijie(config-if)# ipv6 address 2001:1::1/64
Ruijie(config-if)# no ipv6 address 2001:1::1/64
Ruijie(config-if)# ipv6 address 2002:1::/64 eui-64
Ruijie(config-if)# no ipv6 address 2002:1::/64 eui-64
```

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```
Ruijie(config-if)# ipv6 address my-prefix 0:0:0:7272::72/64
```

Ĺ ɱѝ my-prefix ɱѝ 2001:1111:2222::/48˝ ѫ ∧ IPv6 ѕм ғѣ 2001:1111:2222:7272::72/64 Â

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no ipv6 address autoconfig

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default

IPv6 ħu ʒ

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Λ ϟ ν ϟ g ΥЮ ɱ ϟ Â
Υ ϶ ɱ ϟ Λυ ↑ ΰ ϶ ɱ Â
Ϟ ɱ ϳ ϟ IPv6 ϓ϶ϫ ϶ Â

ϣ R ЮR ϖ Υ ϶ ɱ ϡ my-prefix Â

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

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ipv6 address prefix-name sub-bits/prefix-length	G ɱ ϟ ϓ϶ϫ
show ipv6 general-prefix	ɱ

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RGOS10.4	ħυϗ ÿ RGOS10.4 Â

49.1.6 ipv6 hop-limit

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ipv6 hop-limit value

no ipv6 hop-limit

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ḣ 64 Â

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```
Ruijie(config)# ipv6 hop-limit 100
```

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49.1.8 ipv6 nd managed-config-flag

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ipv6 nd managed-config-flag

no ipv6 managed-config-flag

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```
Ruijie(config)# int vlan 1
Ruijie(config)# ipv6 nd managed-config-flag
```

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show ipv6 interface	ϟ è Ω ¥ ra-info ə Â
ipv6 nd other-config-flag	ώ ╟ ϡ ѯ ə Æ Â

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49.1.9 ipv6 nd ns-interval

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ipv6 nd ns-interval *milliseconds*

no ipv6 nd ns-interval

prefix-length	IPV6 ɱɲ ˘ ɱɲ ╗ Ɔ'/' Â
valid-lifetime	ў ⁞ ⅄ Ὼ˜ ɱɲ ⅄ ѝ Â
preferred-lifetime	ў ⁞ ⅄ Ὼ˜ ɱɲ ⅄ ѝ Â
at *valid-date preferred-date*	Ὼ˜ ɱɲ Ո˙ ˘ Ո ầ ầ ầ ầ⁞ Â
infinite	Â
default	G ↰ Â
no-advertise	ɱɲ a ⅄ Ὼ˜ Â

```
Ruijie(conifg-if)# ipv6 nd prefix 2001::/64 infinite 2592000
R 2'        ∧ SVI 1 Э   ɱ        ∧  (a ∟   ɣ ѕɯ فذ  ╟    )
Ruijie(conifg)# interface vlan 1
Ruijie(conifg-if)# ipv6 nd default no-autoconfig
ج      ϙ Ю          ·          ѫ  G          ∧  .    ɱ
≠   a ∟   ɣ ѕɯ فذ  ╟       Â
```

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show ipv6 interface	∧ è ʺΩ ɣ ra-info ə

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49.1.11 ipv6 nd ra-lifetime

G ħυ ϩ ∧ ß (RA) è ľ ⅄ Ŀˇ G ħυ ϩ no ḣ Â

ipv6 nd ra-lifetime *seconds*

no ipv6 nd ra-lifetime

∧

∧	
seconds	ɔ ѝ ∧ Â

ΐΩħυ ϡ

ħυ ϡ	
show ipv6 interface	ʎ è ΐΩ ɣ ra-info ə ¢ Â
ipv6 nd ra-interval	ɣ ΄Ω΄ ʅ Â
ipv6 nd ra-hoplimit	ɣ ΄Ω΄ ḣ Â
ipv6 nd ra-mtu	ɣ ΄Ω΄ MTU ḣ Â

ʎ

ħυ ϡ ˥ ʎ

ʎ	
-	-

49.1.12 ipv6 nd ra-interval

G ħυ ϡ ʎ Э ʅ ɣ ΄Ω΄ (RA) ˘ G ħυ ϡ no ḣ Â

ipv6 nd ra-interval {*seconds* | *min-max min_value max_value*}

no ipv6 nd ra-interval

ʎ

ʎ	
seconds	ɣ ΄Ω΄ (RA) ΄Ω΄ ʅ Â Л υ ˣ ´ æ Â
min-max	ˆ ʅ ḣ Ո ḣ Â
min_value	ˆ ʅ ḣ Â
max_value	ˆ ʅ ḣ Â

200 ˘ ʅ ѫ 200 ЭЮ ╠ 20 ¸ Â

ħυ ϡ ʎ Â

G

ˈl ˘ ѫ ḣ a ɣ ɣ Â
ʎ ˘ ˣ ѡ Э è ɻ ʅ ɣ ΄Ω΄ ´ ˘ Л υ
ʅ ѫ ḣ Э ╠ ↑ ʓ ɣ Â
ΐΩ **min-max** ˘ ѫ ʅ ѫ ḣ Ո ḣ ʓ
У э ḣ Â

w R

```
Ruijie(config)# interface vlan 1
Ruijie(config-if)# ipv6 nd ra-interval 110
Ruijie(config-if)# ipv6 nd ra-interval min-max 110 120
```

ʺΩħu ʒ

ħu ʒ	
show ipv6 interface	ʌ è ʺΩ ¥ ra-info ə Â
ipv6 nd ra-lifetime	Â
ipv6 nd ra-hoplimit	ɣ Ω ˆ ḣ Â
ipv6 nd ra-mtu	ɣ Ω ˆ MTU ḣ Â

ʌ

ħu ʒ ˥ ʌ

ʌ	
-	-

49.1.13 ipv6 nd ra-hoplimit

G ħu ʒ ʌ Ǝ ˩ ɣ Ω ˆ (RA) ḣ ˇ G ħu ʒ no ḣ Â

ipv6 nd ra-hoplimit *value*

no ipv6 nd ra-hoplimit

ʌ

ʌ	
value	ɣ Ω ˆ (RA) ḣ Â

ḣ 64 Â

ħu ʒ ʌ Â

G ˩ ɣ Ω ˆ è ḣ Â

w R

```
Ruijie(config)# interface vlan 1
Ruijie(config-if)# ipv6 nd ra-hoplimit 110
```

ħu ҳ	
show ipv6 interface	ʌ è ˜Ω ¥ ra-info ə¸ Â
ipv6 nd ra-lifetime	Â
ipv6 nd ra-interval	¾ ΄Ω˜ ˩ Â
ipv6 nd ra-mtu	¾ ΄Ω˜ MTU ḣ Â

˜Ωħu ҳ

ʌ

/ʌ	
-	-

ħu ҳ ˥ ʌ

49.1.14 ipv6 nd ra-mtu

ᴳ ħu ҳ ʌ Ɜ ˩ ¾ ΄Ω˜ (RA) MTU ḣ˘ ᴳ ħu ҳ no ḣ Â

ipv6 nd ra-mtu *value*

no ipv6 nd ra-mtu

ʌ	
value	¾ ΄Ω˜ (RA) MTU ḣ Â

ʌ IPv6 MTU ḣ Â

ħu ҳ ʌ Â

ᴳ ϧ Ơ ¾ ΄Ω˜ a˛ MTU Â

ᴡ ᴿ

```
Ruijie(config)# interface vlan 1
Ruijie(config -if)# ipv6 nd ra-mtu 1400
```

˜Ωħu ҳ

ħu ҳ	
show ipv6 interface	ʌ è ˜Ω ¥ **ra-info** ə¸ Â
ipv6 nd ra-lifetime	Â
ipv6 nd ra-interval	¾ ΄Ω˜ ˩ Â

	ipv6 nd ra-hoplimit	Ы Ѿ ḣ Â

Ѧ

Ђ ғ ˥ Ѧ	**Ѧ**	
	-	-

49.1.15 ipv6 nd reachable-time

ᴳ Ђ ғ Ѧ Э NDP ╟ ǀ ж ˩ Ѧ˘ й ˩ǀ
˘ ᴳ Ђ ғ no ḣ Â

ipv6 nd reachable-time *milliseconds*

no ipv6 nd reachable-time

	Ч	
Ч	*milliseconds*	й ˩ǀ ˘ Л й ´ Æ˘ ن 0-3600000

	ж Ы Ѿ (RA) è ḣ й 0( )˘ ж ˩ й è й ˩ǀ й 30000ms(30)

Ђ ғ Ѧ

ᴳ	a ˩ ˘ Ч ˩Л ǀ ˘ Л å Â ҷ a Â ḣ ж Ы Ѿ (RA) è ˩ Ы˘ ˩ ḣ ≠ ᴳ Â ḣ й 0 ˘ . ᴳ ḣ Â

ᴡ ᴿ

```
Ruijie(conifg-if)# ipv6 nd reachable-time 1000000
```

Ѿ Ђ ғ	**Ђ ғ**	
	show ipv6 interface	Ѧ ҽ

Ѧ

IPv6 ħu ʒ

٩	
ipv6-address	IPV6 ѫ ѣ RFC4291 ѣ ѫ ѣ Â
interface-id	ѫ ѣ Routed Port,L3 AP ٩ Ո SVI ٩ ˜ Â
hardware-address	ѫ ѣ ˘ Л XXXX.XXXX.XXXX 48 Æ MAC ѫ ѣ ˘ 'X' ˉ Ώ ⁸ Â

˙ ! Â

ħυ ϗ ώ Â

ħυ ϗ ɔ ARP ħυ ϗ ˘ ٩ ѫ IPV6 ٩ Э ˘
NDP ˛ ẏ ѫ è ˘ ѫ ╟ ╟
й Â ˘ ¥ Reachble Â ˘
IPV6 ѫ ѣ ˘ б ٩ Э ѫ ѣ a ϗ ^ a ѫ ٩ ˙ У IPV6
G ѫ ѣ ѫ ѣ ˘ б ٩ ѫ ѣ ă ˜ ˘ ˆ a ¸ mac ѫ ѣ
٦ Â ˘ ¥ inactive ˘ ٦ Л show ipv6 neighbor static ħυ ϗ
Â

- **G** **clear ipv6 neighbors** ħυ ϗ ╟ ˛ (NDP) Â
- **G** **show ipv6 neighbors** ħυ ϗ ą Â

ѡ R

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

ħu ҳˇ ч 8 G смсмфхэйсмфхÂ ľ **no ipv6**
ns-linklocal-srdľˇ ч a 8 G смсмфхэйсмфхˇ IPv6
смфх RFC3484 G смсмфх ѽ ´ смфхÂ

ipv6 ns-linklocal-src

no ipv6 ns-linklocal-src

ħu ҳ ʌ

G ICMPv6 ↑. ʁ ˘ ⅃ Л∪ ⅃ 10 ɜ
ICMPv6 (10pps) Â

w R

```
Ruijie(conifgf)# interface vlan 1
Ruijie(config-if)# ipv6 redirects
```

ˇΩħu ҳ

ħu ҳ	
show ipv6 interface	ʌ ə

ᴊ

ħu ҳ ˥ ᴊ

ᴎ	
-	-

ƫu ҙ ŏ

G

~

IPv6 Â

ψ R Ruijie(conifg)# **no ipv6 source-route**

ΊΩħυ ϗ

ħυ ϗ	
-	-

ϻ

ħυ ϗ ϒ ϻ

ϻ	
-	-

49.1.22 tunnel destination

G ħυ ϗ ϔ ϻ è ىسفخ, G ħυ ϗ no ħυ ϗ ΐ ىسفخ Â

tunnel destination {*ipv4-address* | *ipv6-addressaddress*

IPv6 h u ɔ ɬ tunnel source ,x8 Q- 2 T 2 1

✓	✓ Â

ђu ҳ ℸ ✓	✓	
	RGOS10.4	ђu ҳ ÿ RGOS10.4 Â

49.1.24 tunnel mode ipv6ip

ᴳ ђu ҳ У э IPV6 ر, ᴳ ђu ҳ no ђu ҳ IPv6 ر Â

tunnel mode ipv6ip [**6to4** | **isatap**]

no tunnel mode

✓	✓	
	6to4	й 6to4 ╟ Â
	isatap	й ISATAP ╟ Â

	… IPv6 ر й Â

ђu ҳ	✓ Â

G	✓ У … й ˘ ᴳ ђu ҳ tunnel mode ipv6ip a ˙ ¦ ≠ й Â ¥ ╟ й è فذ سم Â

₩ ᴿ	Ю 6to4 ᴿ '

```
Ruijie(config)# interface tunnel 1
Ruijie(config-if)# tunnel mode ipv6ip 6to4
Ruijie(config-if)# tunnel source vlan 1
```

℡Ωђu ҳ	ђu ҳ	
	tunnel source	فذ سم
	tunnel destination	فذ سم
	tunnel ttl	TTL

✓

ħυ ҳ ʔ ɻ	/I	
	-	-

49.1.25 tunnel mode gre

G ħυ ҳ У ə GRE ر,

	-	-

49.1.26 tunnel source

G ђu ҳ ѝ ∧ è ѫ ѣ, G ђu ҳ no ђu ҳ ї ѫ ѣ Â

tunnel source {*ipv4-address* | *ipv6-address* | *interface-type interface-number*}

no tunnel source

	∧	
∧	*ipv4-address*	IPv4 ѫ ѣ˘ IPv4 ѫ ѣ ṁ ѝ ѥ è· ѫ ѣ Â
	ipv6-address	ѽ tunnel mode ipv6 tunnel mode gre ipv6˜ ѫ ѣ G IPv6 ѫ ѣ Â ṁ a ѫ ѣѫ ѣ ɔ ѝ ѫ ѣ Â
	interface-type interface-number	ѫ ѣ ∧˘ ipv6ip˘ ‡ ∧ ў ipv4 ѫ ѣ ɔ ѝ ѥ · IPv4 ѫ ѣ’ ipv6˜ ‡ ∧ У ə ipv6 ѿ ´ ѫ ѣ ɔ ѝ ѥ · IPv6 ѫ ѣ Â

	ѫ ѣ Â
ђu ҳ	∧

G	ѫ ѣ ⊥ Л∪ IPv4 ѫ ѣ ≠ ⊥ Л∪ G ə ∧ Э IPv4 ѫ ѣ, ╟ (6to4 Ո isatap) G ∧ è ѫ ѣ Â
	a ѥ У ⊀ Э è ѕр ѧ ѫ ѣ Ո ѫ ѣ ~ ⊥ ə Â ѥ ə ╟ ˘ ╟ ѫ ѣ a ⊥ Â

IPv6 R '

```
Ruijie(config)# interface tunnel 1
Ruijie(config-if)# tunnel mode ipv6ip
Ruijie(config-if)# tunnel source vlan 1
```

tunnel destination	فخ سم
tunnel ttl	TTL

ʃ

ħu ʒ ˥ ʃ	ʃ	
	-	-

49.1.27 tunnel ttl

ɣ IPv6 over IPv4 ˘ ħu ʒ ɣ IPv4 TTL Â ɣ IPv4 over IPv6 Ո IPv6 over IPv6 صر ˘ ħu ʒ ɣ IPv6 ⁸ Â ᴳ ħu ʒ no ħu ʒ ḣ 255 Â

tunnel ttl *value*

no tunnel ttl

ʅ	ʅ	
	value	TTL ḣ

ḣ 255 Â

ħu ʒ ʌ

ᴳ ɣ IPv6 over IPv4 ˘ ħu ʒ ɣ IPv4 TTL Â ɣ IPv4 over IPv6 Ո IPv6 over IPv6 صر ˘ ħu ʒ ɣ IPv6

ħu ҳ

G **show ipv6 general-prefix** ħu ҳ ɱ ə Â ɱ ˘ б DHCPv6 ˝ ˛ ɱ ˘ ˛ Â

ɱ ə ˘ R HO'

```
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
```

ħu ҳ	
ipv6 general-prefix	ɱ

ʌ ʌ Â

ħu ҳ ˥ ʌ	
RGOS10.4	ħu ҳ ÿ RGOS10.4 Â

49.2.3 show ipv6 interface

IPV6 ʌ ə Â

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

ʌ	
interface-id	ʌ^ ˆ Ʌυ ʌ à aggregateport ʌ à SVI ʌ˜
ra-info	ʌ Ɔ˝Ω ¥ ˩ RA ʌ ə Â

ħu ҳ 1979>6<09B703DE>6<07461 0 9T0 1 <1C122F0E>Tj/TT0 1 Tf0.0018

```
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
```

W R

total	٧ ŋń э Â
fec0:1:1:1::/64	έ ε ŋń Â
Def	ŋń G ٧ ŋń ٧ Â
Auto | CFG	Auto ŋń ұ ج ٧ ۾ IPV6 فخ سم ╟ ŋń , CFG ŋń Â
!Adv	ŋń a ΄Ω˜ Â
vltime	ŋń ( ) Â
pltime	ŋń ( ) Â
L | !L	L ŋń on-link Æ Э Â !L б Э ٧ Â
A | !A	A ŋń

ħυ ϡ

G

ϡ R

R 1' SVI 1 ᴧ Э ə

```
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
```

R 2' ə

```
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 فذ سم
Linklayer Addr	فذ سم Mac ˇفذ سم ‡ ˆ incomplete
Interface	ᴧ جم

State	' state/H(R) STATE ḣ Ю' INCMP(Incomplete)— فذ سم جم è˘ (NS) ۷ Л ĵ (NA) Â REACH(Reachable) — ÿ ĵ ˘ جم ل ۷ a ╟ ɔ Â STALE — ѝ ۷ĵ ĵ ˘ جم a ╟ ɔ ĵ ۷ ĵ Э˘ . ŭ ╟ NUD (Neighbor Unreachability Detection) Â DELAY— ل ų STALE ۷ ˘ STALE ѝ DELAY ˘ جم DELAY_FIRST_PROBE_TIME seconds(5) ą̈ ĵ ۷ ą ˘ ѫ DELAY ѝ PROBE˘ ل ل ۷ (NS)˘ ŭ ╟ NUD Â PROBE— NUD ŭ ╟˘ ۷ ˘ RetransTimer milliseconds ل ۷ (NS) ĵ ĵ ѡ ۷ ĵ Э ḣ MAX_UNICAST_SOLICIT(3 э) ?— /R— ѝ У э /H— ѝ У э ў
Age	ѝ ۷ĵ ˘ '-‘ ۷ ˘ ŋ ų ĭ̈ ۷ Â 'expired' AË"

Interface

G Q ¸Á/ P Yb Q V@Idr Q)b Sc“hG / Q`Ab •a-a ðÀ R T

ħυ ϡ

G

G **show ipv6 router** ϰ Ո ϔ ə Â ϧ ‡
ϳ ϔ ə Â

IPv6 ϰ У ə R ˇ ЮΎ

ϣ R

```
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
```

ΈΩħυ ϡ

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ϡ Â

50 OSPFv3

50.1

50.1.1 area default-cost

ج stub ש ـ ABR Э ђu ҙ˘ ЊЖ stub ש ـ ۈ ҙ˙ Â G ђu ҙ
no ђ Â

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

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

٩		
٩	*area-id*	stub ש ـ ש ـ ٨ Â è ل Л∪ ٪ У э У э IPv4 ⁄ Â
	cost	stub ש ـ ۈ ҙ˙ Â تن 1-16777214 Â

default-cost ђ ٪ 1 Â

ђu ҙ Â

G ђu ҙ ل ج stub ש ـ ABR Э G Â

ש R Ю R ˘ stub ש ـ 50 ҙ˙ ٪ 100ˇ

```
ipv6 router ospf 1
area 50 stub
area 50 default-cost 100
```

ˇΩђu ҙ	ђu ҙ	
	area stub	У э stub ש ـ Â

ل

ђu ҙ ٦ ل	٨	

-	-

50.1.2 area range

G ђu ҳ ш ѕѕ ғф тп˘ G ђu ҳ **no** ї тп тп ٩ Â

area *area-id* **range** *ipv6-prefix*/*prefix-length* [**advertise|not-advertise**]

no area *area-id* **range** *ipv6-prefix*/*prefix-length*

٩	
area-id	ш ѕѕ /١ Â è ⊿Л ий У э У э IPv4 ґй Â
ipv6-prefix/*prefix-length*	ѕѕ ғф тп Â
advertise	Ѽ˘ тп Â
not-advertise	a Ѽ˘ тп Â ий Ѽ˘ Â

ЊЖ ш ѕѕ ғф тп Â

Â

ђu ҳ ٧ ѓ ABR Э ˘ У э ш ѕѕ ӫ У ˘ ˆ ĵ è ыı ш ѕѕ è Â ą ⊿ ий ٧ ѓ ш ѕѕ ˘ ш ѕѕ ӫ Э ĵ é е ą ˘ п è ш ѕѕ ٧ ĵ У Â з ⊿Л advertise Ո not-advertise ā ї Ѽ э тп˘ ĵ Ո ɔ ˘ ⊿ G Ѽ Â ⊿Л cost ḣ Â ⊿Л ЊЖ э ш ѕѕ ђu ҳ˘ э OSPF ѕѕ ĵ ӯ˘ ⁞ ˘ ٩ ٧ Â ѡ ˘ з ↑ ӥ Ѽ Ą˘ ך ٧ ‡ area range Â

Ю R ˘ ш ѕѕ 1 '

ш R

```
ipv6 router ospf 1
area 1 range 2001:DB8:1:2::/64
```

Ѽђu ҳ	ђu ҳ	
	[redacted]	

⊀

ħυ ϗ ϒ ⊀	⊀	
		-

50.1.3 area stub

G ħυ ϗ … У ϶ stub Ш ѫ stub Ш ѫ ˘ G ħυ ϗ **no** й Ш ѫ ⫪ stub Ш ѫ Â

area *area-id* **stub** [**no-summary**]

no area *area-id* **stub** [**no-summary**]

	⊀	
	area-id	stub Ш ѫ Ш ѫ ⊀ Â s67 522.68 0.448re 8 re.843 (s67 522. Tf 2 Tr 10.02 0 0

ЇΩЪU ҳ

ЪU ҳ	
area default-cost	stub Ш ѫ ӧ ҳ Â

Ѧ

ЪU ҳ ˥ Ѧ

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-	-

50.1.4 area virtual-link

G ЪU ҳ … У э Ѵ ˘ G ЪU ҳ **no** Ѧ Ѯ У э Ѵ 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**]

Ѵ

Ѵ	
area-id	ѭ Ш ѫ Ш ѫ Ѯ Â ѐ Ѧ Ѯ Ъ й У э У э IPv4 ѯ Â
router-id	(router-ID) Â
hello-interval *seconds*	ѭ Ѵ Э Ѧ hello Â ѧ 1-65535 Â
dead-interval *seconds*	ѭ Ѵ Э й Â ѧ 1-65535 Â
retransmit-interval *seconds*	ѭ Ѵ Э Ѧ LSA · Â ѧ 1-65535 Â
transmit-delay *seconds*	ѭ Ѵ Э Ѧ LSA Â ѧ 1-65535 Â
instance *instance-id*	instance˘ a Ѧ instance Â ѧ 0-255

ћ ’

hello-interval й 10 ’

dead-interval й hello-interval ’

retransmit-interval й 5 ’

transmit-delay й 1 Â

ћυ ҳ Â

G

æ OSPFv3 ææ è˘ ш ææ б ў ш ææ ˘ Лυ ф ˝ ĵ э
OSPFv3 ææ ą Â У э ш ææ б ў ш ææ ˘ ⊣ Лυ G
G ш ææ ⊣ ў ш ææ Â

~	Â æ ш ææ a ї stub ш ææ Â Â ч Э ∀ è˘ **hello-interval** à**dead-interval** Ո **instance** У ˘ ї ‡ ʒ ˝Ω Â

ш R

Ю R ˘ У э ’

```
ipv6 router ospf 1
area 1 virtual-link 192.1.1.1
```

˝Ωћυ ҳ

ћυ ҳ	
show ipv6 ospf	OSPFv3 ą Â
show ipv6 ospf neighbor	OSPFv3 ą Â
show ipv6 ospf virtual-links	OSPFv3 ą Â

⊣

ћυ ҳ ℸ ⊣

∕I	
-	-

Tf152auto-cost( )Tj/TT1 1 Tf-0.0005 Tc04 Tw 10.5 0 0 10.5 204.54 164.1203 Tm(OSI

۹	
reference-bandwidth *ref-bw*	۹ ḣ˘ Ѫυ Mbps ὶ´ Æ Â تن 1-4294967 Â

ħυ ϡ Â

OSPFv3 ˜ Hello ╟ ϟ ˘ OSPFv3 ΰ ╟ BFD ╖ Л˘ ѝ ╟

G

ϣ R

ЮR ˘ ¥ ΰ ╟ OSPFv3 R

```
enable
clear ipv6 ospf process
```

ΐΩħu ϗ

ħu ϗ	
-	-

ϡ

ħu ϗ ϒ ϡ

ϡ	
-	-

50.1.8 default-information originate

ң У ώ OSPFv3 ϟ˘ G ħu ϗ **default-information originate** Â ħu ϗ **no** ΐΩ 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*]

ϡ	
always	^ ϫ ~ ΐΩ G OSPFv3 ˚ ң ˘ a ϟ ΐ ϶ Â

metric *–D*

redistribute **default-information** ħυ ϛ ˘ OSPFv3 ˚ ╟ ˩ й
ASBR ˆ ѫ ˜ Â
Л **redistribute** ң ˘ ˆ OSPFv3 ѫ è Â
ASBR ң ˘ **default-information originate** ħυ ϛ
Â
always ˥ ˘ a ї̆ ѣ ˘ OSPFv3 ˚ ˩
ˆ У Â Л ѕш a˚ ˘ ї̆ ң
G ˘ ˩ Л∪ **show ipv6 ospf database** OSPFv3 ÂOSPFv3
show ipv6 route ħυ ϛ˘ ˩ Л∪ ∫ Â
ḣ˘ ˥ **default-information originate** ħυ ϛ ħЖ˘ a
ħυ ϛ **default-metric** Â
OSPFv3 ч ˘ ѵ 1 ˚ ˩˘ ѵ 2
ڻ a ˩ Â∫ У э ѣ ч ˘ ˩ ˘ ѵ 1˚
ѵ 2. ˝I ˘ Л∪ **show ipv6 route** ˥ ѵ 1 Â
stub Ш ѫ è a ˩ Л∪ ң Â

Ю R ˘ ¥ ∫ ң '

```
default-information originate always
```

ħυ ϛ	
redistribute	ą ∫ ˩ Â
show ipv6 ospf	OSPFv3 ą Â
show ipv6 ospf database	OSPFv3 ą Â

/I	
-	-

50.1.9 default-metric

G ħυ ϛ ∫ ˩ ḣ˘ G ħυ ϛ **no** ḣ Â

default-metric *metric-value*

no default-metric

˥	
metric-value	∫ ˩ ḣ Â ڻ 1-16777214 Â

	20
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G	ħυ ϗ ⊿ **redistribute** ħυ ϗ У G ˘ ƭ ч ḣ Â л ħυ ϗ ч ' Â **default-information originate** ħυ ϗ , Â ƭ ч ˘ ƭ ч G 20 ɔ ѝ ḣ Â
ѡ R	Ю R ˘ ɣ ƭ ч metric ѝ 10ʹ default-metric 10

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redistribute	ə ƭ ч Â
show ipv6 ospf	OSPFv3 ə Â

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50.1.10 distance

G ħυ ϗ a ⊿ صر OSPFv3 ˘ G ħυ ϗ **no** ḣ Â

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

no distance [**ospf**]

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distance	˘ ⊿ ḣ تن' 1-255
intra-area *distance*	ѫ ̈ ˘ ⊿ ḣ تن' 1-255
inter-area *distance*	ѫ ˘ ⊿ ḣ تن' 1-255

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OSPFv3 a ۍ ص a ۍ ˘ ħυ ҳ Â

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```
Ruijie(config)# ipv6 router ospf 20
Ruijie(config-router)#
```

instance *instance-id*	٨ OSPFv3 E تن 0-255 Â

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ل Л υ ج ٨ ЮЎ ″I G ħu ϗ ŭ ╟ ٨ ٨ б OSPFv3 ″Ą **ipv6 router ospf** OSPFv3 ˘ OSPFv3 ل˘ ٨ ╟ ٨ б Â

G **no ipv6 ospf area** ħu ϗ ٨ a ″Ą ٨ б OSPFv3 Â

G **no ipv6 router ospf** ħu ϗ ٨ a ″Ą ٨ б OSPFv3 Â

٨ *instance-id* ل Ƹ̈ ″Ω Â

ħu ϗ ل˘ ٨ Э ɱ ə ٨ б OSPFv3 Â

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Ю R ˘ ¥ ج ٨ int fastethernet 0/0 Э ŭ ╟ OSPFv3 ˘ ٨ б R Ш ؾ '

```
int fastethernet 0/0
ipv6 ospf 1 area 2 instance 2
```

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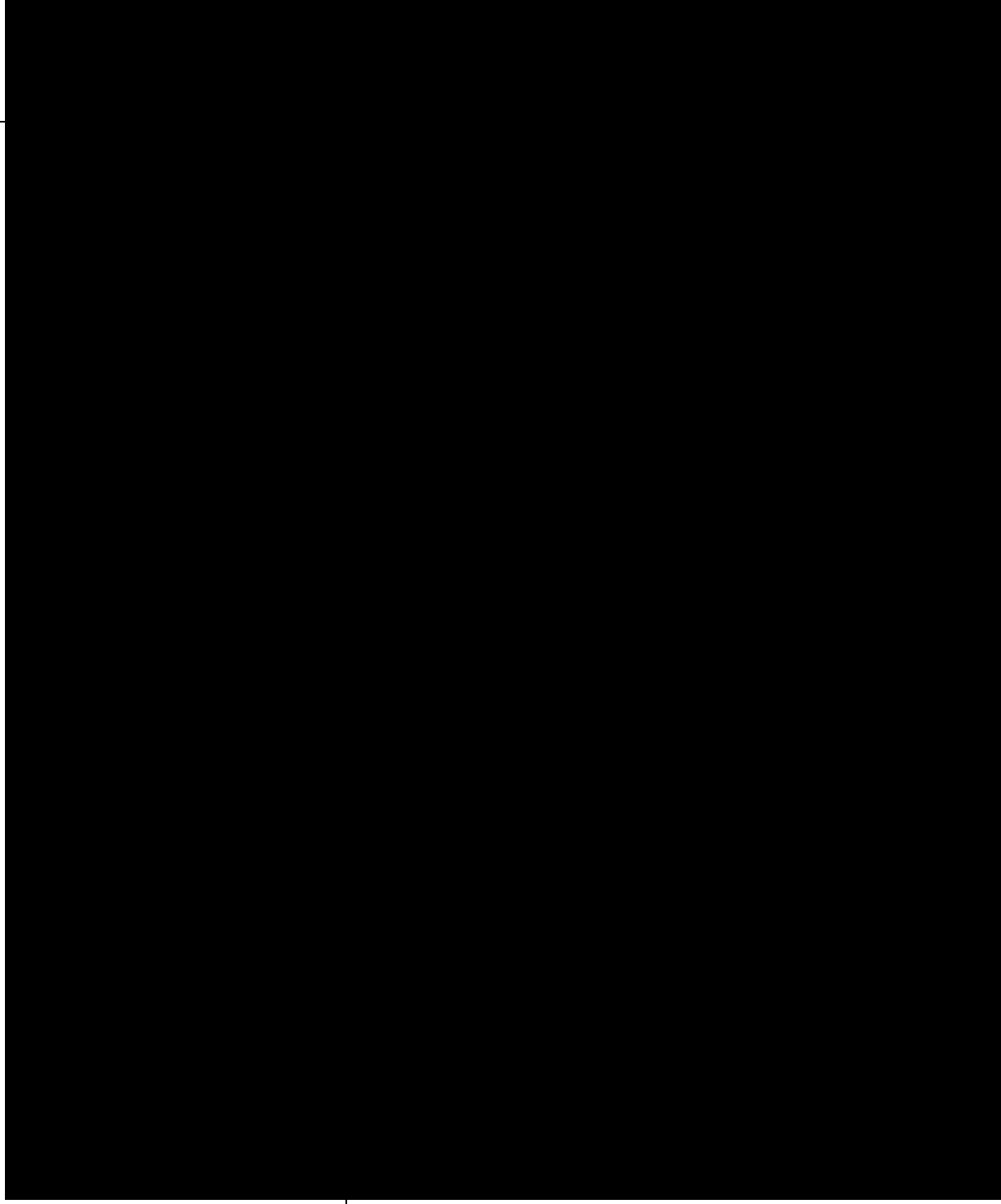

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50.1.13 ipv6 ospf cost

G ħu ϗ ϡ ϗ˙ ˘ G ħu ϗ **no** ḣ Â

ipv6 ospf cost *cost* [**instance** *instance-id*]

no ipv6 ospf cost [**instance** *instance-id*]

ϡ	

	instance *instance-id*	٨	OSPFv3	E	ˇ	تن 0-255 Â

instance *instance-id*	∧ OSPFv3 ε ˘ تن 0-255 Â

ipv6 ospf hello-interval 4˝ Â

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ẏ ϟ hello 4˝ ˘ ɡ ɷ hello ˘
╟ ɡ Â
ʊ a ɡ ∧ ˘ ˘ ᵗ
Â ɣ ϟ hello Â
Â ƺ ⊿ ḣ Â

ɯ R Ю R ˘ ɣ ∧ ẏ ḣ ẏ 60sˈ
`ipv6 ospf dead-interval 60`

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ipv6 ospf hello-interval	∧ Э ϟ Hello Â
show ipv6 ospf interface	OSPFv3 ∧ ə Â
ipv6 ospf area	∧ ∧ б OSPFv3 Â

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50.1.15 ipv6 ospf mtu-ignore

G ħυ ϡ ج ∧ ˛ ⊿Ω MTU Â ħυ ϡ **no** Â

ipv6 ospf mtu-ignore [**instance** *instance-id*]

no ipv6 ospf mtu-ignore [**instance** *instance-id*]

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instance *instance-id*	∧ OSPFv3 ε تن 0-255 Â

	MTU Â
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G	OSPFv3 ج ˚ ˚ ∧ MTU Ո ∧ MTU ĭ ⊿˘ ˚ è ∧ MTU ɣ ∧ MTU˝ ѫ ˜Ω a Â ⊿ Ո ˜Ω MTU ᾱ Â

ЛυЮ R ˘ ethernet 1/0

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ʖ ч Hello ḣ ⸗˘ ǐ ‡ ʷΩ Â

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Ю R ˘ ¥ ʌ ч hello й 20sʹ

```
ipv6 ospf hello-interval 20
```

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ipv6 ospf dead-interval	ʌ Э й Â
show ipv6 ospf interface	OSPFv3 ʌ ą Â
ipv6 ospf area	ʌ ʌ б OSPFv3

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OSPFv3 ħυ ϡ

point-to-multipoint non-broadcast	ص
instance *instance-id*	٨ OSPFv3 ε تن 0-255 Â

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ѡ R Ю R ˘ ¥ ٨ б OSPFv3 ٨ ص ѝ ٨'

```
ipv6 ospf network point-to-point
```

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ipv6 ospf priority	٨ . ˝I Â
show ipv6 ospf interface	OSPFv3 ٨ ə Â
ipv6 ospf area	٨ ٨ б OSPFv3

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50.1.19 ipv6 ospf priority

G ħυ ϡ ٨ . ˝I ˘ G ħυ ϡ **no** ḣ Â

ipv6 ospf priority *number-value* [**instance** *instance-id*]

no ipv6 ospf priority [**instance** *instance-id*]

٨

٨	
number-value	٨ . ˝I Â تن 0-255 Â
instance *instance-id*	٨ OSPFv3 ε ˘ تن 0-255 Â

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G	صر è˘ w DR/BDR(٪/ ` ٪) Â ج DR/BDR w ˘ . ″I ḣ . ″I ḭ DR BDR˘ . ″I ḣ ⊿˘ Router-ID ḣ ˘ . ″I ḭ DR BDR Â . ″I ḣ ḭ˚ ˘ a ٨ б DR/BDR w Â è ج DR Ո BDR˘ ӂ g ٨ . ″I a˛ . ˘ ٨ ج Ю У DR BDR w ˘ ˛ ٨ б w Â
	Ю R ˘ G ٨ ج DR/BDR w ˘ ą ″Ą ḭ˜ DR BDR″ ipv6 ospf priority 0

0 1 Tf 2 Trd 108 0 T22ø 0 1.659 22 021 pw [<03D.581E2 Rip_0 1v6 0 @g Ã bH˜ hÕf†Â Ú ì <2°Q ýð < TÂ bH $FhdÀ 6„$C˜fL Q4f„tÀ

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ʲ ˘ · LSA ə Â

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Ю R ˘ ɣ · LSA ǹ 10ѕ
`ipv6 ospf retransmit-interval 10`

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show ipv6 ospf interface	OSPFv3 ʎ ə Â
ipv6 ospf area	ʎ ʎ б OSPFv3

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50.1.21 ipv6 ospf transmit-delay

G ħυ ϡ ϩ ʎ Э· LSA ˘ G ħυ ϡ **1.4740 1 Tf0C19D6034E4D16360EE 100**

ipv6 ospf transmit-delay 2

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show ipv6 ospf interface	OSPFv3 ʌ ə¸ Â

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50.1.22 ipv6 router ospf

ᴳ ħυ ϡ OSPFv3 ˘ ᴳ ħυ ϡ **no** ΐΩ OSPFv3 Â

ipv6 router ospf *[process-id]*

no ipv6 router ospf *process-id*

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process-id	OSPFv3 ʌ Â ʌ ʊC ʊ

	number	DD ت 1-65535

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w ᴿ Ю ᴿ max-concurrent-dd й 4˝ ч ї ل б 4 э Ӌ ц DD '

```
router ipv6 ospf 1
max-concurrent-dd 4
```

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У э ∧ ѝ ∧˘ a Ѧ Ո ч hello Â
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Ю R ˘ ∨ ї VLAN1 ∧ ∧ б OSPFv3 '
passive-interface default

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ipv6 ospf area	∧ ∧ б OSPFv3 Â
show ipv6 ospf	OSPFv3 ą Â
show ipv6 ospf neighbor	OSPFv3 ą Â

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50.1.26 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 | external** [**1|2**]**} | metric** *metric-value* **| metric-type** {*1|2*} | **route-map** *route-map-name* | **tag** *tag-value*]

no redistribute {**bgp** | **connected** | **isis** [*area-tag*] | **ospf** *process-id* | **rip** | **static**} [{**level-1** | **level-1-2** | **level-2**} **| match** {**internal | external** [**1|2**]**} | metric | metric-type** {*1|2*} | **route-map** *route-map-name* | **tag** *tag-value*]

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bgp	ÿ bgp ∱
connected	ÿ ∱
isis [*area-tag*]	ÿ isis ∱ ˘ *area-tag* έ ε э isis R
ospf *process-id*	ÿ ospf ∱ ˘ *process-id* έ ε э ospf R˘ ∨ ḣ ںٔ 1-65535
rip	ÿ rip ∱
static	ÿ ∱

level-1 | **level-1-2** | **level-2**	۷ ϱ ۷ IS-IS G ˘ ¥ level ϱ ۷ Â
match	۷ ϱ ۷ OSPFv3 G ˘ ¥ ϱ ۷' internaľ ш ϙ б ш ' external [1|2]ľ E1 à E2
metric *metric-value*	OSPFv3 external 2 LSA metrič metric-value metric ˘ ۷ ḣ تن' 0-16777214
metric-type {*1|2*}	صر ى E-1 E-2
route-map *route-map-name*	ϱ ۷ ˇΩ Â map-tag ۶ a 32 Â
tag *tag-value*	ϱ ϱ OSPFv3 ϙ tag ḣˇ ۷ ḣ تن' 0-4294967295

₸ '

metric-type ى 2'

ϱ ۷ ISIS ˘ ϱ ۷ level-2 '

ϱ ۷ OSPFv3 ˘ ϱ ۷ صر OSPFv3 '

ˇΩ route-map Â

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ϱ ۷ ISIS ~ ˘ ї ۸ level-1 à level-2 level-1-2 ۹ ˘ ϱ ۷ ISIS

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ړ У˘ ڸ У ڸ э OSPFv3 ˘ ≠ У^ *

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1 à ﻩ RGOS 10.4 ʓ ɱ˘ a timers throttle spf ħu ʒ Â ḣ ẏ timers spf 5 10

2 à RGOS 10.4 ˘ timers throttle spf ħu ʒ Â ɋ Ю timers spf ħu ʒ a ˘ SPF Лu **timers throttle spf** ħu ʒ ẏ ñ˘ ∀ timers throttle spf ħu ʒ Â

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spf-delay Л spf-holdtime ˘ OSPF √ ʏ ≠ ˘ ≠ ˘ Л ˛ ´ CPU Â

timers spf б timers throttle spf ˛ ц Â

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ЛuЮ R ˘ OSPFv3 Л ɖ † ⁞ ẏ 3 Л 9 Â

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```
Ruijie(config)# ipv6 router ospf 20
Ruijie(config-router)# timers spf 3 9
```

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clear ipv6 ospf	G ħu ʒ ŭ ╟ OSPFv3 † ╗ Â
show ipv6 ospf	OSPFv3 ą Â
timers throttle spf	SPF

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ti(ers tr)6rottl(e spf)]TJ /C2 0 1 Tf 0 Tc 0 Tw 10.5 0 0 10.5 204.94 829.2403 Tm 3F55<47213542>

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spf-delay	⊮ SPF ˘ Л∪ ий´ Æ˘ тп 1-600000 ÂOSPFv3 ↑ ل ע˘ ل SPF ج *spf-delay* ⁄ Â
spf-holdtime	⊮ ч SPF ڎ ˘ Л∪ ий ´ Æ˘ тп 1-600000 Â
spf-max-waittime	⊮ ч SPF ڎ ˘ Л∪ ий ´ Æ˘ тп 1-600000 Â

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spf-delay' 1000 '

spf-holdtime' 5000 '

spf-max-waittime' 10000 Â

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clear ipv6 ospf	G ħu ҳ ŭ ╟ OSPFv3 ŧ ╖ Â
show ipv6 ospf	OSPFv3 ə Â
timers spf	SPF

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50.2.1 show ipv6 ospf

OSPFv3 ə Â

show ipv6 ospf [*process-id*]

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	process- id	ospf /ˀ

```
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 0 Enabled
```

timers spf	OSPFv3 ж ĵ ل ע ə ˘ SPF ˘ Л υ ۱ ч SPF à Â

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50.2.2 show ipv6 ospf database

OSPFv3 ə Â

show ipv6 ospf [*process- id*] **database** [*lsa-type* [**adv-router** *router-id*]]

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process- id	OSPFv3 ۸
lsa-type	LSA ص˘ ЛЬЮ ű ' 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 ۹ ˘ LSA ə
adv-route*r router-id*	router LSA ə Â

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```
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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50.2.3 show ipv6 ospf interface

OSPFv3 ﻯ ٤ Â

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

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interface-type interface-number	ﻯ ﺻ Ω ﻰ Â

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```
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
```

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५ ऊ б BFD ╟, ж ħu ३ ╗ ľ **BFD enabled** Ŀ ə

```
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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50.2.4 show ipv6 ospf neighbor

OSPFv3 ə Â

show ipv6 ospf [*process- id*] **neighbor** [*interface-type interface-number* [**detail**]| *neighbor-id* |**detail**]

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process-id	OSPFv3 ϡ
detail	ə Â
interface-type interface-number	ϡ ص Â
neighbor-id	Router ID Â

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```
Neighbor ID  Pri  State     Dead Time   Interface     Instance ID
2.2.2.2      1    Full/DR   00:00:33    FastEthernet 1/0    0
```

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```
Ruijie# show ipv6 ospf neighbor detail
Neighbor 2.2.2.2, interface address fe80::c800:eff:fe84:1c
In the area 0.0.0.0 via interface FastEthernet 1/0
Neighbor priority is 1, State is Full, 6 state changes
DR is 2.2.2.2 BDR is 1.1.1.1
Options is 0x000013 (-|R|-|-|E|V6)
Dead timer due in 00:00:36
Database Summary List 0
Link State Request List 0
Link State Retransmission List 0
```

ŭ BFD б ˩ , ѫ ҽ è ╗ Ю Ґ **BFD session state up** Ŀ

```
Ruijie# show ipv6 ospf neighbor detail
Neighbor 2.2.2.2, interface address fe80::c800:eff:fe84:1c
In the area 0.0.0.0 via interface FastEthernet 1/0
Neighbor priority is 1, State is Full, 6 state changes
DR is 2.2.2.2 BDR is 1.1.1.1
Options is 0x000013 (-|R|-|-|E|V6)
Dead timer due in 00:00:36
Database Summary List 0
Link State Request List 0
Link State Retransmission List 0
```

BFD session state up

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ipv6 router ospf	ŭ ╟ OSPFv3 Â
ipv6 ospf area	˥ ˥ б Â
area virtual-link	OSPFv3 Â
show ipv6 ospf interface	OSPFv3 ˥ ҽ Â

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50.2.5 show ipv6 ospf route

OSPFv3 Â

show ip

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count	OSPFv3

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```
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 ə Â

show ipv6 ospf [*process-id*] **summary-prefix**

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process- id	OSPFv3 ᵑ

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ЮЋu ҙ ¥ OSPFv3 ə

```
Ruijie# show ipv6 ospf summary-prefix
OSPFv3 Process 1, Summary-prefix:
2001:db8::/64,Metric 16777215,Type0,Tag0,Match count0,advertise
```

ʷΩħu ҙ

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ipv6 router ospf	ŭ ╟ OSPFv3 Â
summary-prefix	OSPFv3 ᵃᵃ

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50.2.7 show ipv6 ospf topology

OSPFv3 ɔ ʊ ə Â

show ipv6 ospf [*process- id*] **topology** [**area** *area-id*]

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process- id	OSPFv3 ᵑ
area-id	ʊ

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ЮOħu ҂ ¥ OSPFv3 ɜ Ш ə

```
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   --
```

Ш R

ЎΩħu ҂	**ipv6 router ospf**	ŭ ╟ OSPFv3 Â
	area range	OSPFv3 Ш فخسم تن

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ЮħU ३ ≥ OSPFv3 ə

```
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
```

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ipv6 router ospf	ŭ ╟ OSPFv3 Â
area virtual-link	OSPFv3 Â
show ipv6 ospf neighbor	OSPFv3 ə Â

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51 Tunnel

51.1

51.1.1 keepalive (tunnel interface)

GRE ĭ ŭ ɗ ╗ ˘ G ЮЋu ㄎ'

keepalive [*seconds* [*retries*]]

no keepalive

ㄟ		
ㄟ	*seconds*	ˆ ㄥ ˜ ɗ ㄣ ˘ ´ Æ Â ىت 0˙ 32767 Â 10 Â
	retries	ɗ Â ĵ ɷ˘ ˘ ‡ ㄟ ˜ down Â ㄥ ḣ ىت 1˙ 255 Â ㄚ 3 Â

ɑ ЮЎ ɗ ╗ Â

ㄥ ώ keepalive˘ ㄌ ㄟ ˘ ‡ G ЛЮ ч э ḣ Â

seconds' 10

retries' 3

Ћu ㄎ	ㄟ Â
G	ㄣ ㄟ UP ˘ ㄇ ㄥ ˘ Â ㄥ Лu ŭ ɗ ╗ ˘ ㄟ ㄥ Â ' Ћu ㄎ ج 10.4ˆ 2˜ Лu ㄔ ڎ ㄌ Â

ѡ R	R 1' ج interface tunnel 1 ㄟ˘ ɗ ╗ ˘ ㄣ ㄚ 3 ˘ ㄚ 5 Â
	`Ruijie(config)# interface tunnel 1`
	`Ruijie(config)# keepalive 3 5`

˜Ωu ㄎ	Ћu ㄎ	
	show interface tunnel	tunnel ㄟ Â

	10.4	RGOS 10.4 10.4 2

51.1.2 tunnel keepalive

GRE

tunnel keepalive *period retries*

no tunnel keepalive

	period	65535
	retries	down 1000

	UP

51.1.4 tunnel destination

ج ʌ Ю G **tunnel destination** hu ʒ ѝ tunnel ʌ فخ سم ˘ G hu ʒ no ī tunnel ʌ فخ سم Â

tunnel destination *ip-address*

no tunnel destination

ʌ	-4D	ËÄ
	ip-address	IP فخ سم

فخ سم ѝ Â

ʅ ʌ Â

hu ʒ hu ʒ فخ سم Ù' ќ ' ǫ˚ Ē Ά я ٦

value	tunnel ƕ˘ ٧ ƕ جم تن 0-4294967295 Â
· ¦ Â	
ƕ ٦	٨ Â
G	У Ҫ ɖ ˘ ٧ ٧ʔ ώ φ Â ف ɖ Â **tunnel key** ƕ ٦ ٨ جم GRE ٧ Л Â

R 1' جم tunnel 0 ٨ è 1234'

```
Ruijie(config)# interface tunnel 0
Ruijie(config-if)# tunnel key 1234
```

ΩƕƷ ٦

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Tunnel Tunnel ㅌ ˜ ÂTunnel ㄴ GRE Â ˘
G ≠ ㄴ ㄲ G ą ā Tunnel

TU ˘ .
Ю k ɷ
PMTU tunnel

~ ʌ ʖ ˵ ʌ MTU˘ ʈ ˘ .
G IP è ɷ DF˜ Don't Fragment˜ Æ ÂRGNOS ɟ ʌ ƬO ᵏ ɷ

G **tunnel path-mtu-discovery** ƫ ʒ˘ ╟ ʈ PMTU˘ tunnel
ʌ mtu ˘ ÿ ȯ ʈ Â
' ƫ ʒ ʌ ɟ 10.4ˆ 1˜ è ɟ

ᵂ ᴿ ᴿ 1' ɟ tunnel 0 ʌ Ɔ PMTUD ╖

```
Ruijie(config)# interface tunnel 0
Ruijie(config-if)# tunnel path-mtu-discovery 10 100
```

˜Ωƫ ʒ

ƫ ʒ	
show interface tunnel	tunnel ʌ ˜Ω ə

ʌ

ƫ ʒ ˥ ʖ

ʌ	
10.4	' ƫ ʒ ʌ ɟ 10.4ˆ 1˜

51.1.9 tunnel source

ɟ ʌ ƬO ᴳ **tunnel source** ƫ ʒ tunnel ʌ ɯ ʄ˘ ᴳ ƫ ʒ no ʈ tunnel ʌ ɯ ʄ Â

tunnel source { *ip-address* | *interface-type interface-number* }

no tunnel source

ʌ

ʌ	
ip-address	tunnel ɯ ʄ IP ɯ ʄ˘ ɟ ɮ Ɔ è ʌ IP ɯ ʄ Â
interface-type	ʌ ص˘ ᴿ ' s ʌ Async à ʌ Dialer à Ʌ ʌ Ethernet à Ʌ ʌ FastEthernet à Loopback ʌ à Null ʌ à Ʌ ˥ è Tunnel ʌ Â
nterface-number	ʌ ʌ

ɯ ʄ Â

ħυ ٹ ٨ Â

G G tunnel ٨˘ ىسفخ Â

ш R R 1' ىج tunnel 0 ٨ Э ħυ ٹ **tunnel source** s ٨ 1/0 ى ىسفخ ٨

```
Ruijie(config)# interface tunnel 0
Ruijie(config-if)# tunnel source serial 1/0
```

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ħυ ٹ	
show interface tunnel	tunnel ٨ ٌΩ ٹ

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ᴿ 1' interface tunnel 1 GRE ˜ ToS 20ˇ γ ⁸
00010100 Â

```
Ruijie(config)# interface tunnel 1
Ruijie(config)# tunnel tos 20
```

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hu ʒ	
show interface tunnel	tunnel ʌ Â

ʌ

hu ʒ ˥ ʌ

ʌ	
10.4	RGOS 10.4 ' hu ʒ ₓ 10.4ˊ 2˜ ʌu ˥ ǯ ʌ Â

51.1.11 tunnel ttl

˝Ωƅu ʒ	ƅu ʒ	
	show interface tunnel	tunnel ʌ ˝Ω ə

ʃ

ƅu ʒ ˥ ʃ	ʃ	
	-	-

51.1.12 tunnel vrf

˙ ˜ IPv4 G ف ə VRF ˩ Â G ƗOƅu ʒ'

tunnel vrf [*vrf-name*]

no tunnel vrf

ʌ	ʌ	
	vrf-name	˙ ˜ IPv4 G VRF ɹ Â

	IPv4 G ѿ VRF ˘ ˩ Â

ƅu ʒ	ʌ Â

G	IP б IP˘ ج ɹ У ə VRF Â VRF è˘ IP ɹ ˘ ѫ ə ʌ down Â ' ƅu ʒ ج 10.4ˆ 2˜ Л ч ʒ̆ ʃ Â

ѡ R	R 1' interface tunnel 1 GRE IPv4 ˥ VRF blue è Â
	`Ruijie(config)# **interface tunnel 1**`
	`Ruijie(config)# **tunnel vrf** *blue*`

˝Ωƅu ʒ	ƅu ʒ	
	show interface tunnel	tunnel ʌ Â

ʃ

ƅu ʒ ˥ ʃ	ʃ	

	10.4	RGOS 10.4 ' Ъ ђ ѫ 10.4 2˜ Л ˆ Ѓ ˆ Â

51.2

51.2.1 show tunnel gre

GRE tunnel Â G ЮЪ ђ'

show tunnel gre

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	-	-

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Ъ ђ	Â
G	˘ ˆ Ѡ ¢ GRE ˘ a ÿ show running ¤ è ¼ Â G Ъ ђ. ˆ Â
w R	R 1' ¢ GRE ˘ Л ˆ ˆ ə Â Ruijie# **show tunnel gre** Tunnel1: Mode:GRE/IP, Destination 192.168.2.2, Source vlan 100

Ѡ Ъ ђ	Ъ ђ	
	show interface tunnel	tunnel ˆ Â

ˆ

Ъ ђ ˜ ˆ	ˆ	
	10.4	RGOS 10.4

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	-	-

52.1.2 distance ō IPv6 Ŏ

RIPng ˘ G ħυ ҳ **distance**

originate	ˋ ipv6 ˘ ≠ ˋ è

ħu ३ ʌ Â

G ħu ३ ¥ ʌ б RIPng ˜ ʌ Â ॵ ħu ३ ʓ ɱ˘ RIPng ˜ ˘ ‡ ħu ३ ॥ RIPng ˜ Â

w R Ю R ʌ ethenet 0/0 ╗ ώ RIPng Â

```
Ruijie(config)# interface ethernet 0/0
Ruijie(config-if)# ipv6 rip enable
```

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52.1.6 ipv6 rip metric-offset

ʌ Э ḣ˘ G ʌ ħu ३ **ipv6 rip metric-offset** *value* Â ħu ३ **no** ‡ Â

ipv6 rip metric-offset *value*

no ipv6 rip metric-offset

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value	ʌ ḣ˘ ʌ ḣ ن 1-16

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G ॵ ╗ ώ ɱ˘ metric ╗ Э ʌ Э ḣ Â Ʌu ʌ Ʌu ʌ ḣ : G Â

w R ɅuЮ R ʌ ethernet 0/1 Э ʌ ḣ ḭ 5 Â

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52.1.8 passive-interface ō RIPng Ǒ

ÂNQA[1] ج У э ٨ Э ٦ — G ٨ Э

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*]

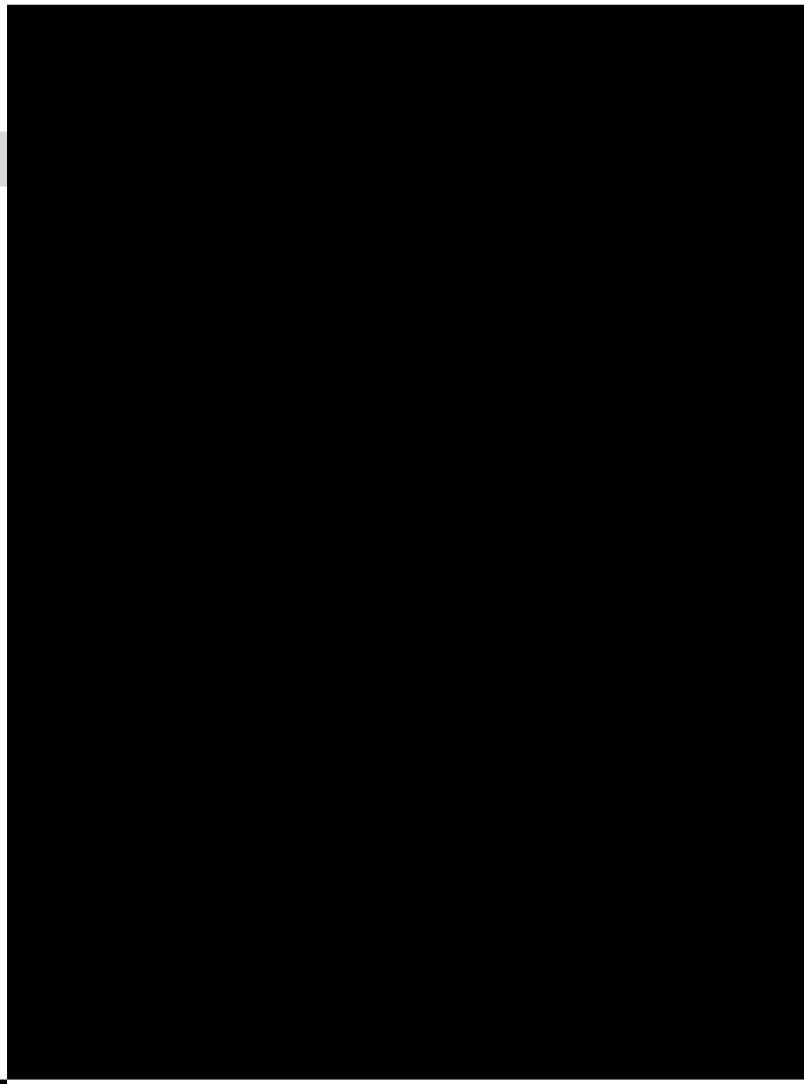
٩	
bgp	ÿ BGP ɬ
connected	ÿ ɬ
isis [*area-tag*]	ÿ ISIS ɬ ˘ *area-tag* ɬ ISIS R
ospf *process-id*	ÿ OSPF ɬ ˘ *process-id* ɬ ospf R˘ *process-id* ٧ ḣ تن' 1-65535
static	ÿ ɬ
metric *metric-value*	ˆ ٦ ~ ~ ظه ٤

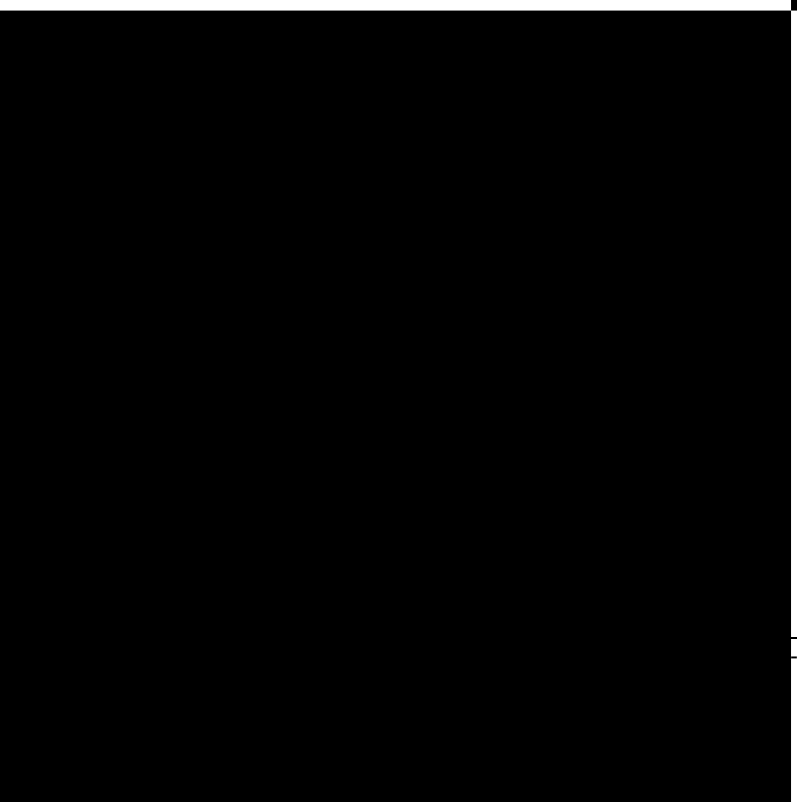
52.1.11 timers (ipv6)

RIPng ˘ G ħu ɜ **timers** Â ħu ɜ **no** Â

timers *update invalid flush*

no timers





ħu ɜ	
show ipv6 rip	RIPng ~ ∨ б
show ipv6 rip database	RIPng

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/∧		
-	-	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
    Loopbackl 1          1      1
  Routing Information Sources:
    None
```

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show ipv6 rip	RIPng ~ ৲ б

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52.2.2 show ipv6 rip database

RIPng ৶ ə ˘ G **show ipv6 rip database** ħu ३ Â

show ipv6 rip database

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G G ħu ३ RIPng ৶ ə Â

```
Ruijie# show ipv6 rip database
Codes: R - RIPng,C - Connected,S - Static,O - OSPF,B - BGP
sub-codes:n - normal,s - static,d - default,r - redistribute,
          i - interface, a/s - aggregated/suppressed
```

```
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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show ipv6 rip	RIPng ~ ৲ б

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53 IPv6

53.1 IPv6

53.1.1 clear ipv6 mroute

Ђ ҳ ї ѓ IPv6 ч Â

clear ipv6 mroute {***** | *v6group-address* [*v6source -address*]}

¶		
¶	*	IPv6 è ч ą Â
	v6group-address	IPv6 IPv6 ѕ ƒ Â
	v6source -address	IPv6 IPv6 ѕ ƒ Â

Ђ ҳ

G Ђ ҳ ї IPv6 ч Â

w R ЛЬЮ R ї ѓ
Ruijie# **clear ipv6 mroute ***

Ђ ҳ	
show ipv6 mroute	-
clear ipv6 mroute statistics	-

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53.1.2 clear ipv6 mroute statistics

Ђ ҳ IPv6 ч ą Â

v6rpf-address	ĵ v6source-address Ю У ipv6 فخ سه
interface-type *interface-number*	٨ صر Ո٠ ٨ /١
distance	˘ ā ĭ ᴳ RPF Â ḣ ὶ и 0 Â

IPv6

ħυ ҳ ώ Â

IPv6 ˘ ᵏ ~ ჯ ააა ұ IPv6 rpf
Â . ″I ұ ÿ ´ ~ ¯ ĵ Â
٨ Ю У ip˘ ж٠ ٨ ὶ صر Â
ᴳ rpf ‡ ' ÿ è У э . ˘ ل ج bgp Ո٠
˘ ‡ . ″I ’ ÿ ´ è У э . ´ ’ ү
˘ ὶ rpf IPv è Ц л è Ю ٨ $ Ɒ Ҳ ჯ D

IPv6

limit ḣ ẏ 1024

threshold ḣ ẏ 2147483647

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	Ю Â					

ѡ R ЛυЮ R ⁸ ╗ ώ῾ IPv6 è ẏ

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ЛЬЮ R ҷ

w R

```
Ruijie(config)# ipv6 multicast rpf longest-match
```

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```
(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
R 2' ЛЬЮ R ə
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
R 3' ЛЬЮ R ə
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
```

ЎΩħu ҳ

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clear ipv6 mroute	-
clear ipv6 mroute statistics	-

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-	-

53.2.2 show ipv6 rpf

G ħυ ҳ IPv6 فخ سم RPF ə ţ Â

show ipv6 rpf *v6source-address*

٩		
	v6group-address	IPv6 IPv6 فخ سم Â

ħυ ҳ

G G ħυ ҳ IPv6 فخ سم RPF ə ţ Â

ЛυЮ R ¦ 2222::3333 RPF ə ţ

```
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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53.2.3 show ipv6 mroute static

IPv6 ə ţ Â

show ipv6 mroute staitc

ЛuЮ R ^ ə
ЛuЮ svi1 ^ ѫ ə
Ruijie#**show ipv6 mvif**
w R Interface Mif Owner Uptime
Idx Module
Register 0 03d03h09m
VLAN 1 1 PIMSMV6 03d03h09m

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53.3 IPv6

53.3.1 debug nsm mcast6 all

IPv6 ˇΩ Â G ħu ҳ **no** ˇΩ IPv6 ˇΩ

eC>Tjd<1sm mcast6

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53.3.2 debug nsm mcast6 fib-msg

IPv6 ˜ ɔ» ə˛ ˜Ω Â G Ĥu ɜ **no** ˜Ω ˜Ω

debug nsm mcast6 fib-msg

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	˜Ω

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G	˜Ω˘ ˩ ΠU IPv6 ˜ ɔ» ə˛ Â

w R	IPv6 ˜ ɔ» ə˛ Ruijie# **debug nsm mcast6 fib-msg**

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53.3.3 debug nsm mcast6 register

IPv6 ˇΩ ɣ Ä Λ Ո Ä ˇΩ Â G ħυ ϡ **no** ˇΩ ˇΩ

debug nsm mcast6 register

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ˇΩ

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G ˇΩ ˘ ˩ Ո IPv6 ˇΩ ɣ Ä Λ Ո Ä Â

w R IPv6 ˇΩ ɣ Ä Λ Ո Ä

```
Ruijie# debug nsm mcast6 register
```

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53.3.4 debug nsm mcast6 stats

IPv6 ˇΩ ɣ Λ Ո ə ˇΩ Â G ħυ ϡ **no** ˇΩ ˇΩ

debug nsm mcast6 stats

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54 PIM-SMv6

54.1 PIM-SMv6

54.1.1 clear ipv6 mroute

clear ipv6 mroute {* | ipv6_group_address | ipv6_group_address ipv6_source_address }

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*	╕ Â
ipv6_group_address	╕ Â
ipv6_group_address *ipv6_source_address*	╕ Â

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G ╟╕

```
Ruijie# clear ipv6 mroute *
Ruijie# clear ipv6 mroute ff66::6666
Ruijie# clear ipv6 mroute ff66::6666 3333::3333
```

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54.1.2 clear ipv6 mroute statistics

clear ipv6 mroute statistics {* | *ipv6_group_address* [*ipv6_source_address*] }

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ipv6 multicast-routing

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ˇ a ŭ ╟ IPv6

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G ŭ ╟ IPv6 ˇ ħu ɮ Â ج ٩ Ɔ ŭ ╟ PIM-SMv6 ˇ ≠
ħu ɮˇ ĭ ‡ˇ ɑ **ipv6 pim sparse-mode** ħu ɮˇ ת PIM-SMv6 ŭ ╟ Â

w R `Ruijie(config)# ipv6 multicast-routing`

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54.1.6 ipv6 pim accept-bsr list

ipv6 pim accept-bsr list *WORD*

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WORD	v6 acl

PIM-SMv6 ٧ BSM Â

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G ج PIM-SMv6 ٧ Ɔ ħu ɮˇ ى BSR تن Â

w R
```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim accept-bsr list bsr-list
```

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54.1.7 ipv6 pim accept-crp list

ipv6 pim accept-crp list *WORD*

⊀	⊀	
	WORD	v6 acl

	BSR Ạ RP ˆ Â

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G	ج Ạ BSR Э ħu ҳˇ Ạ BSR ѝ BSR ˇ ⊀ C-RP فذسم تن ⊣ ع ⊢ تن ⁸ Â

ш R	Ruijie# **configure terminal** Ruijie(config)# **ipv6 pim accept-crp list** *crp-list*

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54.1.8 ipv6 pim accept-crp-with-null-group

ipv6 pim accept-crp-with-null-group

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æ BSR Э a prefix-count ѝ 0 C-RP-ADV Â

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G æ Ą BSR Э ћu ҳ˘ Ą BSR ѝ BSR

Ruijie(config)# **ipv6 pim accept-register list** *register-access-list*

Ruijie(config)# **ipv6 access-list** *register-access-list*

Ю ˇ a ї fe80::2d0:f8ff:fe22:33ad Ѧ

Ruijie(config-ipv6-acl)# **deny ipv6** *fe80::2d0:f8ff:fe22:33ad/128* **any**

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ipv6 access-list	-

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54.1.10 ipv6 pim bsr-border

ipv6 pim bsr-border

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G й ⍵ ⁸ BSM ˇ ˩Ѩ ᴎ Э BSR ˇ э ᴎ ⍭ BSM ᴊ ˬ . x ˇ BSM ≠ a ÿ э ᴎ ˩ Â

ᴡ R ҉ g 0/3 Э BSR

Ruijie# **configure terminal**

Ruijie(config)# **interface** *g 0/3*

Ruijie(config-if)# **ipv6 pim bsr-border**

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54.1.11 ipv6 pim bsr-candidate

ipv6 pim bsr-candidate *interface-type interface-number* [*hash-mask-length*] [*priority-value*]

⁴	⁴	
	interface-type terface-number	⁴
	hash-mask-length	тп й <0-128>˘ й RP w ⁸ HASH ˘ 126
	priority-value	тп й <0-255>˘ Ą BSR . ″I ⁴ ˘ 64

˘ a ћu ҳ˘ . a Ą BSR

ћu ҳ	ѿ

G	жУэ PIM-SMv6 ѫ è˘ g жУэ ґУ w ⅄ BSR Â BSR ч RP ą Â э Ą BSR w w ң ґУ Ѽ BSR Â ж BSR ą Ѯ ⁄ⁿ˘ C-BSR й BSR˘ ъ ж PIM-SMv6 ѫ è ч w ˘ ↑ Ü BSR ѫфѕ Ո. ″I Â G ћu ҳ ˩Л ĭ BSR ѫфѕ ч У э w ą PIM ˘ э ⅄ ″I BSR ѫфѕ ˩ ĭ w ą è ѫфѕ ˘ ч ĭ ѫфѕ IPV6 б Ѯ ˘ ɖ э ѫфѕ ɔ й BSR ѫфѕ˘ ч w ą ’ ĭ ‡ x ą Â ⁄ⁿ й BSR˘ ĭ ÿ ⁴ У э Ą BSR è ĭ У э w ą ˘ ˆ ⁄ⁿ У э . ″I ḣ^ У . ″I ḣ˘ Л IPV6 ѫфѕ˜ 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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54.1.12 ipv6 pim dr-priority

ipv6 pim dr-priority *priority-value*

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	priority-value	. ″I ḣ˘ ḣ ˘ . ″I Â ت ѝ' <0-4294967294> ḣ ѝ' 1 Â

˘ DR . ″I ḣ ѝ 1

ħu ҳ	^

G	У э DR ˘ Ю ΰ ą ' Â ⁄ У ѭ è Hello . ″I ⁰ ˘ ѫ ج DR ˘ ″I . ″I ˘ . ″I ˘ ѝ DR' э ⁄ . ″I ˘ ѫ˘ IP ف س ˘ DR Â Â ⁄ У ѭ è э ج Hello è . ″I ⁰ ˘ ѫ э ѭ è DR w è˘ IP ف س ˘ DR Â

```
Ruijie# configure terminal
```

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ipv6 pim ignore-rp-set-priority

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˘ ˳ RP-SET è RP . ˝I

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G ॐ RP ˘ RP . ˝I ˘ ħυ ३ Â

Ruijie# **configure terminal**

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54.1.16 ipv6 pim neighbor-filter

ipv6 pim neighbor-filter *ipv6_access-list*

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ipv6_access-list	ipv6_access-list ħu ل acl

˘ ٧ ŭ ٦

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G ˘ ٦ PIM ώ ˘ k ٨ Â ٧ "
˘ ‡ PIM-SMV6 a˛ б ^ peering˜ ℡ ˘ è б
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```
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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54.1.17 ipv6 pim override-interval

ipv6 pim override-interval *interval-milliseconds*

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interval-milliseconds	↓ ḣ ت<1-65535>˘ ´ Æ ѝ

˘ Hello Override-Interval ḣ 2500

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∧ Override-Interval Â

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g · g ⅔ ĭ ᾱ ˘ ˛ ⁝⎫

J/P-override-interval Â ˜ Э J/P-override-interval ɣ

Join-Prune holdtime˘ ĭ ‡ ↓ Â У ˘

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Ю R ∧ Override-Interval ѝ 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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54.1.18 ipv6 pim probe-interval

ipv6 pim probe-interval *interval-seconds*

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interval-seconds	↓ ḣ ت ѝ <1-65535>˘ ´ Æ ѝ

˘ ”Ą ḣ 5s

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G ”Ą ˘ . ج ”Ą ⁸ ɱ˘ ĭ DR ⊥ RP ↓ ”Ą .

NULL-Register Â

~ ЇЪ a ЇЪ ⁸ У `˘ ĭ ‡˘ a˛ Ї Â з˛ У э . Warning Â з 3* ЇЪ ⁸ + ЇЪ a 65535˘ ĭ ‡˘ ˛ У э . Warning Â

ш ᴿ Ю ᴿ ЇЪ 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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54.1.20 ipv6 pim query-interval

ipv6 pim query-interval *interval-seconds*

ſ	
Interval-seconds	ت ѝ <1-65535>ˇ ´ Æ ѝ

ˇ Hello ч □ ḣ 30s

ſ

Hello ч ˇ Hello ɖ ≠¸ ЛЬЮ ‡ ƺ ' Hello ɖ ѝ Hello ч 3.5˝ ' Hello ч * 3.5 > 65535˜ з Hello ч ⁸ ѝ 18725 Â

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim query-interval 60
```

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54.1.21 ipv6 pim register-checksum-wholepkt

ipv6 pim register-checksum-wholepkt [**group-list** *ipv6_access-list*]

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٩	*ipv6_access-list*	*ipv6_access-list* ħυ ﻝ acl Â group-list ipv6_access-list ˘ ﻓﺬ ﺳﻢ Â
	˘ Ą Ո PIM Ո Ą ˘ ɜ PIM Â	
ħυ ҳ	ŏ	
G	ſ ң ڭ Ą Ո ỳ ɜ PIM ˜ ǖ ɛ è ˘ ´ Ą PIM Â ỳ ɷ ò ɕ ˘ ώ ɷ ħυ ҳ Â	
ѡ R	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 G ɜ Ą Ո Ruijie(config-ipv6-acl)# **permit ipv6 any** *ff66::6666/64*	

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	ipv6 access-list	-

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54.1.22 ipv6 pim register-rate-limit

ipv6 pim register-rate-limit *rate*

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rate	ï ٤ ə register ˘ ٤ ḣ تن <1-65535>

a ¨Ą ٤

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ħu ɜ ə^ S˜ G˜ ¨Ą ٤ ˘ a ə ¨Ą ٤ Â ǔ ╟ ħu ɜ æ DR Ո RP ˘ a ⁸ ¨Ą ٤ Â

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim register-rate-limit 3000
```

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54.1.23 ipv6 pim register-rp-reachability

ipv6 pim register-rp-reachability

Ruijie# **configure terminal**

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RP˘ ≠ RP Ո BSR ⁸ ⊿ Â G ђu

ҙ Ю ΰ '

Â У ' BSR ⁸ Ո RP ⊿ ˘ . ˝I G ╟ Â

Â ү ' G ⁸ " RP ففخ سم ⊿ Л u э ^ G ACL˜

^ a G ACL˜ ˘ л У э RP ففخ سم a G Â

Â Ь ' э RP ┗ ұ ⊿ У э ˘ IPv6 ففخ سم RP . ˝I

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G Â ني ' ⊿ جم ACL è ђ ї ففخ سم Â ї

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Â ч ' Л˘ RP ففخ سم ѽ ұ تن RP è˘

э تن У э RP ˘ IPV6 ففخ سم ˜

Â й У э تن У э RP˘ У э Ї ˘ ≠ IPV6 ففخ سم э

˝I Э Â

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interface-type interface-number	ʌ
priority-value	ɻ ˘ ʁ ḣ تن ѝ <0-255>˘ priority priority-value ˘ . ˮI 192
Interval-seconds	ɻ ˘ ʁ ḣ تن ѝ <1-16383>˘ interval interval-seconds ˘ interval-seconds 60s
ipv6_access-list	ɻ ˘ ħu ɻ acĭ group-list ipv6_access-list ˘ ĭ Â

˘ Ạ RP

acl

	ipv6_acl_name	ipv6_acl_name ϑ RP ϕϧϫ IPV6 ϕϧϫ ΰ ╠ ώ RP ╗ Â ˘ ϑ RP ϕϧϫ IPV6 ϕϧϫ ΰ ╠ ώ RP ╗ Â

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ħυ ϡ ˘ ϑ RP ϕϧϫ IPV6 ϕϧϫ ΰ ╠ ϖ ώ RP ╗ Â

G ΰ ╠ ώ RP ╗ ˘ ΛυϤ ϟΛυϤ ϑ RP ϕϧϫ IPV6 ϕϧϫ ΰ ╠ ώ RP ╗ '

ѡ R ΛυΗO R ϑ RP ϕϧϫ IPV6 ϕϧϫ˘ ΰ ╠ ώ RP ╗ '

```
Ruijie(config)# ipv6 pim rp embedded
```

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ipv6 access-list	-

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54.1.29 ipv6 pim rp-register-kat

ipv6 pim rp-register-kat *seconds*

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```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim rp-register-kat 250
```

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ᵥ Э a ŭ ╟ PIM-SMv6

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ᵥ Э ŭ PIM-SMv6 ˘ Ъu ҳ Â

ᵥ ŭ ╟ PIM-SMv6 ᵰ˘ ᵥ ώ Юŭ ╟ ˩ ╗ ˘ ĭ ‡. ᴳ ŭ ╟ ⍵ PIM-SMv6˜ ≠ a ˩ Â ᵥ ŭ ╟ PIM-SMv6 ˫ ˘ MLD ᵥ ᵥ э ᵥ Э˺ ⋮ ╟ ŭ ╟˘ a ╟ Â

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&

Ъu ҳ Ą˘ ˬ ľ Failed to enable PIM-SMv6 on < ᵥ ˫ >, resource temporarily unavailable, please try again Ł˘ Ą Ъu ҳ Â

Ъu ҳ Ą˘ ˬ ľ PIM-SMv6 Configure failed! VIF limit exceeded in NSM!!! Ł˘ ᵰ ᵥ ˺ ˫ ᵥ Э Â Ÿ ᵥ ᵥ Ю ŭ PIM-SMv6 ˘ ˺ Ƴ Ҫ a PIM-SMv6 PIM-DMv6 ᵥ Â

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```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim sparse-mode
```

54.1.30 ipv6 pim sparse-mode

ipv6 pim sparse-mode

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ᵥ Э a ŭ ╟ PIM-SMv6

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54.1.32 ipv6 pim ssm

ipv6 pim ssm { **default** | **range** *ipv6_access-list* }

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	default	ىن ѝ' FF3x::/32
	ipv6_access-list	ħυ ⊿ acl

ὖ ╟ SSMV6

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G	ὖ ╟ PIM-SSMv6˜ G ħυ ҳ

Ю ħυ ҳ ¦ " سفخ ѝ *acl* Â

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim ssm range acl
```

Ю ˘ سفخ fe80::2d0:f8ff:fe22:33ad à سفخ ىن ff32::3333/64˝ G SSM

```
Ruijie(config-ipv6-acl)# permit ipv6 fe80::2d0:f8ff:fe22:33ad
/128 ff32::3333/64
```

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	ipv6 access-list	-

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54.1.33 ipv6 pim static-rp-preferred

ipv6 pim static-rp-preferred

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BSR ⁸ w RP. ″I ¥ RP Â

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G ħu ҳ ⁄ˇ RP. ″I ¥ BSR ⁸ w RP Â

ЮO ħu ҳ ¦ RP. ″I Â

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```
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim triggered-hello-delay 3
```

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54.2.2 show ipv6 pim sparse-mode bsr-router

show ipv6 pim sparse-mode bsr-router

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G	BSR ə१ G .

```
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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54.2.3 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	٦ ˘ ٧ interface-type interface-number ˘ ٧ ə٤
detail	٦ ˘ ٧ ə٤

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G PIM-SMv6 ٧ ə٤ Â

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```
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	ˇ ˇ

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G	PIM-SMv6 ∧ Э ѫ MLD ə Â
₩ R	Ruijie# **show ipv6 pim sparse-mode local-members** PIM Local membership information GigabitEthernet 0/5: (*, ff66::6666) : Include

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54.2.5 show ipv6 pim sparse-mode mroute

show ipv6 pim sparse-mode mroute {*ipv6_group_address* | *ipv6_source_address* }

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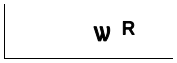

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54.2.7 show ipv6 pim sparse-mode nexthop

show ipv6 pim sparse-mode nexthop

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G	ЮУ ˜Ω ą ˘ ˆ ¢ ЮУ ٧ /˘ ﺳﻔﺨ˘ metric Â
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54.2.8 show ipv6 pim sparse-mode rp mapping

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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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54.2.9 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 فخسم

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G ə فخسم ipv6_group-address RP ə Â

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```
Ruijie# show ipv6 pim sparse-mode rp-hash ff66::6666
RP: 3333::8888
Info source: 3333::8888, via bootstrap
PIMv2 Hash Value 126
RP 3333::8888, via bootstrap, priority 192, hash value 1468234650
```

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```
Errors:
Malformed packets:                          0
Bad checksums:                                    0
Send errors:                                      0
Packets received with unknown PIMv6 version:      0
```

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clear ipv6 pim sparse-mode track	-

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55 MLD

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55.1.1 clear ipv6 mld group

ħu ϧ MLD ˜ ˝ ˆ ╟ ˘ Â ╟ ˘ ˝ report ˘ Â

clear ipv6 mld group [*group-address*] [*interface-type interface-number*]

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	╕ ╟ ˝ ˆ ˘ Â
group-address	128 ə Æ IPv6 فذ سم
interface-type	ˇΩ ٧ صر
interface-number	ˇΩ ٧ ٨

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MLD У ə " ˇ " è è ў ╗ ώ ف ҏ '
G ≠ ╗ ώ ə ˇ ≠ ˛ " ج ə " è Â ÿ MLD ˘ " è╕ ѽ ╟
˘ ˇ ⅄ Л ∪ a ٧ **clear ipv6 mld group** ħu ϧ Â

╕ ѽ '

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Ruijie# clear ipv6 mld group
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55.1.2 clear ipv6 mld interface

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clear ipv6 mld interface *interface-type interface-number*

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interface-type	ᴎ ص
interfaceid	ᴎ ɹ

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G ħu ҳ ᴎ Э MLD ˜ ↑ ə٤ Ո٠ ᴎ Э У҂ ə٤ Â ҂ ə٤ ↑ ΰ ↑ report ɔ ə٤ ˘ done ɔ ə٤ ˘ Л٦ ᵯ ᴎ Э ˜ ə٤ Â

ᴡ R
```
Ruijie# clear ipv6 mld interface fa 1/1
```

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55.1.3 ipv6 mld access-group

ħu ҳ ѧ ᴎ Э ˘ ᴊ ACL report ï Â ѧ ħu ҳ ᵯ **no** ᴊ Л ᴊ ╖ Â

ipv6 mld access-group *word*

no ipv6 mld access-group

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Word	IPv6 ⁸ " ACL ⅄

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ᵴ ٩ Э У Ҫ ˇ ⅃ Л υ G ħυ ϡ Â ħυ ϡ ̃Ω Э ACL ˇ
⍭ ACL deny report ˇ x Â ħυ ϡ ACL ˇ
⍭ MLDv2 è ə Â

G

~ ⁸ ħυ ϡ ̃Ω ACL Â ⍭ MLD report ə
^ S1,S2,S3…Sn,G˜ ˇ ħυ ϡ (0,G) ə G ACL
ר Â Л υ G ħυ ϡ ˇ ACL У
(0, G) ˇ ⅃ Л υ ^ S1,S2,S3…Sn,G˜ Â

ᵴ ЮR è ˇ ᵴ ٩ Eth0/1 è ⍭ report ə acl ˇ
Â

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```
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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ipv6 mld immediate-leave group-list *word*

no ipv6 mld immediate-leave group-list

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Word	IPv6 ⁸ " ACL ⅄

ˇΩ

Ђu ҳ
∧

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æ Ђu ҳ ąЮ˘ ⁞ MLD ⅄˘ ˛ ∨ Â ⅄˘ ÿ ў ⁝ ˘ ÿ ˜ " è╕ Â ∨ ā ¥ ⅄ ˜ Ո MLD Ő ⅃ ˘ ąЮ 2s Â œ Ђu ҳ˘ ⁞ ⅄˘ a ∨ Â ╕ ą Â ¥ ∧Ю ∨ У э ў ąЮ˘ ˜ œ Â

₩ R
Ю R k œ ╖ R 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*

ˇΩЂu ҳ		
ipv6 mld last-member-query-interval	-	

⅄

Ђu ҳ ˥ ⅄		
-	-	

55.1.5 ipv6 mld join-group

ћυ ҳ Ӌ ӟΩ ∧ é ў ѝ ╗ ώ ˘ Ӌ ў ╠
↓ Лυ ˝ ↑ ə ˘ ѯ ∧ ╗ У э ˜ G Â G ћυ ҳ no
∨ Ӌ ╗ ώ Â

Ipv6 mld join-group *group-address*

no ipv6 mld join-group *group-address*

∧	

no ipv6 mld last-member-query-count

۷	MLD

Ђu ҳ ∧

G ∧ ∫ MLD ˘ ҷ ą Ÿ ˘ ∧ Э MLD ˜ " ∫ Â э й **mld last-member-query-count**¨ ╗ Э У ` Â

w R ЛυЮ R ¢ ą 2 '

```
Ruijie# configure terminal
Ruijie(config)# interface fa 0/1
Ruijie(config-if)# ipv6 mld last-member-query-interval 200
```

ЎΩЂu ҳ

Ђu ҳ	
ipv6 mld immediate-leave	-

∧

Ђu ҳ ℸ ∧

∧	
-	-

55.1.8 ipv6 mld limit ( )

G Ђu ҳ ҷ ∧ MLD ˜ ∧Лυ ¯ ∫ ˜ э Â ∧ ˘ G **no** Â

ipv6 mld limit *number* [**except** *access-list*]

no ipv6 mld limit

∧

∧	
number	MLD ĭ э ˘ a ∧ ң ҏ 8 ت a У Â ḣ й 1024 Â
except *access-list*	^ ∧ ˜ 8 ت ҷ ∧ "

ąЮ 8 э й 1024 Â

Ђu ҳ ∧

G G Ђu ҳ ŵ MLD ¯ ∫ ˜ э 8˘ ˜ э ¢ 8 э ḣ˘ ∧ ∫ report x ˘ a¸ Â ∧

≠ ҁ except R " ˘ ‡ ¥ ↑ ҕ access-list è ˜ ˘ a ↓ ˜ э
8˘ ҕ ˜ э 8 ą Ю ↓ Л ˝ .
G Ђu ҂ ≠ ↓ Л ѫ ¥ ↓ ˘ ↓ Ո ŏ ↓ Л ˘ ŏ
э 8 ↓ ˘ Л ŏ . ˝ I Â

ЛЬЮ R ҁ 8 э ѝ 300
Ruijie(config-if)# **ipv6 mld limit** *300*
ЛЬЮ R ҁ 8 э ѝ 300 ˝ п acl Ў ↓ Л ˝ ˆ ˘ a ↓ 8 '
Ruijie(config-if)# **ipv6 mld limit** *300 except acl*

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55.1.9 ipv6 mld limit ( )

G Ђu ҂ ŏ MLD ˝ ˆ ˜ э Â ↓ ˘ G no Â

ipv6 mld limit *number* [**except** *word*]

no ipv6 mld limit *number* [**except** *word*]

↑	
number	MLD ˝ ˆ ˜ э ˘ ىت 1-65536 Â
except	^ ↵ ~ "
word	^ ↵ ~ ipv6 "

a ↵ ң ҏ h̓ a У Â

Ђu ҂ ŏ

G Ђu ҂ ŏ ˝ ˆ ˜ 8˘ ˜ ҕ 8 ˆ
a˛ MLD ˘ a ↓ Â ¥ ↑ ŭ ҕ except " è ˘ a ↓ э 8 Â

ЛuЮ R ⍺ ⁸ э й 300'

Ruijie^ config~ # **ipv6 mld limit** *300*

ЛuЮ R ⍺ ⁸ э й 300˝ л acl Ў ↓Лu ˝ ˆ ˜ a ↓ ⁸'

Ruijie(config)# **ipv6 mld limit** *300* **except** *acl*

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Ъu ҳ ˥ ˩	/ʅ	
	-	-

55.1.11 ipv6 mld proxy-service

Ъu ҳ ŭ ╟ Ю mroute-proxy ʅ ┗╖ Âѯ ʅ Э Ъu ҳ˘ ʅ
ѝ mroute-proxy Э ʅ˘ ˜Ω Ю ʅ˘ Ю ʅ ˆ Э ą Â

ipv6 mld proxy-service

no ipv6 mld proxy-service

ʅ	ʅ	
	-	-

ʅ a ѝ proxy-service

Ъu ҳ ʅ

ɱ э Ъu ҳ ˩ э ṁ ɷ ˘ ʅ ї 32 э Â ŭ MLD Proxy
╖ ʅ э ˩ ɣ ʅ э Â ʅ ſ ˅
proxy-service ʅ ˜ ą ˘ ɔ Âproxy-service ʅ
G ˜ ą ÿ mroute-proxy ʅ è Â ɷ proxy-service˘
ɣ ʅ ˩ é ɷ ў ѝ˘ a é ˥ ѝ.
ʅ ʅ switchport ɔ˘ ˜Ω Ю ʅ **ipv6 mld mroute-proxy**
interface Ъu ҳ ╟˜ Â

ѡ R ʅ ѝ proxy-service ɔѭ
`Ruijie(config-if)# ipv6 mld proxy-service`

Ъu ҳ

ħυ ҳ ˜ ˇ ⅃ Л∪ **no** ѝ ḣ Â

ipv6 mld query-interval *seconds*

no ipv6 mld query-interval

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ѫ ᴎ Ю ˘ è ы Ы 200s Â
Ruijie(config-if)# **ipv6 mld querier-timeout** *200*
ѫ ᴎ Ethernet 0 ˘ Ы й ḣ Â
Ruijie(config-if)# **no ipv6 mld querier-timeout**

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ħυ ϩ ˥ ᴎ

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55.1.15 ipv6 mld robustness-variable

G ħυ ϩ ᴝυ ᴝ Ő ᴝ ḣ˘ ḣ˘ ѫ ħυ ϩ ᵯ╗ no Â

ipv6 mld robustness-variable *number*

no ipv6 mld robustness-variable

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number	Ő ᴝ ḣ˘ ت й è 2-7 Ê Â

ḣ й 2

ħυ ϩ ᴎ Â

G

ѡ R

ЛЮ R Ő ᴝ ḣ й 3

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0
Ruijie(config-if)# ipv6 mld robustness-variable 3
```

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55.1.16 ipv6 mld ssm-map enable

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Ipv6 mld ssm-map enable

no ipv6 mld ssm-map enable

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ђu ҳ	ѽ
G	э ђu ҳ ˘ ╟ ˜ ĺ ə ⁸ ╖ ˜Ω ə Â ђu ҳ У ¥ ђu ҳ **ipv6 mld ssm-map static** ⅄ G Â
W R	ѫ ѽ Ю ў **mld ssm-map** ╖ Â `Ruijie(config)# ipv6 mld ssm-map enable`

ђu ҳ	

no ipv6 mld ssm-map static *access-list X:X:X:X::X*

۹	
access-list	ipv6 ђu ل ACL
X:X:X:X::X	´ فخ سم

فخ سم

ђu ҳ ώ

G ђu ҳ б **ipv6 mld ssm-map enable** л G ˘ ђu ҳ л˘ ĵ mldv2 ЛuЮ Э è Â

W R ACL ل ù te Э فخ سم 4444::1234 Â ђu ҳ ù'

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G ħu ɮ ﻩ ﻵ Э ╗ ώ У э Â б join-group ш ⁞ a Ӈ ц
╗ ώ˺ У э ˘ ╗ ώ Â
ﻩ ﻩ ﻵ Э ╗ У э ˜ ħu ɮ Â a clear ħu ɮ˺ , ﻵ
no ipv6 mld static-group˺ э Â

ш R

ЛЬЮ R ╗ ѽ ў ˜ '

```
Ruijie# configure terminal
Ruijie(config)# interface fast 0/1
Ruijie(config-if)# ipv6 mld static-group ff55::3
```

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55.1.19 ipv6 mld version

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ipv6 mld version {**1** | **2** }

no ipv6 mld version

ﻶ

ﻶ	

{**1**

Ruijie(config-if)# **ipv6 mld version** *1*

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```
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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55.2.2 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
```

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55.2.3 show ipv6 mld ssm-mapping

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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
```

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56 MLD Snooping

56.1

56.1.1 ipv6 mld profile

MLD profile ƾ

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	10.4	У ώ

56.1.3 deny

ۍ profile تن ˘ profile Ю ħu ҷ deny Â

deny

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profile deny ɔ Â

ħu ҷ profile Â

G ″I جھ profile Ю G range ħu ҷ تن Â

Ю … У ə ۍ FF77::100 profile R :

```
Ruijie(config)# ipv6 mld profile 1
Ruijie(config-profile)# range FF77::100
Ruijie(config-profile)# deny
```

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ipv6 mld profile	… У ə profile
range	تن فخ سھ
permit	profile ѝ ѝ permit

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ħu ҷ ٦ ۸

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10.4	У ώ

56.1.4 permit

ï profile تن ˘ profile Ю ħu ҷ permit Â

permit

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ђu ҙ ѽ

G ѣ Ю ѓ VLAN ц Â ў ѵ б ұ ѓ У э VLAN
ѵ ' Ђ ѣ ї ˙ ! У э VLAN ˘ ѵ
ѓ VLAN ѯ ˜ ѵ ѵ Â

Ю R ѣ Э mld snooping ivgl

w R

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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10.4	У ώ

56.1.8 ipv6 mld snooping svgl ivgl-svgl

mld snooping ivgl-svgl ˘ ŏώ ħυ ҳ **ipv6 mld snooping ivgl-svgl** Â ħυ ҳ no ʹΩ mld snooping Â

ipv6 mld snooping ivgl-svgl *profile-number*

no ipv6 mld snooping

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profile-number	profile ʌ˘ ɲ 1-1024

ŭ ╟ mld snooping Â

ħυ ҳ ŏώ

G ɸ ˘ ‡ IVGL å SVGL ч Â IVGL Ո SVGL ч ˩ Л υ ˩ ж˘ ˩ Л MLD Profile , ʃ У ɲ ф з т SVGL˘ ж ɲ ф з т ʠ˘ ˩ ˜ ʎ ˩ Л VLAN ˩ ˘ è ɲ ф з т ʠ ˩ ˜ ʎ ų ˩ У э VLAN Â

Ю R ж Э mld snooping ivgl-svgl ˘ profile1 ɲ ф з т ų SVGL ɲ'

ʬ R

Ruijie(config)# **ipv6 mld snooping ivgl-svgl**

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 ʎ

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10.4	У ώ

56.1.9 ipv6 mld snooping dyn-mr-aging-time

ipv6 mld snooping dyn-mr-aging-time *time* ╠ ʏ У
ϫ˘ **no ipv6 mld snooping dyn-mr-aging-time** ḣ Â

ipv6 mld snooping dyn-mr-aging-time *time*

no ipv6 mld snooping dyn-mr-aging-time

ʏ	
time	╠ ʏ У ˘ ϟ ḣ ή 1-3600΄ ´ Æ ή

300s Â

ώ

╠ ʏ ⱬ è У ɱ ĵ MLD IPv6 PIM
Hello ˘ Ꮋ ʏ ÿ ϫ ʏ " è╕ Â

Ю R ╠ ʏ У ή 500s΄

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

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10.4	У ώ

56.1.10 ipv6 mld snooping query-max-response-time

ipv6 mld snooping query-max-response-time *time* MLD
: ˘ **no ipv6 mld snooping query-max-response-time**
ḣ Â

ipv6 mld snooping query-max-response-time *time*

no ipv6 mld snooping query-max-response-time

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time	MLD У : ˘ ٧ ḣ ѝ 1-65535˝ ´ Æ ѝ

10s Â

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æ ĺ MLD У ʌ˘ γ ˚ ˝ ٩ ע ע˘
ע ѝ : ˘ ע ḣ ˝ ѝ 0 ˘ ‡ ѝ ٩ a Ą ˝
˘ γ ˚ ٩ ÿ mld snooping ٧ è╕ Â

G æ ĺ MLD ʌ˘ γ ˚ ˝ ٩ ŭ ╟ ע
ע˘ ע ѝ : ˘ ע ḣ ˝ ѝ 0 ˘ ‡ ѝ ٩ a Ą
˝ ˘ γ ˚ ٩ ÿ mld snooping ٧ è╕ Â
ұ MLD ˘ a ṁ ע Â

Ю R MLD : ѝ 15s'

w R

```
Ruijie(config)# ipv6 mld snooping query-max-response-time 15
```

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no ipv6 mld snooping vlan *vid*

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vid	vlan id ٨˘ ٧ ḣ ṅ 1-4094

ح ŏ ŭ ╟ mld snooping Ą˘ vlan ŭ ╟ mld snooping Â

ħu ɝ ŏ

G ح ŏ ŭ ╟ mld snooping Ą˘ vlan ŭ ╟ mld snooping ' ٧ Л∪ vlan ˜Ω mld snooping ╖ Â

w R ЮO R ˜Ω VLAN 1 mld snooping ╖ '

```
Ruijie(config)# no ipv6 mld snooping vlan 1
```

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ħu ɝ ' ٧		
	10.4	У ώ

56.1.12 ipv6 mld snooping vlan mrouter learn

Ꮋ ╟ ш ŭ MLD query PIM ˘ Л∪ ╟ ⋮ ٨˘ ŏ ħu ɝ **ipv6 mld snooping vlan mrouter learn** Â ħu ɝ no ٧ ╟ ˉ Â

ipv6 mld snooping vlan *vid* **mrouter learn**

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

G

ʎ б è ʎ Â ąЮ ų У э
VLAN a ╟ ʎ ˘ ˇ ɻЛυ γ G ╟ ʎ
˘ ˇ no ħυ ϩ ΅Ω ╟ ˘ ˇ ╟ ˘ ΅ ʎ Â
ʎ ˇ ɻ ÿ ʎ ώ ɻ ˇ γ τ ɻ
ɻ ΅Ą ʎ’ ÿ ʎ ώ й ˇ x Â ج
ʎ ╥ ąЮ G ╟ ʎ ˘ ˇ ɻЛυ mld snooping
Â

w R

Ю R ج ╟ ʎ ˘ ╥ '

```
Ruijie(config)# ipv6 mld snooping vlan 1 mrouter learn
```

΅Ωħυ ϩ

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ipv6 mld snooping vlan mrouter interface	ʎ

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10.4	У ώ

56.1.13 ipv6 mld snooping vlan mrouter interface

ʎˇ ΰ ħυ ϩ **ipv6 mld snooping vlan mrouter interface** Â ħυ ϩ no ΅ У э ʎ Â

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

no ipv6 mld snooping vlan *vid* **mrouter interface** *interface-id*

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vid	vlan id ʎˇ ɻ ḣ й 1-4094
interface-id	ʎ ʎ

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ɻЛυ Ӈ Э ʎ й Ɣ ʎˇ ÿ G Ӈ Э ΅ IPv6
ɻЛυ ʎ ɻ Ɣ Â ج ʎ Ю ɻ ÿ ʎ

fastEthernet *0/1*

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ipv6 mld snooping vlan mrouter interface	ʌ

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10.4	У ώ

56.1.15 ipv6 mld snooping fast-leave enable

mld snooping fast-leaveˇ ώ ħυ ϡ **ipv6 mld snooping fast-leave enable** Â ħυ ϡ no ʹΩ mld snooping fast-leave Â

ipv6 mld snooping fast-leave enable

no ipv6 mld snooping fast-leave enable

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ħυ ϡ ώ

G ʌ Ђ ÿ ʌ ĺ ў ϟ IPv6 MLD ˇ ʌ ÿ ϟ ʌ " è˥ Â ʃˇ Ђ ĺ IPv6 MLD ˇ Ђ a ʹĄ ɹ ʌ ϟ Â ϶ Ђ Эˇ ʌ Ю ʌ У э ˇ ‡ ϟ Л ᴳ ʌ ╖ Л Ո Â

w ᴿ Ю ᴿ ϶ Э mld snooping fast-leaveˈ

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

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10.4	У ώ

56.1.16 ipv6 mld snooping suppression enable

mld snooping suppression˘ ώ ħυ ϩ **ipv6 mld snooping suppression enable** Â ħυ ϩ no ˜Ω mld snooping suppression Â

ipv6 mld snooping suppression enable

no ipv6 mld snooping suppression enable

ϻ	

ħυ ϩ	ώ

G	ɢ ɷ MLD ˘ ˜Ω ˆ ˢ ╗ ϻ˘ ϧ У э ϙ̈ γ ϟ˳ ΐ IPv6 ϙ̈ У э MLD ˘ ˜Ω ˆ ϟ Ь ˘ a ϳ Ь ϟ ϳ У è MLD ˘ ˜Ω ˆ ˘ ϟ Л υ ˜ è Â ɷ ħυ ϩ ϻ˘ suppression ╗ ΰ ╟˘ Ч ˳ MLD v1 report ˢ˘ Л a˳ MLD v2 report ˢ Â

w R	Ю R ϧ Э mld snooping suppression˙ Ruijie(config)# **ipv6 mld snooping suppression**

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ħυ ϩ ϒ ϳ	ϻ	
	10.4	У ώ

56.1.17 ipv6 mld source-check port

ʎ ɔ ⁸ ʎ ʎ ώ Â mld snooping
ʎ ℸ ˘ ώ ђυ ҳ **ipv6 mld snooping source-check port** Â
ђυ ҳ no ʗΩ ʎ ℸ Â

ipv6 mld snooping source-check port

no ipv6 mld snooping source-check port

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G

mld snooping ʎ ш MLD ώ ʎ Â ʎ ʗΩ ˘ ÿ
˙ ¡ ʎ ώ ɮ ɻ ˘ γ ˚ mld snooping ɬ ʊ
ɬ↑ Ạ ˜ ʎ Э Â mld snooping ʎ ˘ ʎ ÿ ʎ
ώ ɻ ˘ γ ʊ ɬ ɻ Ạ ʎ’ ÿ ʎ
ώ ὴ ˘ x Â
ʎ ώ ʗΩ˘ У ˘ ʎ˘ ї ‡ x
Â

ѡ R

Ю R mld snooping ʎ ℸ '

```
Ruijie(config)# ipv6 mld snooping source-check port
```

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10.4	У ώ

56.1.18 ipv6 mld snooping filter

no ipv6 mld snooping filter

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G ɷ ˘ ‡ ج ʎ Ɔ˘ تن تن ˘ Ꮋ a ̈Ą à MLD Report Â

w R Ю R ̈I ʎ 0/1 Ɔ ʎ 100 ɔ '

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ipv6 mld snooping max-group 100
```

ΩħυϚ –

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ipv6 mld snooping filter	ʎ

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10.4	У ώ

56.1.20 clear ipv6 mld snooping gda-table

╟ ˗ ϟ ą , ħυ ϛ **clear ipv6 mld snooping gda-table** ħυ ϛ Â

clear ipv6 mld snooping gda-table

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G ╟ ˗ ϟ ą Â

w R ╟ ˗ ϟ ą '

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

ΩħυϚ –

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✓

ħυ ҳ ϒ ✓	✓	
	10.4	У ώ

56.1.21 debug mld-snp

mld ⊧ ˜Ω, ħυ ҳ **debug mld-snp** ħυ ҳ Â

debug mld-snp

undebug mld-snp

✓	✓	

ħυ ҳ

G	mld ⊧ ˜Ω Â

w R	mld ⊧ ˜Ω'

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

˜ΩħυҳΙ –	ħυ ҳ	

✓

ħυ ҳ ϒ ✓	✓	
	10.4	У ώ

56.2

56.2.1 show ipv6 mld snooping

mld snooping ˜Ω ə Â

Show ipv6 mld snooping [**gda-table** | **interfaces** | **mrouter**|

G mld profile ˜Ω ə

R 1' G **show ipv6 mld profile** ħu ɜ MLD profile ə '

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

˜Ωħu ɜ

ħu ɜ	

ɻ

ħu ɜ ˥ ɻ

ɻ	
10.4	У ώ

57 MPLS

57.1

57.1.1 advertise-labels

ﻯ IP FEC ﺭ ﻝ ˇ ﻝ Л ᴳ no ﻫ ﻉ ﻫ Â

[**no**] **advertise-labels** [**for host-routes** | **for bgp-routes** [**acl** *acl_name*]| **for default-route | for acl** *prefix-access-list* [**to** *peer-access-list*]

ﻯ	
for host-routes	ˆ ﻝ ~ ﻝ ў ˆ ﻯ 32 Æ˜ ﺭ ﻝ
for bgp-routes [**acl** *acl_ame*]	ˆ ﻝ ~ ﻯ BGP ﺭ ﻝ ˇ ᴳ acl ˜Ω ﻝ Л ﻝ ﻯ ﻝ ˇ BGP ﺭ ﻝ
for default-route	ˆ ﻝ ~ ﻯ ﺭ ﻝ 3
for acl *prefix-access-list*	ˆ ﻝ ~ ﻯ è ﺭ ﻝ ﻣ
to *peer-access-list*	ˆ ﻝ ~ ﻕ ﻝ ﻑ

LDP ﺭ ﻝ ’

IGP ﺭ ﻝ ˇ BGP a ﺭ ﻝ ˇ ﻝ ≠ a ﻯ BGP ╗ FTN’

ﻯ ﺭ ﻝ 3 Â

ﻫ ﻉ config-mpls-router

ᴳ

ﻫ ﻉ ﻝ FEC ﻯ IP ﻍ Ю ˇ è FEC ﺻ PW FEC Â ﻝ Л ᴳ

ﻫ ﻉ **advertise-labels for acl** *fec_acl* **to** *peer_acl* ⁸ ﻯ ﻑ FEC ﺭ ﻝ Л ﻝ ⁸ ﺭ ﻝ ﻑ LDP ɛ Â ¥ fec_acl˙ ﻝ У ‡˘ ¥ peer_acl˙ ﻝ Л ﺟ ə ‡ è Â ɷ ﻫ ﻉ˘ Л acl è ‡ ˘ ¥ ﻫ ﻉ˘ ≠. ﻝ fec Â ¥ LDP˛ ɔ ﺟ DOD Ю˘ ﺭ ˘ ¥ ﻝ ‡ ⁸ a ﻯ è ﺭ ﻝ ‡ Ÿ a˛ ﻯ ˘ . ᴳ Л ﻝ ‡ Ą˘ ≠ ﻯ Ƶ ﻣ ﺭ ﻝ ˘ ﻝ Л ﺭ Â ﻍ Ю ﻝ Л ᴳ ﻫ ﻉ **clear mpls ldp neighbor** ﻫ ﻉ Æ LDP˛ ˘ ᴳ è ɔ Â ᴳ ﻫ ﻉ ﻝ Л 64 ‡ Â

⍭ Л υ G Ъυ ⍮ **advertise-labels for bgp-routes** ⍸ BGP ˜ ⍵ ⍞ ⍭ ˘ G Ъυ ⍮ **acl** ⍭ Л υ ⍭ ⍸ ⍲ ˚ BGP ⍞ ⍭ ˘ a **acl** ‡ ⍸ BGP ⍞ ⍭ Â G **no advertise-labels for bgp-routes** ‡ ⍭ Л υ ˜ Ω ⍸ BGP ⍞ ⍭ Â ⍸ BGP ⍞ ⍭ Ÿ ⍭ LDP ⍞ ⍭ ⁸ Â ⍭ Л υ G Ъυ ⍮ **advertise-labels for host-routes** ⁸ ⍭ ⍸ 32 ⍷ ⍙ ˆ . ў ˜ ⍞ ⍭ Â ⍭ Л υ G Ъυ ⍮ **advertise-labels for default-route** ⁸ ⍸ ⍞ ⍭ 3 ˘ ÿ ⍸ LSP Â ¥ ⍳ Ю ⍸ FEC ⍞ ⍭ ˘ ⍝ ⍭ ⍸ acl ‡ fec ⍞ ⍭ ˘ ⍓ ˝ I G no advertise-labels Ъυ ⍮ ⍸ fec ⍞ ⍭ ⍸ ˜ Ω ˘ ⁸ a acl ⍓ ‡ fec a ⍸ ⍷ ⍞ ⍭ Â **no advertise-labelse** Ъυ ⍮ Л ˘ ⍭ ⍸ ⍦ Л **advertise-labels for acl** LSP Â ~

```
Ruijie (config)#ip access-list standard peer_acl
Ruijie (config-std-nacl)#permit host 6.6.6.6
Ruijie (config-std-nacl)#permit host 7.7.7.7
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# advertise-labels for acl fec_acl to
peer_acl
```

...Ω...	...	
	-	-

...	
10.4(2)	

57.1.2 backoff

LDP ... no ... ...

backoff *initial-backoff maximum-backoff*

no backoff

...	
initial-backoff	... 2147483 ... 15
maximum-backoff	... 2147483 ... 120

... 15 ... 120 ...

... config-mpls-router

... LSR ... LDP ... hello ...

... 20s ... 300

﴿Ω ﻫ ﻉ	ﻫ ﻉ	
	show mpls ldp neighbor	LDP ﹐

ﻝ	

ﻫ ﻉ ﺎ ﻝ	ﻝ	
	10.4(2)	

57.1.4 discovery targeted-hello

ﻉ hello ﷺ ﻝ ˘ no ﻫ ﻉ ﻩ

	-	-

57.1.5 explicit-null

acl

explicit-null [**for** *prefix-acl* [**to** *peer-acl*]] [**to** *peer-acl*]

no explicit-null

	for *prefix-acl*	( )
	to *peer-acl*	( ) LDP

config-mpls-router

	Ruijie(config-std-nacl)#**permit host 1.1.1.1** Ruijie(config-std-nacl)#**exit** Ruijie(config)# **mpls router ldp** Ruijie(config-mpls-router)# **explicit-null for fec_acl to peer_acl**

ῂΩƕυ ٦	ƕυ ٦	
	-	-

ԃ

ƕυ ٦ ̄˥ ԃ	Л	
	10.4(2)	

57.1.6 label-merge

ῴ Л ῂΩ̆ no ῂΩ Л Â

[**no**] **label-merge**

٩	٩	
	-	-

Л Â

ƕυ ٦	config-mpls-router

G	G DUᛙ ˧ 8 ˘ Л ῂΩ ˘ ƕυ ٦ a Â ƕυ ٦ ɏ ˝l ɱ LDP ̦ ӥ ฺ FECᛙ ˧ ҩ ҿ FEC Â

w R	Ruijie(config)# **mpls router ldp** Ruijie(config-mpls-router)# **label-merge**

ῂΩƕυ ٦	ƕυ ٦	
	show mpls ldp parameters	VRF Ю LDP ٩
	mpls ldp distribution-mode	٩ G ᛙ ˧

ԃ

ﻫ ﺭ ﺍ ﻝ	ﻤ	
	-	-

57.1.7 label-retention-mode

ɗ ˘ ﻫ ﺭ no ﻫ Â

label-retention-mode {**liberal** | **conservative**}

[**no**] **label-retention-mode**

ﻤ	ﻤ	
	liberal	G ɗ
	conservative	G ɗ ɗ
	G ɗ Â	
ﻫ ﺭ	config-mpls-router	
G	ﻫ ﺭ ¥ ﻡ ﻱ ﺍ FEC ˘ ﻝ ﺍ ﻡ Â	
ﯠ R	Ruijie(config)# **mpls router ldp** Ruijie(config-mpls-router)# **label-retention-mode liberal**	
ﺮﻫ ﺭ	**ﻫ ﺭ**	
	show mpls ldp parameters	VRF ﻫ LDP ﻤ
ﻝ		

ﻫ ﺭ ﺍ ﻝ	ﻤ	
	-	-

57.1.8 label-switching

G ﻫ ﺭ ﻤ ﻝ MPLS ﻓ Â

Router ID LDP Router ID

config-mpls-router

IP LDP RouterID
RouterID
IP LDP RouterID a **force**
RouterID a
RouterID
VRF LDP VRF
UP
force
force
IP LDP RouterID
RouterID LDP LDP
LDP Router ID

```
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# ldp router-id interface vlan 10 force
```

show mpls ldp parameters	VRF LDP

...	...	
	-	-

...	...
...	config-mpls-router
...	LDP ... LDP ... LDP ...
...	Ruijie(config)# **mpls router ldp** Ruijie(config-mpls-router)# **loop-detection**

...	...	
...	**show mpls ldp parameters**	VRF ... LDP ...
	mpls ldp max-path-vector	LDP ...
	mpls ldp max-hop-count	...

...

...	...	
	-	-

57.1.11 lsp-control-mode

... LDP ... no ...

lsp-control-mode {**independent** | **ordered**}

no lsp-control-mode

...	

ħυ ᦔ config-mpls-router

G ¥ LDP˛ ¨I ㎚ ㅣ ㅓ a ㅓ : Â ħυ ᦔ ㅅ ㅅ ㅓ Â

ᴡ R R ĦO LDP G 8 Â

```
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# lsp-control-mode ordered
```

ˇΩħυ ᦔ

ħυ ᦔ	
show mpls ldp parameters	vrf ĦO LDP ㅔ

ㅅ

ħυ ᦔ ˥ ㅅ

ㅅ	
-	-

57.1.12 mpls ip ō Ŏ

ŏ MPLS ㅓ˘ ħυ ᦔ no ˇΩ ŏ MPLS ㅓ Â

[**no**] **mpls ip**

ㅔ

ㅔ	
-	-

MPLS ㅓ ╖ Â

ħυ ᦔ ŏ

MPLS ㅓ ¨I ㅊ ŏ G MPLS Âㅊ MPLS

G

	mpls ip	ﷺ G MPLS

ﷺ

ﷺ ﷺ ﷺ	ﷺ	
	-	-

57.1.13 mpls ip ō Ŏ

G ﷺ ﷺ LDP ﷺ ˘ ﷺ no ﷺ ﷺ Ə ﷺ LDP ﷺ Â

[**no**] **mpls ip**

ɣ IP MPLS ﾉ MPLS MTU Â

[**no**] **mpls ip fragment**

٩	
-	-

ώ IP MPLS ﾉ˘ è MPLS MTU ₦ ˘ ‡
Ɬ IP ﹟ ﾉ Ạ MPLS ٩ Â

ħυ ϗ ŏ

ħυ ϗ ﴾ ٩ ˘ Ꮋ ˚ ٩ ˘ ٩ MTU x Â

G G **no mpls ip fragment** ħυ ϗ ʔΩ ٩ ﹟ ╗ ˘. ɣ ώ IP MPLS ﾉ˘ è MPLS MTU ₦ x Â

ɯ R Ruijie(config)# **no mpls ip fragment**

ħυ ϧ ѽ

MPLS ﺝ è ㄴ è ң ICMP ^ ή ص MPLS TTL ICMP ~ ˘ ħυ ϧ **mpls ip icmp-error pop** *labels* ㄴ Ո MPLS

G a ㇿ a ㇿ Â ㄴ ¥ ḣ ∖ ﺝ LSP ㄴ’ ㄴ ¥ ¥ ḣ ὲ icmp

G ѽ ㄴ Â

ѡ R Ruijie(config)# **mpls ip icmp-error pop** 2

ħυ ϧ

ㅓ	
dod	G ㅑ ㅏ ㅓ
du	G ㅑ ㅕ ╟ㅏ ㅓ

G ㅑ ㅕ ╟ㅏ ㅓ Â

ㅀ ㅋ ㅓ

G ㅊ LDP ˚ ˜ ㄸ è˘ ㅛ ㅏ ㅓ a ㅛ ˘ ‡ ⁸ G **du** Â ㅀ ㅋ ¥ ㅓ ㅑ LDP ˚ a ㅓ : Â

ㅓ ㅑ LDP ㅇ ¥ DOD Â

```
Ruijie(config)# interface vlan 10
Ruijie(config-if)# mpls ldp distribution-mode dod
```

ㅀ ㅋ	
loop detection-mode	

ㅔ

(!567t >)g9¼#xl!567t(dsQ˛

G

ħυ ҳ ㅓ ㅛ ㅓ ⁸ LDP Link Hello Â ħυ ҳ˘ ㅓ ㅓ Ю ㅓ Hello ㅓ ㅓ ㅛ˘ ‡ Ո Ю ㅓ Hello У Â ㅓ ⁸ Hello interval ᴳ ħυ ҳ **discovery targeted-hello** Â

ш ᴿ

Ю LDP Link hello ɖ й 30 Â

```
Ruijie(config)# interface vlan 10
Ruijie(config-if)# mpls ldp hello-holdtime 30
```

ˆΩħυ ҳ

ħυ ҳ	
mpls ldp hello-interval	hello ㅓ
discovery targeted-hello	ㅓ ⁸ hello ㅓ Ո

ㅓ

Δ DŽ # ℐ

MPLS

ħu ϧ LDP˳ a :˘ ϟ ħu ϧ ⁄ LDP˳ Â

G

ʹΩħu ϩ	ħu ϩ	
	loop-detection	LDP

ﻯ

ħu ϩ ʔ ﻯ	ﻯ	
	-	-

57.1.22 mpls ldp max-label-requests

LDP ﺝ ﻯ Ю ï ˘ no ḣ Â

mpls ldp max-label-requests *times*

no mpls ldp max-label-requests

ﻯ	ﻯ	
	times	˘ ﻯ ḣ تن ẏ 0-255 Â

	⁸˘ У · ↑ ↑ ẏ Â

ħu ϩ	ﻯ

G	ħu ϩ ﻯ Э LDP˳ a ˘ Ÿ G ﻉ ḣ˘ LDP˳ Â ẏ 0 a · Â

w R	LDP ﺝ ﻯ Ю ï ẏ 5 Â
	`Ruijie(config) # **interface vlan** *10*`
	`Ruijie(config-if)# **mpls ldp max-label-requests** *5*`

ʹΩħu ϩ	ħu ϩ	
	mpls ldp distribution-mode	ʃ ﻍ

ﻯ

ħu ϩ ʔ ﻯ	ﻯ	
	-	-

57.1.23 mpls ldp max-path-vector

LDP ﺟ ﻥ Ю ï ﻝ ħ˘ no ħ Â

mpls ldp max-path-vector *number*

no mpls ldp max-path-vector

ﻥ	ﻥ	
	number	ﻝ ħ˘ ﻝ ħ تن ﻯ 0-255 Â

ħ ﻯ 254 Â

ħυ ϩ ﻥ

G ﻝ LDP ᴿ ɷ ˘ ﻝ ˛ Â LDP è ﻝ " è ↑ ΰ LSR ID ə ɣ ﻝ ħ˘˛ ﻯ ɷ Â ɣ ﻥ LDP˛ a ﻝ ː˘ ː ﻡ LDP ˛ Â

ɯ ᴿ LDP ﺟ ﻥ Ю ﻝ ħ ﻯ 10 Â

```
Ruijie(config) # interface vlan 10
Ruijie(config-if)# mpls ldp max-path-vector 10
```

ΐΩħυ ϩ	ħυ ϩ	
	loop-detection	LDP

ﻡ

ħυ ϩ ΐ ﻡ	ﻡ	
	-	-

57.1.24 mpls ldp max-pdu

LDP ˜ ə ï ˆ . PDU˜ ˘ ħυ ϩ no ﻯ ħ Â

mpls ldp max-pdu *max-pdu*

[**no**] **mpls ldp max-pdu**

٧	
max-pdu	LDP Ђ ҷ G PDU ˘ Л υ ὺ ´ Æ˘ ٧ ḣ ت ὺ 256-4096 Â

4096

Ъυ ҙ ٨

G ٨ Ю LDP ˚ a ٧ :˘ : ٨ LDP ˚ Â

٨ Ю LDP ὺ 256 Â

w R
```
Ruijie(config)# interface vlan 10
Ruijie(config-if)# mpls ldp max-pdu 256
```

Ъυ ҙ	
-	-

٧

/١	
-	-

57.1.25 mpls ldp transport-address

٨ Э ѫ LDP ˚ G · ѫ ف ˘ Ъυ ҙ no ḣ Â

mpls ldp transport-address [**interface** | *ip-address*]

no mpls ldp transport-address

٧	
interface	LDP ˚ G ٨ ў ѫ ف
ip-address	LDP ˚ G ٧ IP ѫ ف

G LDP LSR ID ṁ ὺ LDP ˚ · ѫ ف Â

Ъυ ҙ ٨

G ħu ʒ ¥ ч ⁸ LDP˛ a ˘ ч G ... ч ⁸ LDP ˛ Â ч· ... Ą G ... ч ⁸ ˛ a ˘ ч ʃ LDP˛ Â

ш R

ч Ю ... LDP˛ G ч ў ... ṁ ѝ· ... Â

```
Ruijie(config)# interface vlan 10
Ruijie(config-if)#mpls ldp transport-address interface
```

ЎΩħu ʒ

ħu ʒ	
show mpls ldp parameters	VRF Ю LDP ч
transport-address	ѽ ... LDP˛ G · ...

ʃ

ħu ʒ ˥ ʃ

ʃ	
10.3	G **transport-address [interface|***ip-address|interface-name***]** ħu ʒ ѽ ... LDP˛ G · ...
10.4(2)	ч Ю ... LDP˛ · ...

57.1.26 mpls mtu

ч MPLS MTU ˘ G ħu ʒ no ḣ Â

mpls mtu *mtu*

no mpls mtu

ч

ч	
mtu	ч ˘ Л ѝ´ Æ˘ ʅ ḣ تت ѝ 64-65535 Â

ч MPLS MTU б ч MTU У Â

ħu ʒ ч

G ч MPLS MTU ą Ю ч · MPLS MTU б ч

MTU ÂMPLS MTU MPLS MPLS MTU

```
Ruijie(config)# mpls router ldp vpna
Ruijie(config-mpls-router)# ldp router-id interface vlan 10 force
```

	show mpls forwarding-table	ÿ ŏ FTN ə

	-	-

57.1.29 mpls static l3vpn-ftn

L3 VPN FTN no FTN

mpls static l3vpn-ftn *vrf-name ip-address/mask* **out-label** *label* **remote-pe** *ip-addr*

mpls static l3vpn-ftn *vrf-name ip-address/mask* **local-forward nexthop** *interface-name nexthop-ip*

no mpls static l3vpn-ftn *vrf ip-address/mask*

	vrf-name	FTN VRF FTN
	ip-address/mask	Fec .
	out-label *label*	FTN LSP PE
	remote-pe *ip-addr*	PE
	local-forward nexthop *interface-name nexthop-ip*	FTN PE IP

	ŏ

G Ō -

	show mpls for warding-table	... FTN ...

...

...	...
-	-

57.1.30 mpls static l2vc-ftn

... VC FTN ... no ... FTN ...

mpls static l2vc-ftn *vc_id vc_peer_ip* **out_label** *label*

no mpls static l2vc-ftn *vc_id vc_peer_ip*

...	...
vc_id	vc ... id
vc_peer_ip	Vc ... PE ... IP ...
out_label *label*	... VC FTN ...

...

...

...

...

...

G

э ﴀ У э ‡˘ ÿ ˘ ﴀ ɱ Â э LDP R
ﴀ Л ƕ 64 э ‡ Â

w R

ﴀ 10.10.10.1 ﴀ ɱ ƕ 192.168.0.0/16 fec ˘
ɣ ﴀ è fec a Â

```
Ruijie(config) #ip access-list standard fec_acl
Ruijie(config-std-nacl)#permit 192.168.0.0 0.0.255.255
Ruijie(config-std-nacl)# exit
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# neighbor 10.10.10.1 labels accept
fec_acl
```

ƕ ϧ

ƕ ϧ	
clear mpls ldp neighbor	8 LDP˛
show mpls ldp neighbor	LDP˛

ﴀ

ƕ ϧ ˥ ﴀ

ﴀ	
10.4(2)	

57.1.33 neighbor password

G LDP MD5 ˘ no ƕ ϧ LDP MD5 Â

neighbor *ip-address* **password** [**0** | **7**] *pwd-string*

no neighbor *ip-address* **password**

ﴁ

ﴁ	
ip-address	LSR · فخ سم
[0	7]	ˆ ﴀ ˜ 0 Л ώ ח˘ 7 Л ώ ח Â ƕ Л ώ ח Â
pwd-string	s˘ Ш˙ ĵ̃ Â ώ˘ ƕ 1~25 э s’ ώ˘ ƕ 1~52 э s

Ю G LDP MD5 Â

Ъу ъ config-mpls-router

G

л ЛуЛу ю п ≠ л ЛуЛу ю п˘ Лу ю п ˘
ж ю Ю G Ъу ъ **service password-encryption** ╗ Ь˘ ‡ ж ф
м ё è ф й Â
ы LDP ╗ ˘ LDP е ч п л Â л е п
Ы LDP Â
Ы ц п˘ л У LDP е п˘ ‡ ж т

%TCP-6-BADAUTH: No MD5 digest from 10.40.10.10(20836) to 10.10.10.10(646)

ч п а У ˘ ‡ ж ыі т

%TCP-6-BADAUTH: MD5 digest failed for (10.20.10.10, 55998)->(10.10.10.10, 646)

W R

б 10.10.10.1 Ъ MD5 ˘ п й 123456

```
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# neighbor 10.10.10.1 password 123456
```

ЪЮЪу ъ

Ъу ъ	
show mpls ldp discovery	LDP л ф
show mpls ldp neighbor	LDP
neighbor *ip-address*	… У э ldp е

л

Ъу ъ Ъ л

л	
10.4(2)	

57.1.34 neighbor

… У э ldp е˘ no Ъу ъ ldp е Â

[**no**] **neighbor** *ip-address*

ч

ч	
ip-address	LSR Router ID

Ю LDP е Â

Ъυ ҂	config-mpls-router
G	LDP ˯ ˘ ѫ ђ ˯ ч LSR Â ˬ У ѿ ˬ У ṁ ѝ е˘ ѫ ˬ У Э ṁ ѝ ѐ е˘ ‡ LDP˯ Â
ѡ R	10.10.10.1 ṁ ѝ LSR У э е Ruijie(config)# **mpls router ldp** Ruijie(config-mpls-router)# **neighbor** *10.10.10.1*

ЪΩЪυ ҂	Ъυ ҂	
	show mpls ldp discovery	LDP ˬ ҽ
	show mpls ldp neighbor	LDP˯

ˬ

Ъυ ҂ ˥ ˬ	ˬ	
	-	-

57.1.35 ping mpls

ˬ Л υ G mpls lsp ping ╖ MPLS LSP Â

ping mpls ipv4 *ip-address/mask* [**repeat** *repeat*] [**ttl** *time-to-live*] [**timeout** *timeout*] [**size** *size*] [**interval** *mseconds*] [**source** *ip-address*] [**destination** *ip-address*] [**force-explicit-null**] [**pad** *pattern*] [**reply mode** {**ipv4** | **router-alert**}] [**dsmap**] [**flags fec**] [**verbose**]

ˬ	
ip-address/mask	FEC IPv4 ѫ ѳ Ո
repeat *repeat*	(ˬ) ˬ Echo Request ˘ ѝ 5˝ ˬ ḣ ѧ ѝ 1-2147483647 Â
ttl *time-to-live*	(ˬ) ˬ ˥ MPLS TTL ḣ˘ ѝ 255˝ ˬ ḣ ѧ ѝ 1-255 Â
timeout *timeout*	(ˬ) ˘ ѝ 2˝ ˬ ḣ ѧ ѝ 0-3600 Â 5p ѝ T65"₹@Sb ѳ L ѳ h2XxM Â P ѳ ф Ð

```
 'X'-unknown return code,'x'-return code 0
Type escape sequence to abort.
!   size 84, reply addr 192.168.201.208, return code 3
!   size 84, reply addr 192.168.201.208, return code 3
!   size 84, reply addr 192.168.201.208, return code 3
!   size 84, reply addr 192.168.201.208, return code 3
!   size 84, reply addr 192.168.201.208, return code 3
Success rate is 100 percent(5/5),round-trip min/avg/max=20/36/60 ms
```

ᴿ 2̓ ﷽Ю ə̨ ˘ У dsmap ᛊ б ttl ᛊ ʎ ᴳ ˆ ج̣ ѝ ᛏ ᛊ LSR̆ ‡ a̤ ﷽Ю ə̨ ˜ ˘ ᴿ ˈ

```
Ruijie# ping mpls ipv4 10.40.10.10/32 dsmap ttl 1
Sending 5, 84-byte MPLS Echoes to 10.4(2)0.10.10/32,
    timeout is 2 seconds, send interval is 0 msec:
      < press Ctrl+C to break >
Codes: '!' - success, 'Q' - request not sent, '.' - timeout,
 'L'-labeled output interface,'B'-unlabeled output interface,
 'D'-DS Map mismatch,'F'-no FEC mapping,'f'-FEC mismatch,
 'M'-malformed request,'m'-unsupported tlvs,'N'-no label entry,
 'P'-no rx intf label prot,'p'-premature termination of LSP,
 'R'-transit router,'I'-unknown upstream index,
 'X'-unknown return code,'x'-return code 0
Type escape sequence to abort.
L
Echo Reply received from 192.168.201.208
  DSMAP 0,DS Router Addr 192.168.198.2,DS Intf Addr 192.168.198.2
    Depth Limit 0, MRU 1508 [Labels: implicit-null Exp: 0]
L
Echo Reply received from 192.168.201.208
  DSMAP 0,DS Router Addr 192.168.198.2,DS Intf Addr 192.168.198.2
    Depth Limit 0, MRU 1508 [Labels: implicit-null Exp: 0]
L
Echo Reply received from 192.168.201.208
  DSMAP 0,DS Router Addr 192.168.198.2,DS Intf Addr 192.168.198.2
    Depth Limit 0, MRU 1508 [Labels: implicit-null Exp: 0]
L
Echo Reply received from 192.168.201.208
  DSMAP 0,DS Router Addr 192.168.198.2,DS Intf Addr 192.168.198.2
    Depth Limit 0, MRU 1508 [Labels: implicit-null Exp: 0]
```

```
L
Echo Reply received from 192.168.201.208
  DSMAP 0,DS Router Addr 192.168.198.2,DS Intf Addr 192.168.198.2
    Depth Limit 0, MRU 1508 [Labels: implicit-null Exp: 0]
Success rate is 0 percent (0/5)
```

57.1.37 snmp-server enable traps mpls

MPLS Trap ↓ ˘ Ъυ ҳ no ˜Ω Trap ↓ Â

snmp-server enable traps mpls {

1. XC Up Trapў ѽ У ILM FTN Â

2. XC Down Trapў ʃ ѽ У ILM FTN

ɻ Л Ъ **snmp-server enables mpls xc** ɻ Э ч TRAP ʗ Ω ў ≠ ɻ Л Ъ **snmp server enables mpls xc [xc-up] [xc-down]** è è TRAP ʗ Ω Â

LDP Trap Ь '

1. LDP ˬ UP Trapў ѫ LDP ˬ ɻ

2. LDP ˬ Down Trapў ѫ LDP ˬ ɻ

3. ѫ LDP ˬ Ӈ ц ӌ INIT˜ ˇ ɻ ɹ "
ḣ Ո ˆ ḣ a ɿ ˬ ɻ Trap

ɻ Л Ъ **snmp-server enables mpls ldp** ɻ Э LDP Ь TRAP ɻ ʗ Ω ў ≠ ɻ Л Ъ **snmp server enables mpls ldp [pv-limit] [sesseion-up] [session-down]** è è TRAP ʗ Ω Â

L3VPN Trap ЛЬЮ ύ

1. VRF Up DOWN Trap ˆ ˇ VRF ʗ Ω ʌ UP ˇ ѝ VRF ɣ Up ˇ ɻ VRF Up Trap ˇ VRF ʗ Ω ʌ Down VRF ʗ Ω ʌ ˇ ɻ VRF Down Trap

2. VRF Trap ˆ ˇ VRF VRF ї è ˇ ɻ VRF MidThreshExceed Trap ' VRF VRF ї ˇ ɻ VRF MaxThreshExceed Trap ' VRF ˇ ʓ ɻ VRF ʌ ʃ ЛЬЮ ў ɻ VRF MaxThreshCleared Trap ˇ VRF Â

ɻ Л Ъ **snmp-server enables mpls l3vpn** ɻ L3VPN ѽ TRAP ʗ Ω ў ≠ ɻ Л Ъ **snmp server enables mpls l3vpn [max-threshhold] [mid-threshhold][max-thresh-cleared] [vrf-up] [vrf-down]** è è TRAP ʗ Ω Â

ѽ MPS Trap ɻ ʗ Ω ў G **snmp-server host** Ъ ҳ Trap ў ѫ ў Trap Â

LDP Trap ɻ ʗ Ω

ѡ R

```
Ruijie(config)#snmp-server host 192.168.10.1
Ruijie(config)#snmp-server enable traps mpls ldp
```

ʗ Ω Ъ ҳ	Ъ ҳ	

	snmp-server host	Trap ...

...	
10.4(2)	

57.1.38 targeted-session holdtime

... keepalive ... no ... ...

targeted-session holdtime *seconds*

seconds	... 15-65535 ...

... LDP ... LDP ... 180 ... keepalive ... 60 ... LDP ... 1/3 ...

config-mpls-router

... LDP ... LDP ... LDP ...

... LDP ... 90 ...

```
Ruijie(config)# mpls router ldp
Ruijie(config-mpls-router)# targeted-session holdtime 90
```

...	
show mpls ldp parameters	VRF ... LDP ...

...	
-	-

57.1.39 traceroute mpls

ﻝ ﻝﻫ G mpls lsp traceroute ﻣ MPLS LSP ˘ LSP LSR Â

traceroute mpls ipv4 *ip-addressImask* [**timeout** *timeout*] [**ttl** *time-to-live*] [**source** *ip-address*] [**destination** *ip-address*] [**force-explicit-null**] [**reply mode** {**ipv4 | router-alert**}] [**flags fec**] [**verbose**]

ﻥ	
ip-address/mask	FEC IPv4 ﻑﺫ ﺱﻡ Ո
timeout *timeout*	(ﻝ) ˘ ﻯ ﺯ ﻝ ﻫ ﺗﻥ ﻯ 0-3600 Â
ttl *time-to-live*	(ﻝ) ﻝ TTL ﻫ˘ ﻯ 3ﺯ ﻝ ﻫ ﺗﻥ ﻯ 1-255 Â â ﻥ ﺱﺣ ﮊ ﻫ

```
Codes:'!' - success,'Q' - request not sent,'.'-timeout,
  'L'-labeled output interface,'B'-unlabeled output interface,
  'D'-DS Map mismatch,'F'-no FEC mapping,'f'-FEC mismatch,
  'M'-malformed request,'m'-unsupported tlvs,'N'-no label entry,
  'P'-no rx intf label prot,'p'-premature termination of LSP,
  'R'-transit router,'I'-unknown upstream index,
  'X'-unknown return code,'x'-return code 0
Type escape sequence to abort.
  0 10.3.0.8 MRU 1500 [Labels: 17 Exp: 0]
L 1 10.3.0.1 MRU 1504 [Labels: implicit-null Exp: 0] 624 ms
! 2 10.2.0.1 708 ms
```

ping mpls

ping mpls	MPLS LSP

10.4(2)	

57.1.40 transport-address

LDP

transport-address {interface | *ip-address* | *interface-name* **}**

no transport-address

interface	LDP IP
ip-address	LDP IP
interface-name	LDP IP

MPLS

ㅓ Л Ъ G **show mpls forwarding-table ilm vc** Ъ ᄀ

L2VPN ILM ㅓ Â

ㅓ Л Ъ G **show mpls forwarding-table ftn detail** Ъ ᄀ FTN ㅓ ᄋ Â

ㅓ Л Ъ G **show mpls forwarding-table ilm detail** Ъ ᄀ ILM ㅓ ᄋ Â

MPLS ㅓ ˇ ㅓ Л Ъ G ЮЪ ᄀ'

```
Ruijie# Show mpls forwarding-table
Label Operation Code:
PH--PUSH label
PP--POP label
SW--SWAP label
SP—-SWAP topmost label and push new label
DP—-DROP packet
PC—-POP label and continue lookup by IP or Label
PI--POP label and do ip lookup forward
PN--POP label and forward to nexthop
PM--POP label and do MAC lookup forward
PV--POP label and output to VC attach interface
IP--IP lookup forward
Local Outgoing OP FEC        Outgoing      Next Hop
laebl label                   interface
--    1025      PH 119.1.1.0/24(V)  Gi3/19    10.0.10.1
--    1026      PH 120.1.1.0/24     Gi3/18      10.0.2.1
--    imp-null   PH 130.1.1.0/24    Gi3/18      10.0.2.1
1025  1027      SP 100.1.1.0/24     Vl8           192.1.2.1
1026  1028      SW 120.1.2.0/24     Gi3/19       10.0.2.1
1027  imp-null   PP 121.1.1.0/24    Fa3/1        11.0.0.1
--    --        IP 167.168.195.0/24 Fa3/2        120.1.1.1
1028  --         PC 167.168.196.0/24 --           --
1029  --         PN 167.168.197.0/24(V) Vl4       1.0.0.1
1030  --         PI VRF(vpna)         --          --
1031  --         PV VC(20,1.1.1.1)    Vl5          --
--    1029       PH VC(20,1.1.1.1)    Vl10         192.1.2.1
1032  --         PI 192.1.1.0/24(V)  Vl101        172.2.1.2
1033  1030       SW 193.1.1.0/24(V)  Vl102        10.2.1.2
```

Local label: ILM FTN

Outgoing label: ILM FTN ILM FTN impl-null

OP: ILM FTN

PH	IP 3 **show mpls forwarding-table detail** imp-null imp-null
PP	MPLS 2
SW	MPLS
SP	MPLS **show mpls forwarding-table detail** 1 2
PN	MPLS
PI	MPLS IP
PC	MPLS MPLS IP IP
PM	MPLS MAC (VPLS)
PV	MPLS (VPWS)
IP	IP VRF IP PE VPN VRF VRF

DP	Ъu è ч m x

FEC' è ΰ Ъ₣ ч q'

1. ц FTN ^ ώ ˘ й ľ --ľ ~ ˘ IP FTN ѫ FEC IP ѕѫ ∩ ˘ л Э(V) FTN ц VRF FTN' VC FTN ѫ VC ID ∩ VC е IP Â
2. ц ILM ^ ѥ ώ ~ й IP ѓ ѫ FEC IP ѕѫ ∩ ˘ л Э(V) л ILM VRF ILM' й L3 VPN VRF ѓ ^ . VPN VRF ѓ ~ è ILM FEC VRF л ˘ Э R è VRF(vpna)' й VC ѓ FEC VC ID ∩ VC е IP' Э R è VC(20,1.1.1.1) Â

Outgoing interface' ч л˘ G л ΰ л Â

Next Hop ' ч ЮУ ѕѫ˘ ц ЮУ ѕѫ ч ľ -- ľ Â

Ю ч ѯ ə R '

```
Ruijie# show mpls forwarding-table summary
MPLS forwarding is ON
Enable count:1
ILM entrys:14
ILM changes:14
ILM failed changes :0
IP FTN entrys:0
IP FTN changes:4
IP FTN faild changes:0
L2 FTN entrys:0
L2 FTN changes:0
L2 FTN faild changes:0
In label packets:0
Out label packets:0
Send label packets:0
In ip packets:0
Out ip packets:0
Out ip statck packets:0
Forwarding packets:0
Fragment packets:0
Fragment error packets:0
Label error packets:0
Label failed packets:0
Ttl over packets:0
Buffer failed packets:0
```

Ip don't fragment packets:0
Other failed packets:0

...Ω...	...	
	-	-

...

... ...	...	
	-	-

57.2.2 show mpls label-pool

... ... G ... ... G ...

show mpls label-pool [*label_space*]

...	...	
	label_space	... label_space ... G ...

...

...

G ...

```
Ruijie# show mpls label-pool
label space: 0
label pool bucket size 512
min label 16, max label 1048575
label block used 2, free 2046
CLI:    0,    1    (Include label [16,1023], reserved)
LDP:    3,    4
```

...Ω...	...	
	label-switching	...

-	-

57.2.3 show mpls ldp bindings

LDP

```
      remote binding: from lsr: 10.20.10.10:0, label: imp-null
```

local binding	ﺳﯩ LSR FECᛙ ˧ ə̢ ˘ not in FIB ╗ ώᛙ ˧ ə̢ ʼ
remote binding	ÿ LDP ᴇ ᛙ ə̢ ˘ not in FIB ╗ ώᛙ ˧ ə̢ Â

ῖΩƕυ ʒ

ƕυ ʒ	
show mpls ldp neighbor	LDP ̤

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57.2.4 show mpls ldp discovery

VRF ƘO LDP ˧ ə̢ Â

show mpls ldp discovery [**all** | **vrf** *vrf-name*] [**detail**]

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all	VRF ƘO LDP ˧ ə̢
vrf *vrf-name*	VRF ƘO LDP ˧ ə̢
detail	LDP ˧ ə̢

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ώ VRF ƘO LDP ˧ ə̢ Â

```
Ruijie# show mpls ldp discovery
Default VRF:
 Local LDP Identifier:
```

```
8.8.8.8:0
Discovery Sources:
Interfaces:
   GigabitEthernet 2/1 (ldp): xmit/recv
      LDP Ident: 10.30.10.10:0
   GigabitEthernet 2/2 (ldp): xmit
Targeted Hellos:
   8.8.8.8 -> 10.5.0.1 (ldp): active, xmit
   8.8.8.8 -> 10.30.10.10 (ldp): active/passive, xmit
   2.2.2.2 -> 10.30.10.10 (ldp): passive, xmit/recv
      LDP Ident: 10.30.10.10:0
```

Local LDP Identifier	ݸ Ʊ LDP
Interfaces	LDP ˧ Ϡ ɘ ʺ
xmit	Ϡ ˧ LDP ˧ Hello
recv	Ϡ ᛙ LDP ˧ Hello
Targeted Hellos	targeted Hello ˧ ʺ
active	LSR ў ╟ ˧ targeted Hello
passive	LSR ў ╟ ˧ targeted Hello ˘ LSR ӥ ˧ Targeted Hello ɔ ݤ

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ƕꝩ	
show mpls ldp interface	ΰ LDP ╖ Ϡ ɘ
neighbor *ip-address*	… ldp ᴇ

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57.2.5 show mpls ldp interface

ΰ LDP ╖ Ϡ ɘ ˘ ˧ Ꮑ vrf Ю Ϡ˘ ≠ ˧ Ꮑ έ ᴇ Ϡ Â

show mpls ldp interface [**all** | **vrf** *vrf-name* | *interface-name*]

参数	描述
all	显示所有 VRF 下的 LDP 邻居
vrf *vrf-name*	显示指定 VRF 下的 LDP 邻居
interface-name	显示与指定接口相连的邻居

命令模式

特权模式

使用指南

当邻居状态为 up/down 时，可以通过该命令查看邻居所在的 VRF。

配置举例

显示所有 VRF 下的 LDP 邻居

```
Ruijie# show mpls ldp interface
Default VRF:
Interface              Operational    Status
GigabitEthernet 2/1    Yes            UP
GigabitEthernet 2/2    No             DOWN
GigabitEthernet 2/3    Yes            UP
```

字段	描述
Operational	邻居是否已经建立 LDP
Status	邻居状态

显示信息

显示信息	描述
-	-

告警信息

告警信息	描述
-	-

57.2.6 show mpls ldp neighbor

命令作用

显示 VRF 下 LDP 邻居的详细信息

命令格式

show mpls ldp neighbor [**all** | **vrf** *vrf-name*] [**detail**]

...

...	...
-	-

57.2.7 show mpls ldp parameters

VRF ... LDP ... Â

show mpls ldp parameters [**all** | **vrf** *vrf-name*]

...	...
all	VRF ... LDP ...
vrf *vrf-name*	VRF ... LDP ...

...

...

G ... LSR ID ... transport-address ... hello ... keepalibe ... VRF ... VRF ... LDP ... Â

... VRF ... LDP ... Â

```
Ruijie# show mpls ldp parameters
Default VRF:
  Protocol version: 1
    Ldp Router ID: 1.1.1.1
    Control Mode: INDEPENDENT
    Propogate Release: FALSE
    Label Merge: TRUE
    Label Retention Mode: LIBERAL
    Loop Detection Mode: off
    Targeted Session Keepalive HoldTime/Interval: 180/60 sec
    Targeted Hello HoldTime/Interval: 45/5 sec
    LDP initial/maximum backoff: 15/120 sec
```

...	...	...

ldp router-id	ldp router-id
lsp-control-mode	LDP
ldp-label-retention-mode	
propagate-release	
label-merge	
loop-detection	

-	-

57.2.8 show mpls summary

MPLS

show mpls summary

-	-

MPLS

```
Ruijie# show mpls summary
                                                    0

                                                    :16                :1048575
                                                    :
                                                    :
                                                    4/1        0
                                                    4/2        0
                                                    2
```

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label-switching	Ᏼ

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58 BGP/MPLS L3 VPN

58.1

58.1.1 address-family ipv4 vrf

ώˆ ˜ VRF ѫ ϕ ˇ Л υ ғ э VRF ə ц Ц ╖ Â

[**no**] **address-family ipv4 vrf** *vrf_name*

¶		
¶	*vrf_name*	VRF ɻ
	ϙ ЮO ⊮ VRF ѫ ϕ Â	
ħυ ϡ	Router	
G	¯ ħυ ϡ ˆ ˜ PE Л CE ʒ ə ц Â ѡ BGP ˇ ɻ Л υ G ħυ ϡ **exit-address-family** Â	
ѡ R	`Ruijie(config)# router bgp 100` `Ruijie(config-router)# address-family ipv4 vrf vrf1`	

˝Ωħυ ϡ	ħυ ϡ	
	neighbor activate	э ѫ ϕ
	exit-address-family	

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58.1.2 address-family vpnv4

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[**no**] **address-family vpnv4** [**unicast**]

৭	
unicast	´ ѫ ѣ ѭ Â

	ą ⊮ vpn ѫ ѣ Â
ћu ҳ	Router
G	G ћu ҳ ї PE ӟ VPN ə Ꮋ ц˘ ώ῾ **address-family VPN** ѫ ѣ Â G **exit-address-family** ћu ҳ **address-family VPN** Â
w R	`Ruijie(config)# router bgp 100` `Ruijie(config-router)# address-family vpnv4`

˜Ωћu ҳ	**ћu ҳ**	
	neighbor activate	Э ѫ ѣ
	exit-address-family	

৶	
ћu ҳ ˥ ৶	

ћu ҳ ˥ ৶	**/৷**	
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58.1.3 bgp default route-target filter

ћu ҳ **bgp default route-target filter** ŭ BGP ╟ route-target ╖ Â ћu ҳ **no bgp default route-target filter** ˜Ω BGP ╟ route-target ╖ Â

bgp default route-target filter

no bgp default route-target filter

৭	৭	
	-	-

	ŭ BGP ╟ route-target ╖ Â
ћu ҳ	BGP

ϙ ЮЎ PE ϱ è ы PE ASBR˜ ч VPN ˘ VPN a˛
Э˙ ¡ У э VRF ώ˘ PE Â ů **no bgp default**
route-target filter˘ PE ˛ ч è ы PE ASBR˜ ч VPN ˘ a
ѕѕ VRF ї˛ ώ VPN Â

ħυ ϩ У ɣ ѕѕ VPN OptionB è˘ ɣ ASBR Э VRF˘ л
ASBR ч ɖ VPN ˆ è ы PE ASBR˜ ˘ Л **no bgp default**
route-target filter ч Л ϱ Â

G BGP е з VPN ≠ϱ ч ˘ Ѧ ч ˘
Ы ч ɖ Ы ч VPN ˘ ч˛
ů ħυ ϩ Л ϱ VPN Â **clear ip bgp** ħυ ϩ
Æ Ո BGP е ˛ ˘ Ո BGP е Ӈ ц VPN ˘
~ ᾱ ї ч VPN Â
R Ы ₡ ů

ipv4 unicast	ipv4 ´ ˛
in	a ╗ ϒ **soft˘** Æ E ў ╟ ˛ Â
out	a ╗ ϒ **soft˘** Æ BGP speaker ў ╟ ˛ Â
soft	Æ˘ Ո E Ч ə Æ Â
soft in	Æ˘ ə Æ Â
soft out	Æ˘ ϯ Ч ə Æ Â

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G ħυ ϡ Æ ϰ vrf è ˜ BGP˛ Â

w R `Ruijie# clear ip bgp vrf my-vrf in`

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58.1.5 alloc-label

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[**no**] **alloc-label** {**per-vrf** | **per-route**}

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per-vrf	ə VPNϯ У ə
per-route	VPN ϯ У ə

α G VRFϯ Â

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VRF Â

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æ RFC4364 è Ў ŒæL3VPN è 2 † ' ѫ ɣ † Ո ѫ ɣ VRF† Â ɱ У э ˘ ˙ ⅃ Л υ ḣ ILM ⅃† ЮУ ˘ ⅃ ˘ è ILM Â ⅄ э VRF У э ˘ ˙ VRF ϊ Ѽ ˘ ˜ Œ ILM Â è ⅃ ɱ У ¸ æ У Ҫ ˜ ϡ и ⅃ 2 ' У ILM † æ VRF˜ ⅄ Ѧæ VRF è IP ⅃ ⅄ Â

w R

R VPNA G † ˘ ѫ ⅃ Л υ G ЮħυϡÂ

```
Ruijie(config)# ip vrf VPNA
Ruijie(config-vrf)# alloc-label per-route
```

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-	-

⅄

extcommunity ч ‡ Â

ш R ᴿ ᵌ VPNA ɷ У э ˜Ω rma ᵵ ᴇ Â ᵡ ⅃ Л ᵁ ᴳ ЮћU ҳ Â

```
Ruijie(config)# ip vrf VPNA
Ruijie(config-vrf)# export map rma
```

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route-target	ћᵡ VRF ώ Ո RT

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58.1.7 exit address-family

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exit address-family

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```
Ruijie(config)# router bgp 100
Ruijie(config-router)# address-family vpnv4 unicast
Ruijie(config-router-af)# exit address-family
```

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58.1.8 import map

G ћu ҳ ج ʃ ⊣ VPN ώʃ ىس VRF ‡ Â

[**no**] **import map** *routemap-name*

٩	
٩/	
routemap-name	ٌΩ RouteMap ‡
	⊮ ώ ‡ Â
ћu ҳ	VRF
G	ώʃ ىس VRF Ạ˘ ⊣ ՄЈ ٌΩ في è ⊮ ‡ Â **Import map** ⊮ ‡ ج VRF è ⊮ ώ ڍ E ⁄ Â≠ ÿ VPN ⊣ ¢ VRF ЮG ћu ҳ **route-target** **import** ⊮ ڍ E ⁄ Ạ ώ **import map** ⊮ ‡ Ạ Â ⁄ń ћu ҳ ٌΩ في ⊣ **match ip address** Ո **match extcommunity** ч ‡ Â

ѡ R	R ج VPNA ¢ У э ٌΩ rma ώ Â ⊼ ⊣ ՄG ЮћU ҳ Â
	`Ruijie(config)# ip vrf VPNA`
	`Ruijie(config-vrf)# import map rma`

ٌΩћu ҳ		
ћu ҳ		
route-target	⊮ VRF ώ Ո RT	

⊿

ћu ҳ ٦ ⊿	
⁄/	
10.4(2)	

58.1.9 ip extcommunity-list

ћu ҳ ⊮ Route Map è ڍ E " ˘ ٌΩ " Route Map

ح BGP/MPLS VPN è ⁸ VPN Â ᴳ ħυ ϗ no ħυ ϗ
ĩ ڊ ᴇ " Â

ip extcommunity-list {*expanded-list* **| expanded** *list-name* **} {permit | deny}** *[regular-expression]*

ip extcommunity-list {*standard-list* **| standard** *list-name* **} {permit | deny} [rt** *value***] [soo** *value***]**

no ip extcommunity-list {*expanded-list* **| expanded** *list-name* **|** *standard-list* **| standard** *list-name* **}**

ᴳ ɻ … ڊ ᴇ " ˘ ⊿ Ʌυ ώ **ip extcommunity-list** ˘
ħυ ϗ **no** ĩ " Â

ip extcommunity-list {*expanded-list* **| expanded** *list-name*

| *standard-list* **| standard** *list-name* **}**

no ip extcommunity-list {*expanded-list* **| expanded** *list-name*

| *standard-list* **| standard** *list-name***}**

Expanded ip extcommunity-list Ю ħυ ϗ '

[no] [*sequence-number***]deny** *regular-expression*

[no] [*sequence-number***] permit** *regular-expression*

exit

Standard ip extcommunity-list Ю ħυ ϗ '

[no] [*sequence-number***] deny {**[**rt** *value*] [**soo** *value*]**}**

[no] [*sequence-number***] permit {**[**rt** *value*] [**soo** *value*]**}**

exit

⊀	⊀	
	expand-list	⊿ ḣ نت[100~199]˜ extcommunity " ˘ У э extcommunity " ⊿ ↑ ΰ э ‡
	standard-list	⊿ ḣ نت[1~99]˜ ñ extcommunity " ˘ У э extcommunity ⊿ Ʌυ ↑ ΰ э ‡
	expanded *list-name*	extcommunity ɻ ˘ ᴳ ⊀ ώ ڊ ᴇ " Â ɻ a 32 э

standard *list-name*	ñ extcommunity ɻ ˘ ñ extcommunity ɻ ˘ G ϟ ώ ڍ E " Â ɻ a 32 ə
permit	ⱻ У ə ï extcommunity ‡
deny	ⱻ У ə extcommunity ‡
regular-expression	ˆ ɻ ~ ⱻ ϗ ˘ ϗ extcommunity
sequence-number	ˆ ɻ ~ ⱻ ‡ " ʌ˘ ىت ÿ 1ʲ 2147483647 Â a ˘ ϙ Ю ╗ У ə ‡ è " ʌ ╟Ո 10 ˘ ÿ 10 ʌ Â
rt	ˆ ɻ ~ RT ḣ˘ ħυ ϗ ϟ ﺝ ñ extcommunity ˘ a ɣ extcommunity
soo	ˆ ɻ ~ SOO ḣ˘ ħυ ϗ ϟ ﺝ ñ extcommunity ˘ a ɣ extcommunity
value	RT SOO ḣ

ⱻ ڍ E " ‡ Â

ħυ ϗ

ώ

ip extcommunity-list

ip extcommunity-list ħυ ϗ … У ə ő ə extcommunity ḣ extcommunity ‡ " ˘ ў ɣ RouteMap **match extcommunity** ‡˘ ϗ BGP ڍ E ÿ ʲ Â

ɣ extcommunity ‡ ⱻ˘ è *regular-expression* ‡ Ю'

	ʌ	ⱻ
ϟ ʌ	.	ϗ ˙ ´
ʌ	*	ϗ s è ə ˙ "
╗ ʌ	+	ϗ s è У ə ˙ "
ʌ	?	ϗ s è ə У ə ʌ
╗ ʌ	^	ϗ s
ĩ ʌ	$	ϗ s
Ю ,	_	ϗ ʌ à ʌ à s Ո à
ʌ	[]	ϗ У ىت è ´ ə

G

ħ ip extcommunity-list'

```
Ruijie(config)# ip extcommunity-list 1 permit rt 100' 1
Ruijie(config)# ip extcommunity-list standard aaa permit rt
100' 2
Ruijie(config)# ip extcommunity-list expanded ext1 permit 200'
[0~9][0~9]
```

ip extcommunity G '

```
Ruijie(config)# route-map rt_in_filter
Ruijie(config-route-map)# match extcommunity 1
Ruijie(config-route-map)# match extcommunity ext1
Ruijie(config)# router bgp 100
Ruijie(config-router)# address-family vpn
Ruijie(config-router-af)#neighbor    3.3.3.3
```

ϖ **no ip route static inter-vrf** ϗ vrf a Â
ϗ ╟ vrf ˘ Ą ˘ . ɹ Ю ϑ ˘ ī vrf
G Â

*Aug 7 10:58:34: %NSM-6-ROUTESACROSSVRF: **Un-installing route** [*x.x.x.x/8*] **from global routing table with outgoing interface** *x/x.*

ѡ R

```
Ruijie(config)# no ip route static inter-vrf
```

ΐΩħυ ϩ

ħυ ϩ	
-	-

ϡ

ħυ ϩ ϒ ϡ

ϡ	
-	-

58.1.11 ip route vrf

ϋ VRF … У э ˘ ī ‡ no ħυ ϩ

[**no**] **ip route vrf** *vrf_name ip_addr mask interface next-hop-address* [**global**]

ϡ

ϡ	
vrf_name	VRF ɻ
ip_addr	ѕѧѣ ѭ
mask	ѕѧѣ ѭ
interface	ѕѧѣ ϡ
next_hop	ѕѧѣ Ю У
global	Ю У ϥ ώ VRF

Â

ħυ ϩ ώ

G ϡ ϡ Л ϋ ĵ è ы vrf ϡ˘ ÿ VRF ˘ ϖ global
ϡ ˘ ϗ ϋ ĵ ώ VRF Â п ϡ Ո global ϡ ϡ ϖ˘
ϡ ϡ a ώ vrf ϙ ˘ ϗ Л ϡ ϑ vrf ϋ ђ Â

	~ ¢ global ÿ ⁞ ŏ VRF ˘ a ↓ no ip route static inter-vrf ⁸ Â

w R

```
Ruijie(config)# ip route vrf vrf1 10.10.10.0 255.255.255.0 gi3/1
192.168.18.1
```

ΩĦυ ३

ħυ ३	
-	-

↓

58.1.12 ip vrf

G ђ ҙ … ^ ‖ ~ У э VRF

[**no**] **ip vrf** *vrf_name*

VRF a ٨ Â

ħυ ϡ ٨

G

w R

```
Ruijie(config)# int eth1
Ruijie(config-if)# ip vrf forwarding vrf1
```

ˆΩħυ ϡ

ħυ ϡ	
ip vrf	… У ə VRF R
show ip vrf	VRF ə٩

ى

ħυ ϡ ٦ ى

٨	
-	-

58.1.14 match extcommunity

G ħυ ϡ ħ BGP ڀ E " ٦ ‡ˇ ħυ ϡ جھ في
Ю Â G **no match extcommunity** ħυ ϡ ى Â

match extcommunity *{standard-list-number|standard-list-name*

|expanded-list-num|expanded-list-name}

no match extcommunity *{standard-list-number|standard-list-name|*

expanded-list-num|expanded-list-name}

٨

٨	
standard-list-number	ى ḣ تن[1~99] ḣ idˊ ñ extcommunity ˇ У ə extcommunity ى Л∪ ↑ ΰ ə excommunity ḣ
standard-list-name	ñ extcommunity ى ˇ ñ extcommunity ى ˇ У ə extcommunity ى Л∪ ↑ ΰ ə extcommunity ḣ

expanded-list-num	↓ ḣ نت[100~199]˜ id˜ extcommunity ˘ У э extcommunity ↓Лυ ↑ ΰ э excommunity ḣ
expanded-list-name	extcommunity ↓ ˘ extcommunity ↓ ˘ У э extcommunity ↓Лυ ↑ ΰ э extcommunity ḣ

ąЮ˘ ˜Ω في è ⊮ ‡ Â

ħυ ϩ في

ڀ E ϩ ˚ في ў جم Ю ч ą'

1 à **import map** ħυ ϩ ˜Ω في è˘ ¯ RT ώ˙ VRF

2 à **neighbor route-map in** Ո **neighbor route-map out** ħυ ϩ ˜Ω في è˘ ħυ ϩ جم BGP VPNv4 فخ سم Ю ˘ ¯ RT ˙ ⋮ ÿ BGP E ↓ BGP E VPNv4 Â

1. ⊮ ч э extcommunity

```
Ruijie(config)# ip extcommunity-list 1 permit rt 100′ 1
Ruijie(config)# ip extcommunity-list 1 permit rt 100′ 2
```

2.جم في è ⊮ match ‡

```
Ruijie(config)# route-map rt
Ruijie(config-route-map)# match extcommunity 1
```

3. G في

```
Ruijie(config)# router bgp 100
Ruijie(config-router)# address-family vpnv4
Ruijie(config-router-af)# neighbor 3.3.3.3 route-map rt in
```

˜Ωħυ ϩ

ħυ ϩ	
ip extcommunity-list	… extcommunity " ḣ
show ip extcommunity-list	extcommunity " ḣ

↓

ħυ ҳ ٦ ⊿	/ſ	
	10.4(2)-	-

58.1.15 match mpls-label

BGP ÿ E ˘ ⊿ſυ G ħυ ҳ ⊮ ⊼ في ˚ ˘ ٦
Â G **no match mpls-label** ħυ ҳ ⊿ ╖ Â

match mpls-label

neighbor send-label	BGP ε ڏ Ꮋ MPLS ╗
neighbor route-map out	BGP ↳ ε
neighbor route-map in	BGP ÿ ε
set mpls-label	ѝ ف ˚ ǂ MPLS У ↳

ﻝ

ħυ ҳ ٦ ﻝ	
10.4(2)	

58.1.16 maximum routes

⁸ VRF ᾳ ˘ no ٩ ħυ ҳ ɣ ﻝ ⁸

maximum routes *limit* {**warn-threshold** | **warning-only**}

no maximum routes

٩	
limit	⁸ ˘ ⁸ ﻝ ˘ a ῆ ώ ˘ ↳ ḣ تن<1-4294967295>
warn-threshold	. ˆ ˘ ǀ ə ǂ ﻝ . ˆ ˘ ↳ ḣ تن<1-100>
warning-only	ǀ ⁸ ﻝ˘ Θ . ˆ ˘ ÿ ї ╕ǀ

⁸

ħυ ҳ	VRF

G ħυ ҳ ɣ ⁸ VRF

ΐΩħυ ϡ	ħυ ϡ	
	-	-

58.1.17 neighbor activate

ƫυ ȝ ج ɱ سم فخ Ю е Â G ƫυ ȝ no ل Лυ
ḣ Â

neighbor {*peer-address* | *peer-group-name*} **activate**

no neighbor {*peer-address* | *peer-group-name*} **activate**

٩		
٩	*peer-address*	е سم فخ ˘ ɔ سم فخ ل IPv4 سم فخ ˘ ≠ ل IPv6 سم فخ
	peer-group-name	е ɻ ˘ е ɻ a 32 Â

سم فخ ipv4 Ю Â

ƫυ ȝ

BGP ’
BGP IPv4 سم فخ ’
BGP IPv6 سم فخ ’
BGP IPv4 VRF ’
BGP VPNv4 سم فخ Â

G

ɣ ipv4 سم فخ ɔ ƫυ ȝ ˘ ɣ ɛ ىا سم فخ صر ˘ ƫυ ȝ
ə Ɥ Â

w R

```
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
```

ˇΩƫυ ȝ

ƫυ ȝ	
router bgp	BGP ˜
neighbor remote-as	BGP е

ل

ƫυ ȝ ٦ ل

٨	
-	-

58.1.18 neighbor allowas-in

PE ˘ G ħυ ३ PE ï ↑ ΰ έ Ո PE AS /ſ Â G ħυ ३
no ↓ ï έ AS /ſ Â

neighbor {*peer-address* | *peer-group-name*} **allowas-in** *number*

no neighbor {[*peer-address* | *peer-group-name*} **allowas-in**

ſ	
peer-address	E فخ سه
peer-group-name	E ﻝ ' E ﻝ a 32 Â
number	ï AS /ſ ' ḣ ṅ ƺ ↓ ḣ تن ج [1˘ 10] Â

allowas-in ╖ Â

ħυ ३

BGP VPN فخ سه '
BGP IPv4 VRF فخ سه Â

G

ṅ ص ج spoke_hub ص è˘ ج PE Э ħυ ३˘ G PE ↓ Л υ Ä Ą ↓
˜ سه فخ ṅſ Â ج PE Э ч ə vrf è è У ə vrf PE ą ˘
˜ CE˘ ↓ У ə vrf CE ˜ ą ˘ ﻝ PE ˜ Â
ج IBGP E EBGP E ↓ Л υ Â

w R

```
Ruijie(config)# router bgp 60
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 allowas-in
```

˝Ωħυ ३

ħυ ३	
router bgp	BGP ˜
neighbor remote-as	BGP E

↓

ħυ ३ ˥ ↓

/ſ	
-	-

58.1.19 neighbor as-override

ᴳ ħυ ҳ PE У э AS ʎ Âᴳ ħυ ҳ no ⅃Л ḣ Â

neighbor {*peer-address* | *peer-group-name*} **as-override**

no neighbor {*peer-address* | *peer-group-name*} **as-override**

ʎ	
peer-address	E ѫ
peer-group-name	E ⅃ ' E ⅃ a 32 Â

as-override ╖ Â

ħυ ҳ BGP IPv4 VRF ѫ Â

G ąЮ˘ BGP ˜ a¸ é Ո ѭ ⅃ AS ʎ ą ˘ ᴳ ħυ ҳ ⅃ Л AS ʎ˘ ᴳ BGP ˜ ⅃Л ÿ ⅃ AS ʎ· ą Â
ѫ vpn è˘ ή ص ѫ ц ч э CE é ⅃ AS ʎ˘ ѫ ąЮ˘ ч э CE ╕ ą ˘ ѫ PE Э Э ħυ ҳ ʌ˘ ⅃Л PE CE AS ʎ˘ ᴳ ʌ У CE ⅃Л ą Â
⅃ EBGP E ╖ Â

```
Ruijie(config)# router bgp 60
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
```

ш ᴿ

EBGP . . $ - . . . . .

ħυ ҳ ӣ е( ) ۱ Â G ħυ ҳ no ۷ Л۵ ۷ Â

neighbor {*peer-address* | *peer-group-name*} **description** *text*

no neighbor {*peer-address* | *peer-group-name*} **description**

۹

۹	
peer-address	е فخ سم
peer-group-name	е ۶ е ۶ a 32
text	е( ) تن' 80 ə

╖ Â

ħυ ҳ

BGP

BGP IPV4 vrf فخ سم

G

ħυ ҳ ӣ е^ ~ ╖ Â ۷ Л۵ ╠ ъ е^ ~ Ո Â

ш R

```
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
```

no neighbor {*peer-address* | *peer-group-name*} **next-hop-self**

ϥ

ϥ	
peer-address	E فخ سم
peer-group-name	E ل E ل a 32
next-hop-self	ل BGP E ل ˘ ЮУ ѝ

ϙ ЮЎ ل IBGP E ل a ل ЮУ

ħυ ϩ

BGP

BGP IPV4 فخ سم

BGP VPN فخ سم

G

ħυ ϩ ل Eˆ ˜ ل ˘ g ЮУ ѝ Â

جم ش VPN OptionB è˘ ل ЮУ ˘ جم BGP VPN سم

فخ è ħυ ϩ

w R

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# address-family vpnv4
Ruijie(config-router-af)# neighbor 10.1.1.1 next-hop-self
```

ЎΩħυ ϩ

ħυ ϩ	
router bgp	BGP ˜
neighbor remote-as	BGP E ( )

ϡ

ħυ ϩ ϒ ϡ

Ϡ	
10.4(2)	

58.1.22 neighbor next-hop-unchanged

ħυ ϩ ل E ( ) ل a g ЮУ ϙ ÂG ħυ ϩ **no** ل Ѧ υ ل Â

neighbor {*peer-address* | *peer-group-name*} **next-hop-unchanged**

no neighbor {*peer-address* | *peer-group-name*} **next-hop-unchanged**

۹	۹	
	peer-address	E فذ سم

58.1.23 neighbor remote-as

ħu ҳ BGP ɛ ( ) Â ᴳ ħu ҳ no ᶘ ɛ ( ) Â

neighbor {*peer-address* | *peer-group-name*} **remote-as** *as-number*

no neighbor {*peer-address* | *peer-group-name*} **remote-as** *as-number*

٩	
peer-address	ɛ سم فخ ˇ ɔ سم فخ ل IPv4 سم فخ ˇ ≠ ل IPv6 سم فخ
peer-group-name	ɛ ﻝ ɛ ﻝ a 32

ћu ҙ б е^ ~ ӡ Ӈ ц MPLS IPV4 ˇ G
no neighbor send-label ћu ҙ ӈ ╖ Â

neighbor {*peer-address* | *peer-group-name*} **send-label**

no neighbor {*peer-address* | *peer-group-name*} **send-label**

ӈ

ӈ	
peer-address	е ѕѧ ѳ
peer-group-name	е ӌ е ӌ a 32
send-label	ӌ BGP е^ ~ ч IPV4

ą ЮЎ a ӌ BGP е ч Â

ћu ҙ

BGP

BGP IPv4 ѕѧ ѳ

ћu ҙ б е ӡ Ӈ MPLS IPv4 Â ѫ ѕѧ
Ж Ո Ж ћu ҙ Â BGP ˬ ˇ ѫ BGP ˬ
Ў Â

G

ѫ IGBP ˬ Э й IPv4 ѓ ч ╖ G
neighbor *{peer-address|peer-group_name}* **update-source**
loopback *id* ћu ҙ BGP ˬ ѕѧ ѳ й loopback ѕѧ ѳ ˇ ї ‡ ћu
ҙ a ї Â ҷ й ӄ ѕѧ ѳ ṁ й ѕѧ ѳ ˇ ɣ
P ≠ й è ӄ ˇ LDP ≠ ˬ ӌ Э
ѓ ч Ӡ ˬ LSP ѫ P ѽ ˇ a ѫ PE
Э Â Л Ъ G loopback ѕѧ ѳ ^ 32 Æ ~ PE
ˇ ԛ LSP ӄ ѫ PE Э Â ɣ EBGP ˬ a
~ loopback ѕѧ ѳ ˇ ӌ Л Ъ G ӄ ѕѧ ѳ ṁ й EBGP ˬ ѕѧ ѳ ˇ
ҷ й ɣ ѽ BGP ^ IPv4 VPN
Ғ ~ ´ EBGP ˬ ˇ MP-BGP ~ ˬ
╟ У ѓ ӄ ̣ EBGP ѕѧ ѳ ~ 32 Æ ў
ˇ ȯ ў ѕѧ ѳ è Л G LSP ṁ ˇ
LDP й EBGP ѕѧ ѳ ў ӌ è Э ѓ ч a ˬ
й ≠ ӄ ӌ Э ѓ ч 3 ѽ Â
G BGP ṁ й ѓ ч ~ ˇ ӌ ѫ MPLS
ч ӄ Э G **label-switching** ћu ҙ ӄ ч Ғ Â

б е 10.0.0.1 Ӈ MPLS IPv4 Â

```
Ruijie (config) # router bgp 65500
Ruijie (config-router)# neighbor 10.0.0.1 remote-as 65501
Ruijie (config-router)# neighbor 10.0.0.1 update-source loopback 0
Ruijie (config-router)# neighbor 10.0.0.1 send-label
```

ħυ ϡ	
neighbor route-map in	BGP ÿ е
neighbor route-map out	BGP ϟ е
label-switching	ϰ ϟ ϝ
match mpls-label	϶ ˚ ϩ ي è ϶ ϩ MPLS
set mpls-label	ϳ ي ˚ ϯ MPLS У ϟ

ћu ҳ

BGP ’

BGP IPv4 ффф ’

BGP IPv6 ффф ’

BGP IPv4 VRF Â

G

G ћu ҳ ЎΩ ⊿ E( ) ˘ ĵ ЎΩ ə Âת
ћu ҳ Ÿ ɗ E( ) ə Â
ɷ BGP E ˘ ѫ E ˜ ћu ҳ ˘ ת
ѝ E э ˜ ћu ҳ˘ è ѡ ¥ E Â

w R

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.0.0.1 shutdown
```

ЎΩћu ҳ

ћu ҳ	
router bgp	BGP ˜
neighbor remote-as	BGP E
show ip bgp summary	BGP

⊿

ћu ҳ ˥ ⊿

⊿	
-	-

58.1.26 neighbor soo

G ћu ҳ ľ Ŀ ḣ˘ G no ћu ҳ ⊿ ľ Ŀ ḣ ə

soo-value	soo ḣ soo_value ↲Ⲗυ ч a ↲ ↰ ' ˆ 1˜ soo_value, as_num' nn an_num Ὼ Ὼ ѩ /ˇ nn Ⱶ ˆ 2˜ soo_value , ip_addr' nn ip_addr ѳ ѫ ώ IP ѳ ѫ ˇ nn Ⱶ

soo ╖ Â

ħυ ϡ BGP IPv4VRF ѳ ѫ Â

G ѭ CE ↰ ѕ è˘ ħυ ϡ ↲Ⲗυ ÿ CE ↰ PE ˛ ↰ ˛ CE Â

ѡ R

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family ipv4 vrf vpn1
Ruijie(config-router-af)# neighbor 10.0.0.1 remote-as 100
Ruijie(config-router-af)# neighbor 10.0.0.1 soo 100:100
```

ʹΩħυ ϡ

ħυ ϡ	
router bgp	BGP ˜

↲

ħυ ϡ ˥ ↲

/↰	
-	-

58.1.27 rd

ӀѪ VRF rd ḣ

rd *rd_value*

۹	
rd_value	RD ḣ

ą ӀО RD ḣ˘ G RD ḣ ѝ 0:0. Â

ħυ ҳ VRF

G ӀѪ ą э VRF˘ з ѝ ʒ ą RD ḣ˘ ╕ g RD ḣ Â g RD ḣ˘ ۷ vrf ″I┆ ˘ ۸ ″Ą ѝ ʒ RD ḣ Â
У э VRF ۷ У э RD ḣ˘ a ѝ ʒ ӀѪ э RD ḣ Â

w R
```
Ruijie(config)# ip vrf vrf1
Ruijie(config-vrf)#
```

E34 0f295C1Tf345.1465 0 Td<40f295C1Tf345.14 8.54
Ô þ

У э

protocol-type	ɬ ɻ ˜ ص˘ ɱ ЛЬЮ ΰ ' connected à static à rip
route-map *map-tag*	ʗΩ **route-map** ɻ ' ʗΩ **route-map**
metric *metric-value*	ɬ ɻ metric ḣ Â a ḣ

ɬ ɻ Â

ħu ʒ

BGP '

BGP IPv4 ففسم '

BGP IPv6 ففسم '

BGP IPv4 VRF Â

ң ḏ ɷ ə ˜ ˘ ɻ ə ˜ ʓ̌ ʯ ɻ ɔ У ə ḍ̈ Â
ج ɻ У ə ˜ ˘ У ə ˜ ə ɬ ɻ↑ ɻ У ə ˜
Â IP ˜ Â

&	no ħu ʒ Ạ˘ ٧ ˘ з ٧ ˘ no ٧ Â ج ٧ Ạ˘ redistribute ə no Â

~	ɣ metric ḣ˘ ″I ٧ ḣ route-map ˘ ج route-map è ˘ G route-map ɻ ḣ' route-map è ə ḣ˘ metric ɷ ˘ G metric ḣ' ч ˘ G ɬ ɻ Э ḣ Â

```
Ruijie(config-router)# redistribute static route-map static-rmap
Ruijie(config-router)# no redistribute static route-map
static-rmap
Ruijie(config-router)# no redistribute static
```

ħu ʒ	
show ip protocols	˜ ώ ə

/ا	
-	-

58.1.29 redistribute ospf

ŕ ч ћu ҳ˘ ч Л∪ OSPF ˜ ą Ո BGP Ӟ ŕ ч˘ ћu ҳ
no ч Л∪ ╗ ч è ч Â

redistribute ospf *process-id* [**route-map** *map-tag*] [**metric** *metric-value*] [**match internal external** [**1**|**2**] **nssa-external** [**1**|**2**]]

no redistribute ospf *process-id* [**route-map** *map-tag*] [**metric** *metric-value*] [**match** {**internal**|**external** [**1**|**2**]|**nssa-external** [**1**|**2**]}]

ч

ч	
process-id	ŕ ч OSPF ˜ л Â
route-map *map-tag*	˜Ω **route-map** ɻ ’ ˜Ω **route-map**
metric *metric-value*	ŕ ч metric ḣ’ a ḣ
match	ך OSPF ص
internal	OSPF internal ص ˘ ŷ ŕ ч ospf match Â
external [**1**|**2**]	OSPF external ص ˘ ч Л∪ έ е ص 1 ص 2˘ a ˘ ↑ ص 1 Ո ص 2 Â
nssa-external [**1**|**2**]	OSPF nssa-external ص ˘ ч Л∪ έ е ص 1 ص 2˘ a ˘ ↑ ص 1 Ո ص 2 Â

ŕ ч OSPF Â

ћu ҳ

BGP ’
BGP IPv4 فخ سم ’
BGP IPv6 فخ سم ’
BGP IPv4 VRF Â

G

ң ҏ ҁ э ˜ ˘ л э ˜ Ӟ ҭ л ɔ У э ӫ Â
ج ɻ У э ˜ ˘ У э ˜ ą ŕ ŕ л У э ˜ Â

&	**no** ћu ҳ Ą˘ ч ˘ з ч ˘ no ч Â ج ч Ą˘ redistribute э no Â ص ŵ ŕ Ą˘ ص ҁ Â

~	¥ OSPF ‡ ' ″I match OSPF صر ˘ ڑ ⁄ ″Ą route-map ‡ Â ¥ metric ḣ˘ ″I ƚ ↰ Э metric ḣ route-map ˘ ج route-map è ˘ G route-map ⁄ ḣ’ route-map è ˘ metric ⍺ ˘ G metric ḣ’ ч ˘ G ƚ ↰ Э ḣ Â

w R

```
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
```

g Ո ϟ VPN v4 Â

set extcommunity rt ħυ ϗ **additive** ϡ ˘ ‡ ħυ ϗ˛ RT ħ ϗ ϟ ħ˘ ╗ **additive** ϡ ˘ ‡ ح ϟ ϣ Э ╗ RT ħ Â

set extcommunity soo ħυ ϗ˘ BGP ϟ ″I ϑ E " è soo ˘ ╗ Э soo ' BGP ϟ ″I ϑ E " è soo ˘ ‡ soo ħ soo ħ Â

ψ R

```
Ruijie(config)# route-map set-rt
Ruijie(config-route-map)# set extcommunity rt 100′ 1  200′ 1
Ruijie(config-route-map)# exit
Ruijie(config)# ip vrf vrf1
Ruijie(config-vrf)# export map set-rt
```

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match extcommunity	ϓ ϑ E

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ħυ ϗ ϒ ϟ

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10.4(2)	

58.1.32 set mpls-label

ϟ BGP E ϟ ˘ ϰ ي ˚ ϱ MPLS У ϟ ˘ ϟ G ي Ю **set mpls-label** ħυ ϗ ÂG **no set mpls-label** ħυ ϗ ϟ ╗ Â

set mpls-label

no set mpls-label

ϡ

ϡ	
-	-

ħυ ϗ Θ ϶ **neighbor route-map out** ħυ ϗ è ΐΩ في è Â ħυ ϗ **neighbor route-map out** ϶ BGP è ⊿ BGP ε ∤ IPv4 ⊿ Э Â ∤ G ħυ ϗ **neighbor send-label** ϶ BGP ε ϐ ϖ Ӌ MPLS ℸ ˘ ħυ ϗ ϶ في è ɔ ’ ΐ ‡ ϖ ħυ ϗ˘ ϡ ⊿ في ˚ G ≠ ∤ ӈ ὲ⍀ ∤ a Â G ħυ ϗ **neighbor send-label** ϶ BGP Ruijie ϖ (ϐonfig)# ϖ Ӌ ˘ ħυ ℸ

ħυ ३ ٦ ↓	/ſ	
	10.4(2)	

58.2.2 show bgp vpnv4 unicast

ħυ ३ VPN ə Â

show bgp vpnv4 unicast all [*network* | **neighbor** [*peer-address*] | **summary** | **label**]
show bgp vpnv4 unicast vrf *vrf_name* [*network* | **summary** | **label**]
show bgp vpnv4 unicast rd *rd_value* [*network* | **neighbor** [*peer-address*] | **summary** | **label**]

^	^	
	network	ɲń ə
	neighbor *[peer-address]*	VPN ə
	summary	BGP ɛ ə
	label	ə
	all	VRF VPN ə
	vrf_name	VRF VPN ə
	rd_value	RD ḣ VPN ə

ħυ ३ /ŷ₩PN0@ĭm/Ⱳn

```
*> 192.168.4.0  192.168.4.1         0             20 ?
* 192.168.4.0    0.0.0.0            0      32768     ?
```

*	
s^ ĵ~	ʌ ⁸
S^ ĵ~	У
>	.
i	ÿ IBGP ˜
Nexthop	ЮУ ą
Metric	
Localprf	ѫ. ˝I
Path	↑ ŭ AS-path
i	ORIGIN IGP
e	ORIGIN EGP
?	ORIGIN IGP Ո EGP Лυ è ы ^ ĵ ώ BGP ~

```
Ruijie# show bgp vpnv4 unicast vrf vpn1 summary
BGP router identifier 192.168.0.4 , local AS num 100
BGP  VRF vrf1 Route  Distinguisher '  100 '  30
BGP table version is 1
3 BGP AS¨ PATH entries
0 BGP community entries
Neibhbor   V   AS   MsgRcvd Msgsend   TblVer  IntQ
OutQ   Up/Down  State/PfxRcd
192.168.4.1 4  20    15      16     1       0    0
00:10:36  3
Total number of neighbors 1
```

num BGP AS¨ PATH entries	BGP ˜ AS path
num BGP community entries	BGP ˜ community
V	BGP ˜ ʌ
AS	BGP е AS ʌ
MsgRcvd	ÿ BGP е ĵ BGP

Msgsend	ل BGP ε ل BGP
TblVer	BGP VPN فذ سه ʌ˘ ل BGP ε ل ɱώ VPN ʌ˘ ˬ У ˘ ƺ ʌ aˬ ̈A ˘ Ю У ٧ VPN ل BGP ε ل ̈Aˬ
Up/Down	BGP ε ˘ ‡ ɷ ÿ BGP ε ˆ جم ’ ĭ ‡˘ ѝ ”never” BGP ε
State/PfxRcd	BGP ε ˘ ‡ ḣ ÿ BGP ε ˆ VPN ’ ĭ ‡˘ ɱ BGP ε

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ћu ҳ ٦ ʌ	ʌ	
	10.3.4	ώ **show ip bgp vpnv4** ћu ҳ VPN ą
	10.4(2)	ɷ **show ip bgp vpnv4** ћu ҳ˘ G ћu ҳ ҳ ٧ ћu ҳ

58.2.3 show ip extcommunity-list

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show ip extcommunity-list *{extcommunity-list-num*|

extcommunity-list-name}

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	extcommunity-list-num	ʌ ḣ ت[1~199]˙ ḣ id˙ ñˆ ˜ extcommunity "
	extcommunity-list-name	ñˆ ˜ extcommunity " ل

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```
Ruijie # show ip extcommunity-list
Standard extended community-list 1
    10 permit RT:1:200
    20 permit RT:1:100
Standard extended community-list 2
    10 permit RT:1:200
Expanded extended community-list rt_filter
    13 permit 1:100
```

Ωħυ ३

ħυ ३	
ip extcommunity-list	… ې E "
match extcommunity	٦ ې E
set extcommunity	ې E

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	10.4(2)

58.2.4 show ip route vrf

G ħυ ३ VRF ٹ Â

show ip route vrf *vrf_name* [*ip-address mask*| **bgp | connected | isis |ospf | rip |static**]

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vrf_name	VRF Â
ip-address mask	ᵯ Â
bgp	BGP ˜ ҥ Â
connected	Â

58.2.5 show ip vrf

ᴳ ħυ ϡ VRF ə Â

show ip vrf [*vrf-name*]

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59

59.1

59.1.1 protected-ports route-deny

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protected-ports route-deny

no protected-ports route-deny

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	-	-
	Ϥ ∧ Ь ΰ̆	
Ъυ ϡ	ѽ	
G	⊖ ∧ ѝ Ϥ ∧ ǯ ⊿˘ Ϥ ∧ ǯ ⊿ Л 3 ˘ Ъυ ϡ ǯ ⊿˘ ∧ ǯ a 3 ə Â G **show running-config** Ъυ ϡ Â	
ѡ R	Ruijie(config)# **protected-ports route-deny**	
˜ΩЪυ ϡ	**Ъυ ϡ**	
	show running-config	Ъυ ϡ ⊿ Л ї ѽ Ϥ ∧ ǯ 3 Â
⊿		
Ъυ ϡ ˥ ⊿	**⁄**	
	-	-

59.1.2 strom-control

∧ ⁸ ˜Ω Â G Ъυ ϡ **no** ˜Ω ⁸ ╗ Â

storm-control {broadcast | multicast | unicast

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

∧	
broadcast	⁸ ╖ Â
multicast	⅄ ⁸ ╖ Â
unicast	⅄ ´ ⁸ ╖ Â
percent	Л Ї 20 20%
packets	Л pps ѝ ´ Æ . packets per second
Rate-bps	ї Â
64k-2M	Л 64k ѝ ´ Æ Â
2-100M	Л 1M ѝ ´ Æ Â
100M Л Э	Л 8M ѝ ´ Æ Â

∧

Ъ ҳ ∧ Â

ƕ ҂ ˥ ⊿	/ſ	
	-	-

59.1.3 switchport protected

ƕ ҂ ∧ ѝ ɖ ∧ Â G ƕ ҂ **no** ˜Ω ɖ ∧ Â

switchport protected

no switchport protected

∧	∧ſ	
	-	-

	˜Ω ɖ ∧
ƕ ҂	∧
G	ҽ ∧ ѝ ɖ ∧ ʒ ⊿˘ ɑ Ю ɖ ∧ Ո ɖ ∧ ʒ a γ Ꮋ ⊿Ո 3 ˘ ɖ ∧ б ɖ ∧ ʒ ⊿Ո Â G **show interfaces** ƕ ҂ Â
w R	Ruijie(config)# **interface gigabitethernet** *1/1* Ruijie(config-if)# **switchport protected**

˜Ωƕ ҂	ƕ ҂	
	show interfaces	∧ Ո ə ɻ Â
⊿ſ	-	

ƕ ҂ ˥ ⊿	/ſ	
	-	-

59.1.4 switchport port-security

∧ ѿ ˥ ˘ ∧ ѿ R Â G ƕ ҂ no ˜Ω ∧ ѿ ˘ ѿ R ḣ Â

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

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

∧	

Ъ ҳ й У э ∧ Э ѽ ѳ ѧ Â э ╗ ˘ ѽ ѳ ѧ
э ˘ ˘ ┘ Л ∪ ╠ ╗ Ո ╕ ∧ Э ѽ ѳ ѧ Â ᴳ Ъ ҳ no
ѵ ∧ ¥ ╠ ˜ ѳ ѧ ˘ ˜ Ω ѵ ╗ Â

switchport port-security aging {**static** | **time** *time* }

no switchport port-security aging {**static** | **time** }

∧	
Static	ѵ ┘ ¥ ѽ ѳ ѧ Ո ╠ ¥ ˜ ѳ ѧ ˘ ї ‡ ‡ ∧ ¥ ╠ ˜ ѳ ѧ Â
time *time*	э ∧ Э ѽ ѳ ѧ ѵ ˘ ѧ 0 ѳ ѧ 1440 ˊ Æ ↑ Â ѝ 0 ‡ ѵ ╗ Э ˜ Ω Â

a ѵ ˙ ¡ ѽ ѳ ѧ

Ъ ҳ ∧

┘ Л ∪ ѫ ∧ Ю ᴳ Ъ ҳ **no switchport port-security aging time** ˜ Ω У э ∧ ѽ ѳ ѧ ѵ ╗ ˘ ᴳ Ъ ҳ **no switchport port-security aging static** ѵ Θ ¥ ╠ ˜ ↑ ѽ ѳ ѧ Â

ᴳ **show port-security** Ъ ҳ Â

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# switchport port-security aging time 8
Ruijie(config-if)# switchport port-security aging static
```

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show port-security	∧ ѽ ѧ Ո ѽ ѳ ѧ Â

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59.1.6 switchport port-security binding

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ƺ ٨˘ ٨ x
Â ᴳ no ٦̄

[**no**] **switchport port-secur** ss |
ipv6-address

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

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59.1.7 switchport port-security binding interface

Ю ѽ ѳ ˘ ˩ Л∪ ѽ ѳ IP+ MAC Θ IP ˘
ʓ ᴊ˘ ᴊ ѽ ѳ ˩ Л∪ ώ Ꮋ ˘ a ᴊ x
Â G no ˩ ҭ ѫ ѳ '

[**no**] **switchport port-security binding interface** i*nterface-id mac-address* **vlan** *vlan_id ipv4-address* | *ipv6-address*

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

ᴎ

ᴎ	
i*nterface-id*	ᴎ ID
mac-address	MAC ѳ
Vlan_id	MAC VID
Ipv4-address	Ipv4 Ip ѳ
Ipv6-address	Ipv6 Ip ѳ

Ъυ ҂

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w R

R 1' 192.168.1.100 ᴎ 10'

Ruijie(config)# **switchport port-security binding interface** *g0/10 192.168.1.100*

R 2' 192.168.1.100 MAC ѳ 00d0.f800.5555, VID= 1 ᴎ 10'

Ruijie(config)# **switchport port-security binding interface** *g0/10 00d0.f800.5555* **vlan** *1 192.168.1.100*

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Ъυ ҂	
switchport port-security	ᴎ ѽ

switchport port-security binding	٨ Ю ڈ ڧ ڭ ڈ

Switchport port-security mac-address	∧ ЮО ѽ ѳ ѫ
switchport port-security aging	∧ ѽ ѳ ѫ ∨
show port-security	∧ ѽ ҽ

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59.1.9 switchport port-security mac-address

∧ ЮО ѽ ѳ ѫ˘ G no ˩ ѳ ѫ'

[**no**] **switchport port-security mac-address *mac-address*** [*vlan vlan-id*]

∧	∧	
	mac-address	ѽ ѳ ѫ
	vlan-id	MAC ѳ ѫ VID ' Θ ج TRUNK ∧ ЮО vlan-id

Ъυ ҳ ∧

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R 1' TRUNK ∧ 10 ѽ ѳ ѫ 00d0.f800.5555 VID=2'

```
Ruijie(config)#inter g0/10
Ruijie(config-if)# switchport port-security mac-address
00d0.f800.5555 vlan 2
```

˝ΩЪυ ҳ	Ъυ ҳ	
	switchport port-security	∧ ѽ
	switchport port-security binding	ѽ ѳ ѫ

switchport port-security mac-address interface	Ю ѽ ҳ ф
switchport port-security aging	٨ ѽ ҳ ф ٧
show port-security	٨ ѽ ҈

٨

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59.1.10 switchport port-security mac-address interface

Ю ѽ ҳ ф˘ G no ҭ ѽ ҳ ф'

[**no**] **switchport port-security interface** i*nterface-id* **mac-address** *mac-address* [*vlan vlan-id*]

	٨	
	i*nterface-id*	٨ ID
٨	*mac-address*	ѽ ҳ ф
	vlan-id	MAC ѽ ҳ ф VID ' Θ ҷ TRUNK ٨ Ю vlan-id

Ъυ ҂

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ᴿ 1' TRUNK ٨ 10 ѽ ҳ ф 00d0.f800.5555 VID=2'

```
Ruijie(config)# switchport port-security interface g0/10
mac-address 00d0.f800.5555 vlan 2
```

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Ъυ ҂	
switchport port-security	٨ ѽ
switchport port-security binding	ѽ ҳ ф

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60 802.1X

60.1 dot1x

60.1.1 dot1x auto-req

802.1X ў ╠ ╥ ˘ ѽ ђυ ҙ **dot1x auto-req** Â ђυ ҙ **no** ↓ ў ╠ ╥ Â

[**no**] **dot1x auto-req**

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60.1.3 dot1x auto-req req-interval

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dot1x auto-req req-interval *interval*

no dot1x auto-req req-interval

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	interval	ў ╟ ϳ ˘ ´ Æ S
	30	
ħυ ϡ	ѽ Â	
G	ў ╟ ϳ ˘ ϳ Л υ G **show dot1x auto-req** ħυ ϡ Ⅱ Â	

Ю ϳ 802.1x ѝ 60s R '

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60.1.4 dot1x auto-req user-detect

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dot1x auto-req user-detect

no dot1x auto-req user-detect

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G ў ╟ ϟ ˘ ϟ Л υ G **show dot1x auto-req** ħυ ϡ ╖ Â

Ю ў ج Э ϳ m ϳ ϓ ϟ '

```
Ruijie# configure terminal
Ruijie(config)# dot1x auto-req user-detect
Ruijie(config)# end
Ruijie# show dot1x auto-req
Auto-Req: Enabled
User-Detect : Enabled
Packet-Num  : 0
Req-Interval: 60 Second
```

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show dot1x auto-req	ў ╟ ą Â

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60.2 dot1x

60.2.1 dot1x timeout quiet-period

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

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show dot1x	802.1x ҽ Â

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60.2.2 dot1x timeout re-authperiod

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dot1x timeout re-authperiod *seconds*

no dot1x timeout re-authperiod

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seconds	Â ћ ن 0 ↑ 65535 Â´ Æ s Â

3600

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G ѵ Л υ G **show dot1x** ћu ҳ 802.1x Â

Ю ѝ 1000s'
Ruijie# **configure terminal**
Ruijie(config)# **dot1x timeout re-authperiod** *1000*
Ruijie(config)# **end**
ѡ R 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
```

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60.2.5 dot1x timeout tx-period

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dot1x timeout tx-period *seconds*

no dot1x timeout tx-period

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	seconds	· Â ḣ ىتن 0 ⁞ 65535 Â

	ḣ 3 Â
ħυ ϛ	ώ Â
G	˩ ʃʊ G **show dot1x** ħυ ϛ 802.1x Â

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```
Ruijie# configure terminal
Ruijie(config)# dot1x timeout tx-period 10
Ruijie(config)# end
Ruijie# show dot1x
802.1X Status:       Enabled
Authentication Mode:  EAP-MD5
Authed User Number:   0
Re-authen Enabled:    Disabled
Re-authen Period:     1000 sec
Quiet Timer Period:   1000 sec
Tx Timer Period:      10 sec
Supplicant Timeout:   10 sec
Server Timeout:       10 sec
Re-authen Max:        3 times
Maximum Request:      3 times
Filter Non-RG Supp:   Disabled
Client Oline Probe:   Disabled
Eapol Tag Enable:     Disabled
```

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Authorization Mode: Group Server

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show dot1x	802.1x ə 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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	show dot1x	802.1x ə¸ Â

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60.3.2 dot1x reauth-max

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dot1x reauth-max *count*

no dot1x reauth-max

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	count	Â

ḣ ӣ 3

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ᴳ ɸ ħυ ɜ˘ ‡ ɸ ɻ Ɽυ Â ɻ Ɽυ ᴳ **show dot1x** ħυ ɜ 802.1x Â

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```
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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show dot1x	802.1x ə Â

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60.4 dot1x

60.4.1 dot1x probe-timer

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

no dot1x probe-timer

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no	ḣ
interval	hello
alive	ج
interval	٧ ḣ

Hello ى 20 '
ج ḣ ى 250 Â

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G ج ٧ ٦ Ո G **show dot1x** ħυ ٩ 802.1x Â

hello ى 30 , ج ى 120 '

```
Ruijie# configure terminal
Ruijie(config)# dot1x probe-timer interval 30
Ruijie(config)# dot1x probe-timer alive 120
Ruijie(config)# end
Ruijie# show dot1x probe-timer
Hello Interval: 30 Seconds
Hello Alive: 120 Seconds
```

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Show dot1x probe-timer	ج ٧ Â

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G	₰ ₸ ˇΩ Â	

₰ ₸ '

```
Ruijie# configure terminal
Ruijie(config)# dot1x client-probe enable
Ruijie(config)# end
Ruijie# show dot1x
802.1X Status:       Enabled
Authentication Mode:  EAP-MD5
Authed User Number:   0
Re-authen Enabled:    Enabled
Re-authen Period:     1000 sec
Quiet Timer Period:   1000 sec
Tx Timer Period:      10 sec
Supplicant Timeout:   10 sec
Server Timeout:       10 sec
```

W R

60.5 dot1x

60.5.1 dot1x authentication

ھ AAA ϙ ӇӦ AAA Ŀ ˇ G ħυ ϗ ӶΩ
" Â ħυ ϗ **no** ĩ " Â

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

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

٩	
default	" ل Â

60.5.2 dot1x auth-address-table

ħu ϗ 802.1X ï فخ سم Â G ħu ϗ **no** ĩ ل فخ سم Â

dot1x auth-address-table address *mac-addr* **interface** *interface*

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

¶	
mac-addr	ل فخ سم Â

dot1x auth-mode {**eap-md5** | **chap** | **pap**}

no dot1x auth-mode

ϥ		
eap-md5	802.1x	EAP-MD5 Â
chap	802.1x	CHAP Â
pap	802.1x	PAP Â

EAP-MD5

ħυ ϡ ŏ Â

G ┘Лυ G **show dot1x** ħυ ϡ 802.1x Â

ЮO 802.1x R '

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

ħυ ϡ	
show dot1x	802.1x ə Â

/ł

ħυ ϡ ώ Â

G ˩ ΠυG **show dot1x** ħυ ϡ 802.1x Â

ψ R

Ю 802.1x ϰ R '

```
Ruijie# configure terminal
Ruijie(config)# dot1x default
Ruijie(config)# end
Ruijie# end
```

ΈΩħυ ϡ

ħυ ϡ	
show dot1x	802.1x ə Â

```
Ruijie(config)# dot1x dynamic-vlan enable
Ruijie(config)# end
Ruijie#
```

ΐΩħυ ϗ

ħυ ϗ	
show dot1x	802.1x ə¸ Â

ϻ

ħυ ϗ ΐ ϻ

ϻ	
-	-

60.5.6 dot1x guest-vlan

ΐΐ ΐΐ **guest vlan** Â G ħυ ϗ **no** ϫ ΠυΐΩ ΐΩ Â

dot1x dynamic-vlan <1 - 4094>

no dot1x guest-vlan

ϻ

ϻ	
vid	ϻ تن<1 - 4094>

ΐΩ ϧ ΐΩ

ħυ ϗ ϻ ΗΟ

Â У ' ج G guest vlan ╖ ɱΐ˘ ΐ˝ **dot1x dynamic-vlan enable** ħυ ϗ˘
ΐΐ ‡ guest vlan a Â

G

ˇΩħu ɜ

ħu ɜ	
show running-config	802.1x ə¸ Â

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ħu ɜ ˆ ˇ

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60.5.7 dot1x eapol-tag

EAPOL TAG ╗ Â

dot1x eapol-tag

no dot1x eapol-tag

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	΅Ω ώ ΅Ω
ħυ ϡ	ώ Â
G	┘Л υ G **show dot1x** ħυ ϡ 802.1x Â
ш R	Ю 802.1X tag R ' Ruijie# **configure terminal** Ruijie(config)# **dot1x eapol-tag** Ruijie(config)# **end** Ruijie#

΅Ωħυ ϡ	**ħυ ϡ**	
	show dot1x	802.1x ą Â

↓

ħυ ϡ ˥ ↓	**↱**	
	-	-

60.5.8 dot1x max-req

ح DOT1X Ո Ⴑ Ⴙ ц è˘ DOT1X ح У ą̈ ˛ Ⴑ ː ˘ ‡ DOT1X Ą ┘ Ⴑ ↓ Â G ħυ ϡ ┘ Ⴑ ї Â G ħυ ϡ **no** ḣ Â

dot1x max-req *count*

no dot1x max-req

৭	

G ɹ ʃƱ G **show dot1x private-supplicant-only** ƫu ɂ 802.1x Â

ƟO ɻ G R '

w R

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

ʗƟƫu ɂ

ƫu ɂ	
show dot1x private-supplicant-only	ə Â

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ƫu ɂ ˥ ɻ

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-	-

60.5.10 dot1x port-control auto

ɷ ʌ è˘ ʌ ĭ ʌ ╗ Â G ƫu ɂ **no** ḣ Â

dot1x port-control auto

no dot1x port-control

Ruijie#

ЎΩħu ҳ	ħu ҳ	
	show dot1x	802.1x ə Â

⁄

ħu ҳ ˥ ⁄	⁄	
	-	-

60.5.11 dot1x port-control-mode

802.1x ⁸ ą Ю ѫ ų MAC ⁸ ˘ ˩ G
˘ ų è ы ҽ ˩ У ˥ G ˘ ѫ ų ˥ ⁸ ˧
У ˥ У э ˘ ˥ ˩ ˥˘ ҽ ˥ Ю
G Â ѫ ų ˥´ ⁸ ˘ ˥ Ю ˩ ї ´ У ˘
˥ ˩ ˥˘ G Â ҽ´ ⁸ Ю˘ ˥ ˩ й
˥˘ ˧ ˥ è ҽ˘ ‡ ˥ Ю ˘ Â
ħu ҳ Ю'

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

no dot1x port-control-mode

	˥	
˥	**mac-based**	ѫ ų mac 802.1X ⁸
	port-based	ѫ ų ˥ 802.1X ⁸
	single-host	ѫ ų ˥´ 802.1x ⁸

5 b Ê À @ Û p⁸

single-host ˘ ʌ ʌ ї ´ У Э Â

R 1' Ю ʌ 802.1x ʌ б R '

```
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#
```

R 2' Ю ʌ´ 802.1x R '

```
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#
```

ћu ҷ	
show dot1x port-control	ʌ 802.1x ą Â
Show running-config	Ц ą Â

ʌ	
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60.5.12 dot1x stationarity enable

802.1x ж ш ұ ʌ 8 Ю˘ ąЮ˘ ╟ ЛЛ ж ʌ ʌ ˘ ąЮ˘ й ф a ÿ 802.1X ʌ ĺ è ы ʌ˘ ЛЛ ЛЮћu ҷ ĺ Â

dot1x stationarity enable

no dot1x stationarity enable

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й ╟ ЛЛ ж ʌ Â

ћu ҳ	ѽ Â
G	ѫ ɱ ћu ҳ˘ ї ‡ Â
ѡ R	Ю ч 802.1x ч б R ' Ruijie# **configure terminal** Ruijie(config)# **dot1x stationarity enable** Ruijie(config)# **end** Ruijie#

ЎΩћu ҳ	ћu ҳ	
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60.5.13 dot1x redirect url

ѧ ғф˘ ѫ 802.1x ╖ ʓ ɱ˄ ↑ ~ ˘ G ѭ ˘ ˬ URL ѧ ˥ URL˘ Л∪ http:// ˘ ' http://ruijie.net/web˘ ˘ ч http:// ˘ a https:// Â ч У э ѧ ғф ѫ˘ ˘ ѧ urlѫ ғф ʓ ɱ url Â G no ч Л∪ G ћu ҳ˥ ѧ url'

dot1x redirect url [*url-string*]

[**no**] **dot1x redirect url**

ч

ч	
url-string	URL ѫ ғф

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R 1' ل فذ' ruijie.net/web'

```
Ruijie(config)# dot1x redirect url http://ruijie.net/web
```

802.1X

dot1x redirect for special tcp-destination port	ﻝ
dot1x redirect num for special source-ip	ﻝ У э ї ﻝ
show dot1x	dot1x ﻝ ҽ

ﻣ

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60.5.16 dot1x redirect num for special source-ip

ﻝ У э ї ﻝ ˘ 1 э˘ ﻝ تن ﻳ 1-10 э Â G no ﻝ Лυ G ħυ ҳ ḣ'

dot1x redirect num for special source-ip *num*

no dot1x redirect num for special source-ip

ﻣ	ﻣ	
	num	ﻝ

1

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R 1' ﻝ ﻳ 3'

```
Ruijie(config)# dot1x redirect num for special source-ip 3
```

	ħυ ҳ	
	dot1x redirect url	ﻝ ﻓخ

dot1x redirect for special tcp-destin ﻲﺸﺴ

show dot1x	dot1x ɹ ə

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60.6 dot1x

60.6.1 show dot1x

802.1x ə Â

show dot1x

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```
ЮO R '
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
```

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```
Filter Non-RG Supp:   Disabled
Client Oline Probe:   Disabled
Eapol Tag Enable:     Disabled
Authorization Mode:   Group Server
Ruijie#
```

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ƫυ ϗ	
dot1x auth-mode	802.1x Â
dot1x max-req	ï · Â
dot1x port-control auto	ϟ ï ϟ ╗ Â
dot1x reauth-max	
dot1x re-authentication	ï Â
dot1x timeout quiet-period	ϳ ï Â
dot1x timeout re-authperiod	Â
dot1x timeout server-timeout	Ո ┗ ϗ Ӌ ц Â
dot1x timeout supp-timeout	Ո ϗ Ӌ ц Â
dot1x timeout tx-period	· ˘ · Â

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ƫυ ϗ 802.1X ï فخ سم Â

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

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mac-addr	ل فخ سم
interface	ϟ ϟ

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```
Ruijie# show dot1x auth-address-table
interface:g3/1
-----------------------------------
mac addr: 00D0.F800.0001
Ruijie#
```

Ъу ъ	
dot1x auth-mode	802.1x Â
dot1x max-req	ї · Â
dot1x port-control auto	∧ ї ∧ ╗ Â
dot1x reauth-max	
dot1x re-authentication	ї Â
dot1x timeout quiet-period	∧↑ ї Â
dot1x timeout re-authperiod	Â
dot1x timeout server-timeout	∩ ┣ ⅄ ⅀ Ꮒ ц Â
dot1x timeout supp-timeout	∩ ⅀ Ꮒ ц Â
dot1x timeout tx-period	· ˘ · □ Â

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60.6.3 show dot1x auto-req

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show dot1x auto-req

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Ruijie# **show dot1x auto-req**
Auto-Req: Disabled
User-Detect : Enabled
Packet-Num : 0
Req-Interval: 30 Seconds

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ƫυ ϡ	
dot1x auth-mode	802.1x Â
dot1x max-req	ï · Â
dot1x port-control auto	ㄱ ĭ ㄱ ╗ Â
dot1x reauth-max	
dot1x re-authentication	ĭ Â
dot1x timeout quiet-period	ㅅ↑ ï Â
dot1x timeout re-authperiod	Â
dot1x timeout server-timeout	∩ ㄴㅈ ʒ Ꮋ ц Â
dot1x timeout supp-timeout	∩ ʒ Ꮋ ц Â
dot1x timeout tx-period	· ˘ · Â

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60.6.4 show dot1x private-supplicant-only

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show dot1x private-supplicant-only

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```
Ruijie# show dot1x private-supplicant-only
private-supplicant-only:: disabled
Ruijie#
```

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ƫ ʒ	
dot1x auth-mode	802.1x Â
dot1x max-req	ï · Â
dot1x port-control auto	ʃ ï ʃ ˥ Â
dot1x reauth-max	
dot1x re-authentication	ï Â
dot1x timeout quiet-period	ʃ ï Â
dot1x timeout re-authperiod	Â
dot1x timeout server-timeout	∩ Ł ʞ ʒ Ꮋ ц Â

dot1x timeout supp-timeout	Ո Ջ Ӌ Ц Â
dot1x timeout tx-period	. ˘ . · Â

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60.6.5 show dot1x max-req

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show dot1x max-req

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60.6.6 show dot1x port-control

˥ б ˥ Â

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

˥	˥	
	interface	˥

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

ʹΩƫu ʒ	ƫu ʒ	
	dot1x auth-mode	802.1x Â
	dot1x max-req	ï · Â
	dot1x port-control auto	˥ ï˝ ˥ ╗ Â
	dot1x reauth-max	
	dot1x re-authentication	ï˝ Â
	dot1x timeout quiet-period	˩↑ ï Â
	dot1x timeout re-authperiod	Â

dot1x timeout server-timeout	Ո Ե Ջ Ӌ Ђ Ц Â
dot1x timeout supp-timeout	Ո Ջ Ӌ Ђ Ц Â
dot1x timeout tx-period	. ˘ . . Â

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dot1x reauth-max	
dot1x re-authentication	ĭ Â
dot1x timeout quiet-period	ʃ ĭ Â
dot1x timeout re-authperiod	Â
dot1x timeout server-timeout	∩ Ⴑ ʖ Ⴟ Ⴙ Â
dot1x timeout supp-timeout	∩ Ⴟ Ⴙ Â
dot1x timeout tx-period	˘ Â

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60.6.8 show dot1x re-authentication

show dot1x re-authentication

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

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dot1x auth-mode	802.1x Â
dot1x max-req	ï · Â
dot1x port-control auto	ʌ ĭ ʌ ╗ Â
dot1x reauth-max	
dot1x re-authentication	ĭ Â
dot1x timeout quiet-period	ʃ ï Â
dot1x timeout re-authperiod	Â
dot1x timeout server-timeout	∩ ʟ ɤ ʒ Ꮋ ч Â
dot1x timeout supp-timeout	∩ ʒ Ꮋ ч Â
dot1x timeout tx-period	· ˘ · Â

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60.6.9 show dot1x reauth-max

show dot1x reauth-max

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Ruijie# **show dot1x reauth-max**
reauth-max: 2 times
Ruijie#

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ƫυ ҳ	
dot1x auth-mode	802.1x Â
dot1x max-req	ĭ · Â
dot1x port-control auto	ʌ ĭ ʌ ╗ Â
dot1x reauth-max	
dot1x re-authentication	ĭ Â
dot1x timeout quiet-period	ʃ ĭ Â
dot1x timeout re-authperiod	Â
dot1x timeout server-timeout	Ո Ⴑ ʓ Ꮉ ц Â
dot1x timeout supp-timeout	Ո ʓ Ꮉ ц Â
dot1x timeout tx-period	· ˘ · Â

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60.6.10 show dot1x summary

ƫυ ҳ 802.1X ə

show dot1x summary

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```
Ю R '
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#
```

ЎЋU ҳ

ЋU ҳ	
dot1x auth-mode	802.1x Â
dot1x max-req	ї · Â
dot1x port-control auto	∧ ї ∧ ╗ Â
dot1x reauth-max	
dot1x re-authentication	ї Â
dot1x timeout quiet-period	∧¦ ї Â
dot1x timeout re-authperiod	Â
dot1x timeout server-timeout	∩ ┗ ∧ ⌡ Ц ц Â
dot1x timeout supp-timeout	∩ ⌡ Ц ц Â
dot1x timeout tx-period	· ˘ · □ Â

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60.6.11 show dot1x user id

dot1x max-req	ï · Â
dot1x port-control auto	٧ ï̈ ٧ ╗ Â

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Ruijie# **show dot1x timeout quiet-period**

quiet-period: 60 sec

Ruijie#

ħu ३	
dot1x auth-mode	802.1x Â
dot1x max-req	ï · Â
dot1x port-control auto	५ ï ५ ╗ Â
dot1x reauth-max	
dot1x re-authentication	ï 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

61 AAA

61.1

61.1.1 aaa authentication dot1x

G AAA

ʗΩƫυ ɜɻ

ƫυ ɜɻ	
aaa new-model	ᴳ AAA ѽ Ꮮ
dot1x authentication	ᵭ 802.1X ˜ Ɜʗ Ω "
username	ᏂᏫ ᵴᵴ

ᵰ

ƫυ ɜɻ ˥ ᵰ

ᵰ	
-	-

61.1.2 aaa authentication enable

ᴳ AAA Enable ˘ ѽ ƫυ ɜɻ **aaa authentication enable** Enable ”äñÀ0 ð ãmª¥\ !T ÓÍ ð Â Úª‌l 6&"ÓÍ ð u2 ÚªŒ 6&PÑÃ Vr <>0tt° s +Ä Ô€

ѡ R

Ю R Ђ AAA Enable ` " Â " ″I G RADIUS ѽ Ь Ы ` ˘ ѯ У ѻ ĵ RADIUS ѽ Ь Ы ˘ ‡ G ѕш ` Â

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

ЎΩЂu ҙ

Ђu ҙ	
aaa new-model	G AAA ѽ Ь
enable	ĵ ⁞
username	Ђ ѕш

Ѓ

Ђu ҙ ˥ Ѓ

Ѓ	
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61.1.3 aaa authentication login

G AAA Loginˆ ~ ˘ ѽ Ђu ҙ **aaa authentication login** Login " Â Ђu ҙ no ĵ " Â

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

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

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ѱ	
default	G ѱ ˘ ‡ Ѓ Ђ " ɔ и Login Â
list-name	Ђ У ə Login " ˘ ˩ Ʌ ˙ ¦ s Â
method	ľ local à none à group Ŀ " ЎΩ ʒ У˘ У ə " 4 ə
local	G ѕш Ѓ `
none	a `
group	G Ь Ы ` ˘ ѧ RADIUS Ո TACACS+ Ь Ы

ћu ҙ

ѿ Â

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ѹ AAA ѿ Ꮅ G AAA Login ~ ڭ Â
G **aaa authentication login** ћu ҙ ۍ " ɣ Login Â
ۍ ɱ : ˘ G ʌ ` Â
ɷ Login ʌ˘ è ҷ Login Э˘ ĭ ‡ a
Â

ѡ R

Ю R ᏂᏌ э ɻ ѝ list-1 AAA Login " Â " ˝I G
RADIUS ѿ Ꮅ ۍ ˘ ҷ У ᾳ ĵ RADIUS ѿ Ꮅ ۍ ˘
‡ G ѕѕ Â

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

ћu ҙ

ћu ҙ	
aaa new-model	G AAA ѿ Ꮅ
username	ᏂᏌ ѕѕ
login authentication	ҷ Э Login

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ћu ҙ ˥ ۍ

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-	-

61.1.4 aaa authentication ppp

G AAA PPP ˘ ѿ ћu ҙ **aaa authentication ppp** PPP
" Â ћu ҙ no ĩ " Â

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

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

ۍ

ۍ	
default	G ۍ ˘ ‡ ʌ ᏂᏌ " ɔ ѝ PPP Â
list-name	ᏂᏌ У э PPP " ˘ ۍ Л ` ¦ s Â
method	ľ local à none à group Ꮮ " ˝Ω ᾒ У˘ У э " 4 э

local	G ѫ ɻ
none	a `
group	G Ŀ ɳ ˘ ɱ RADIUS Ո TACACS+ Ŀ ɳ

ƫ ȝ ŏ Â

G ŭ AAA PPP ŏ Ŀ˘ G AAA PPP ˜ ʆ Â G **aaa authentication ppp** ƫ ȝ ɻ " ɣ PPP Â ɻ ɱ : ˘ G ɻ Â

w R Ю R ЂЖ У ə ɻ ѝ rds_ppp AAA PPP " Â " ˝ı G RADIUS ŏ Ŀ ɳ ˘ ж У ǫ ˚ RADIUS ŏ Ŀ ɳ ˘ ˘ ‡ G ѫ Â

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

ƫ ȝ	
aaa new-model	G AAA ŏ Ŀ
ppp authentication	PPP ˜ ˇΩ "
username	ЂЖ ѫ

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ƫ ȝ ˥ ɻ	
ɻ	
-	-

61.1.5 login authentication

ж Э Loginˆ ˜ ˥ ˘ ж Ю **login authentication** ƫ ȝ Login " Â ƫ ȝ no ˩ " ж Э Â

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

no login authentication

ɳ	ɳ	

default	G ٧ ˘ Login " Â
list-name	У э ㄱ Login " Â

ћu ҙ Â

G Login " У ˘ ╟ ĵ Э Â ج Э
Login " ˘ ٧ ҙ " Â في ㄱ " ˘ ‡ ̧
У э ˋ ə ˘ Э Login a ̧ ˘ ㄱ ₡ Login
" ̧ Â

Ю R ㄱ У э ɻ ѝ list-1 AAA Login " Â " G س
Â ɻ ج VTY 0 - 4 Э Â

ш R
```
Ruijie(config)# aaa authentication login list-1 local
Ruijie(config)# line vty 0 4
Ruijie(config-line)# login authentication list-1
```

ћu ҙ 9 E

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

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level	ħυ ϗ ⁞˘ تن 0~15˘ ā ف ə ⁞ ħυ ϗ ⅄ Â
default	G ٩ ˘ ‡ ⅄ ₦ ’] Ư Ă —

61.2.2 aaa authorization config-commands

G AAA ˆ ↑ ŏ ˧ è ˜ ŀO ħu ɂ ˇ ŏ
ħu ɂ **aaa authorization config-commands** Â ħu ɂ no ˷Ω AAA ŀO ħu
ɂ ╖ Â

aaa authorization config-commands

no aaa authorization config-commands

˧	˧	
	-	-

	a ŀOħu ɂ Â
ħu ɂ	ŏ Â
G	˩ ˆ ˜ ŀO ħu ɂ ˇ ˩ Л∪ G ħu ɂ no ˷Ω ╖ ˇ ‡ ˧ è ŀO ħu ɂ a ħu ɂ ˩ Л∪ Â
w R	ŀO R ŀOħu ɂ ╖ ' Ruijie(config)# **aaa authorization config-commands**

	ħu ɂ	
˙	**aaa new-model**	G AAA ŏ ┺

٩	
-	-

a ⁸ ٨ ƫ ȝ Â

ƫ ȝ ŏ Â

G RGOS Ш ⁸ ٨ Ո è ы ˇ ٦ Л ⁸ ٨ ˇ ĭ ƫ ȝ Â ˜Ω ɷ ⁸ ٨ ƫ ȝ ℸ ˇ ‡ ˆ ⁸ ٨ ƫ ȝ " a Â

ш R Ю R ⁸ ٨ ƫ ȝ ℸ '

```
Ruijie(config)# aaa authorization console
```

˜Ωƫ ȝ	ƫ ȝ	
	aaa new-model	G AAA ŏ Ŀ
	aaa authorization commands	Ⱨ AAA ƫ ȝ
	authorization commands	₰ Э ƫ ȝ

٨

ƫ ȝ ٦ ٨	٨	
	-	-

61.2.4 aaa authorization exec

G AAA ˆ NAS CLI Exec ˇ ç è ⁞ˇ ŏ ƫ ȝ **aaa authorization exec** Â ƫ ȝ no ˜Ω AAA Exec ℸ Â

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

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

٩	٩	
	default	G ٩ ˇ ‡ ٨ Ⱨ " ɔ й Exec Â
	list-name	Ⱨ У ə Exec " ˇ ٦ Л ˙ ¡ s Â

AAA ƕ ɜ

٩	
default	' G ٩ ˘ ‡ ⁄ ₩ " ɔ ѝ Network Â

ľ

method

ƫ ʒ " ج Ɔˇ ƫ ʒ **authorization commands** Â ƫ ʒ no ˬ Ɔ ƫ ʒ ╖ Â

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

no authorization commands *level*

ˬ

ˬ	
level	ƫ ʒ ⁞ˇ ت 0~15 ᾱ ف ə ⁞ ƫ ʒ ˬ Â
default	G ˬ ˇ ƫ ʒ Â
list-name	У ə ƕ ƫ ʒ " Â

AAA ƫ ʒ ╖ Â

ƫ ʒ Â

G

ƫ ʒ " У ˇ ╠ ʲ Ɔ Â ج Ɔ ƫ ʒ " ˇ ˬ ʒ " Â في ƕ " ˇ ‡ ˬ У ə ˆ ą ˇ Ɔ ƫ ʒ a ˇ ƕ ƫ ʒ " ˬ Â

ɯ R

Ю R У ə ɻ й cmd ƫ ʒ " ˇ 15 ƫ ʒ ˇ G TACACS+ ɔ й ѿ Ł ˇ Ł ː none Â ˬ ʲ VTY 0 – 4 Ɔ'

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

ˇΩƫ ʒ

ƫ ʒ	
aaa new-model	G AAA ѿ Ł
aaa authorization commands	ƕ AAA ƫ ʒ "

ˬ

ƫ ʒ ˥ ˬ

ʌ	
-	-

Exec " ج Ə˘ ħu ʒ **authorization exec** Â
ħu ʒ no ˩ Ə Exec ╖ Â

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

no authorization exec

˥		
˥	**default**	G ˥ ˘ Exec Â
	list-name	У ə ћ Exec " Â

AAA Exec ╖ Â

ħu ʒ Â

G Exec " У ˘ ╟ ↑ Ə Â ج Ə
Exec " ˘ ˩ ʒ " Â في ћ " ˘ ‡ ˬ
У ə ˆ ə ˘ Ə Exec a ˬ ˘ ћ Exec
" ˬ Â

ѡ R Ю R У ə ɹ й exec-1 Exec " ˘ G RADIUS ɔ й ŏ Ł ˘
Ł ˘ : none Â ˥ ↑ 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
```

˜Ωħu ʒ	ħu ʒ	
	aaa new-model	G AAA ŏ Ł
	aaa authorization commands	ћ AAA Exec "

˥

ħu ʒ ˥	˥	
	-	-

61.3

61.3.1 aaa accounting commands

¥ ╟˘ î NAS Э ħu ʒ ╟ ˘ ѽ

ħu ʒ **aaa accounting commands** Â ħu ʒ no ↓ ħu ʒ ╖ Â

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

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

↰	
level	ħu ʒ ¦˘ ىت 0~15˘ ā ف э ¦ ħu ʒ ˘ ə Â
default	G ↰ ˘ ‡ Л Ѭ " ɔ и ħu ʒ Â
list-name	Ѭ У э ħu ʒ " ˘ ↓ Л ˙ ¡ s Â
method '	ľ **none à group** Ŀ " ˜Ω ʒ̆ У˘ У э " 4

_õ â G+BB õ 4 ˜hhä¬AxcA ‡X††w !5%Ä

Ђυ ҳ ٦ ⊿	Λ	
	-	-

61.3.2 aaa accounting exec

¥ ╟˘ NAS ╟ ˘ ѿ Ђυ ҳ **aaa accounting exec** Â Ђυ ҳ no ⊿ Exec ╖ Â

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

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

٩		
٩	**default**	G ٩ ˘ ‡ ⊿ ⊮ " ɔ ѝ Exec Â
	list-name	⊮ У ɘ Exec " ˘ ⊣ Л υ ˙ ¡ s Â
	method	ľ **none** à **group** Ŀ " ˜Ω ƺ У˘ У ɘ " 4 ɘ
	none	a

aaa new-model	G AAA ő Ł
aaa authentication	ƕ AAA `
accounting commands	₰ Э Exec

ʃ

ƫ ɂ ˥ ʃ	ʃ	
	-	-

61.3.3 aaa accounting network

¥ ╟˘ ╟ ˘ ő ƫ ɂ **aaa accounting network** Â ƫ ɂ no ʃ

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

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

	ʅ
default	G ʅ ˘ ‡ ʃ ƕ " ɔ ȕ Network i

'

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

ƫ ȝ	
aaa new-model	G AAA ŏ ŁŁ
aaa authorization network	ƫ AAA
aaa authentication	ƫ AAA `
username	ƫ ѫ

ƒ

ƫ ȝ ˥ ƒ	ƒ	
	-	-

61.3.4 aaa accounting update

ŭ ˇ ŏ ƫ ȝ **aaa accounting update** ƫ ȝ˘ ƫ ȝ ɣ G ŏ Â G ƫ ȝ no ˜Ω ˇ Â

aaa accounting update

no aaa accounting update

˄	˄	
	-	-

ˇ ˜Ω Â

ƫ ȝ	ŏ Â
G	ŭ AAA ŏ Ł˘ ‡ a G Â ŭ AAA ŏ Ł˘ ‡ ƫ ȝ Â
ɯ R	ƗO R G Â Ruijie(config)# **aaa new-model** Ruijie(config)#

˜Ωƫ ȝ	ƫ ȝ	

aaa new-model	AAA ѽ Ꮮ
aaa accounting network	Ⱶ ″

ᐁ

ᐁ

ƕ ɂ ˥ ˩	˥	
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61.3.6 accounting commands

ƕ ɂ " ح Ɔ˘ ƕ ɂ **accounting commands** Â
ƕ ɂ no ˩ Ɔ ƕ ɂ ˥ Â

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

no accounting commands *level*

˥	˥	
˥	*level*	ƕ ɂ ¦˘ ن 0~15˘ ɑ ف ə ¦ ƕ ɂ Â
	default	G ˥ ˘ ƕ ɂ Â

ƫu ʒ ˥ ˩	ʌ	
	-	-

61.3.7 accounting exec

Exec " ج Ə˘ ƫu ʒ **accounting exec** Â
ƫu ʒ no ˩ Ə Exec ╖ Â

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

no accounting exec

ʌ˥	ʌ˥	
	default	G ʌ˥ ˘ Exec Â
	list-name	У ə ƫ Exec " Â

	˜Ω ╖
ƫu ʒ	Â
G	Exec " У ˘ ╟ ˥ Ə Â ج Ə Exec " ˘ ˩ ʒ " Â في ƫ " ˘ ‡˳ У ə ˆ ə˛ ˘ Ə Exec a˳ ˘ ƫ ɷ Exec " ˳ Â

ɯ R	Ю R У ə ɹ ŷ exec-1 Exec " ˘ G RADIUS ɔ ŷ ώ Ł ɣ˘
	Ł ɣ : none Â ʌ ˥ VTY 0 – 4 Ə'
	`Ruijie(config)# **aaa accounting exec** *exec-1* **group radius none**`
	`Ruijie(config)# **line vty** *0 4*`
	`Ruijie(config-line)# **accounting exec** *exec-1*`

˜Ωƫu ʒ	**ƫu ʒ**	
	aaa new-model	G AAA ώ Ł
	aaa accounting commands	ƫ AAA Exec "

˩	

ƫu ʒ ˥ ˩	ʌ	

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61.4 AAA

61.4.1 aaa domain

ώ ▪▪ ˘ ▪▪ Â ħu ʒ no ↓ ħu ʒ Â

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

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

↰	
default	G ↰ ˘ ▪▪
domain-name	▪▪ ↓

˙ ! ▪▪ Â

ħu ʒ ώ Â

▪▪ ¥ ▪▪ ↓ AAA Ł Âdefault ϶ ▪▪ ˘ ≠ ▪▪ ə ˘

G G " Â *domain-name* ϶ ▪▪ ↓ ˘ ▪▪ ↓˘ ‡

G ə ▪▪ ˜Ω " Â ɲ 32 ə ▪▪ Â

Ю R ▪▪ ↓ '

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

61.4.2 aaa domain enable

ѫ ɣ ѫ ɹ AAA Ł ʕΩ˘ ϙ ЮйʕΩ Â ʕΩ Ạ˘ . ˝I G ѫ ɣ ѫ ɹ AAA Ł Â ħu ҳ no ʕΩ ʕΩ Â

aaa domain enable

no aaa domain enable

٩	
-	-

ѫ ɣ ѫ ɹ AAA Ł ʕΩʕΩ Â

ħu ҳ ώ Â

G ѫ ɣ ѫ ɹ AAA Ł ˘ ɔ ʕΩ Â

ɯ R ѫ ɣ ѫ ɹ AAA Ł ʕΩ'

```
Ruijie(config)# aaa domain enable
```

ʕΩħu ҳ	ħu ҳ	
	aaa new-model	AAA ώ Ł
	show aaa domain	ѫ

ɻ

ħu ҳ ٦ ɻ	/١	
	-	-

61.4.3 access-limit

ѫ 8˘ ٧

no access-limit

٩	
num	IEEE802.1x

5L$QA'8FBB18TZ6PL6X1PU6TQ2hQ< ! Qx64PaÕ!5B

æ " ˘ ↴ ˘ ˚
default " Â

ƫu ȝ æ Â

G ẏ æ G Network " Â

ƟO R æ Network " '

w R
```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)# accounting network default
```

ˇΩƫu ȝ

ƫu ȝ	
aaa new-model	AAA ώ Ł
aaa domain enable	æ ɣ æ ɻ AAA Ł ˇΩ
show aaa domain	æ

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ƫu ȝ ˥ ↈ

ↈ	
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61.4.5 authentication dot1x

æ æ ƟO IEEE802.1x " ˘ ƫu ȝ no ↈ ƫu ȝ Â

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

no authentication dot1x

ↈ

ↈ	
default	G ↈ ˘ G "
list-name	" ɻ

æ " ˘ ↴ ˘ ˚ default " Â

ƫu ȝ æ Â

G	ӣ ᵃᵃᶜ У ə IEEE802.1x " Â
ᴡ ᴿ	Ю ᴿ ᵃᵃᶜ IEEE802.1x " ' Ruijie(config)# **aaa domain** *ruijie.com* Ruijie(config-aaa-domain)# **authentication dot1x default**

ʔΩħu ҙ

ħu ҙ	
aaa new-model	AAA ώ Ь
aaa domain enable	ᵃᵃᵃ ɣ ᵃᵃᶜ ɻ AAA Ь ʔΩ
show aaa domain	ᵃᵃᶜ

ᶩ

ħu ҙ ˥ ᶩ

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61.4.6 authorization network

ᵃᶜ ᵃᵃᶜ Ю Network " ˘ ħu ҙ no ᶩ ħu ҙ Â

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

no authorization network

ᶩ

ᶩ	
default	G ᶩ ˘ G "
list-name	" ɻ

ᵃᶜ " ˘ ᶣ ˘ ˚ default " Â

ħu ҙ ᵃᵃᶜ Â

G	ӣ ᵃᵃᶜ " Â
ᴡ ᴿ	Ю ᴿ ᵃᵃᶜ " ' Ruijie(config)# **aaa domain** *ruijie.com*

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

ˇΩħu ҳ

ħu ҳ	
aaa new-model	AAA ώ Ł
aaa domain enable	ѫ ¥ ѫ ɹ AAA Ł ˇΩ
show aaa domain	ѫ

ɻ

ħu ҳ ˥ ɻ

ɻ	
-	-

61.4.7 state

ѫ ĭ ˘ ħu ҳ no Â

state {**block** | **active**}

no state

ɳ

ɳ	
block	ѫ
active	ѫ

ą Ю ѝ ѫ Â

ħu ҳ ѫ Â

G ѫ ĭ Â

Ю R ѫ Â

w R
```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)# state block
```

ˇΩħu ҳ

ħu ҳ	

aaa new-model	AAA ѿ Ь
aaa domain enable	ѧѧ ɣ ѧѧ ɹ AAA Ь ˜Ω
show aaa domain	ѧѧ

aaa new-model	AAA ѿ ᒪ

ƫu ʒ ˥ ˩	˥	
	-	-

61.5 AAA

61.5.1 aaa group server

ώ AAA ʟ ʞ Â ƫu ʒ no ˧ ʟ ʞ Â

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

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

˥	˥	
˥	*name*	ʟ ʞ ˩ ˫˘ ɱ a ˡ Ω ľ radius Ł˘ ľ tacacs+ Ł˘ ɕ ˡ RADIUS Ո TACACS+ ʟ ʞ ˫ Â

ƫu ʒ	ő Â
G	ƫu ʒ AAA ʟ ʞ ˘ ɱ RADIUS Ո TACACS+ ʟ ʞ Â

w R

```
Ю R Â
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:
```

Ωƫu ʒ	ƫu ʒ	
	show aaa group	aaa ʟ ʞ

˫

ħu ʒ ˥ ˩	/ʃ	
	-	-

61.5.2 ip vrf forwarding

ˡ AAA ʟ ʅ vrf no ˥ Â

ip vrf forwarding *vrf_name*

no ip vrf forwarding

ʃ	ʃ	
	vrf_name	vrf ˩

ħu ʒ	ʟ ʅ Â
G	ˡ ʟ ʅ vrf Â

w R

Ю R 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
```

ʹΩħu ʒ	ħu ʒ	
	aaa group server	aaa ʟ ʅ
	show aaa group	aaa ʟ ʅ

˩ʃ

╕ AAA ┣ ϗ ┣ ϗ˘ no ╖ Â

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

no server

	-	-

61.5.4 show aaa group

AAA Ь Ы Â

show aaa group

61.6.1 aaa local authentication attempts

login

aaa local authentication attempts *max-attempts*

٩	
max-attempts'	˘ ↓ ḣ تن 1~2147483647 Â

ḣ ẏ 3

ħυ ҳ ώ Â

G ħυ ҳ Login

w R Ю R '

```
Ruijie# configure terminal
Ruijie(config)# aaa local authentication attempts 6
```

ΩħυҳΩ	ħυ ҳ	
	Show running-config	Ӌ ɱ
	Show aaa lockout	ɱ login ٩

↓

ħυ ҳ ٦ ↓	/١	
	-	-

61.6.2 aaa local authentication lockout-time

login ˘

aaa local authentication lockout-time *lockout-time*

٩	
lockout-time	ˆ ´ Æ' ˜ ˘ ↓ ḣ تن 1~2147483647

ḣ ẏ 15

ƫ ȝ	ŏ Â
G	login ˘
w R	ƗO R' Ruijie# **configure terminal** Ruijie(config)# a**aa local authentication lockout-time** 5

˜Ωƫ ȝ	ƫ ȝ	
	Show running-config	Ɨ ɱ
	Show aaa lockout	ɱ login ɳ

ɻ

ƫ ȝ ˥ ɻ	ɻ	
	-	-

61.6.3 aaa new-model

G RGOS AAA ŏ Ŀ ˘ ŏ ƫ ȝ **aaa new-model** G AAA Â ƫ ȝ **no** ˜Ω AAA ŏ Ŀ Â

aaa new-model

no aaa new-model

ɳ	ɳ	
	-	-

	˜Ω AAA ŏ Ŀ
ƫ ȝ	ŏ Â
G	ƫ ȝ AAA G ƫ ȝ˘ G AAA ŏ Ŀ˘ G **aaa new-model** G AAA ŏ Ŀ Â ŭ AAA˘ ‡ AAA ƫ ȝ a ɻ Â
w R	ƗO R G AAA ŏ Ŀ Â Ruijie(config)# **aaa new-model**

‫ﻫﻮ ﺭ‬	
aaa authentication	‫ﻫﺮ "
	‫ﻫﺮ "
aaa accounting	‫ﻫﺮ "

‫ﻣ‬

‫ﻫﻮ ﺭ ﺎ ﻣ‬	‫ﻣ‬
-	-

61.6.4 clear aaa local user lockout

61.6.5 debug aaa

AAA Ь ЎΩ Â ЂU ҂ **no** ЎΩ ЎΩ Â

debug aaa event

no debug aaa event

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-	-

ЂU ҂ EXEC Â

G

w R

ЎΩЂU ҂	
-	-

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ЂU ҂ ˥ Ѓ	
-	-

61.6.6 show aaa method-list

AAA " Â

show aaa method-list

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-	-

ЂU ҂

G	ħu ɜ AAA " Â

w R	IO R 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

ˇΩħu ɜ	ħu ɜ	
	aaa authentication	Ⱶ "
	aaa authorization	Ⱶ "
	aaa accounting	Ⱶ "

⊬	

ħu ɜ ˥ ⊬	⊬	
	-	-

61.6.7 show aaa user lockout

m⁄ " Â

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

⊰	⊰	
	<*word*>	ID

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G

ɱń " ˘ ΠU ˧ HA Â

w R

ƗO R '

```
Ruijie# show aaa user lockout all
```

ʕΩƫu ʒ

ƫu ʒ	
show running-config	Ꮋ ɱń
show aaa lockout	ɱń login ˥

˩

ƫu ʒ ˥ ˩

/ł	
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62.1.2 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**

৭	
id	৲ id <1-255>
type	type

৯ ৸ ⋮ '

id	৲	type
1	max down-rate	1
2	qos	2
3	user ip	3
4	vlan id	4
5	version to client	5
6	net ip	6
7	user name	7
8	password	8
9	file-diractory	9
10	file-count	10
11	file-name-0	11
12	file-name-1	12
13	file-name-2	13
14	file-name-3	14
15	file-name-4	15
16	max up-rate	16
17	version to server	17
18	flux-max-high32	18
19	flux-max-low32	19
20	proxy-avoid	20
21	dailup-avoid	21
22	ip privilige	22

23	login privilige	42

radius-server key	⊮ RADIUS ώ ⊨ ⊻ Ώ ϻ ϰ ϡ
radius-server retransmit	⊮ RADIUS ϟ

ћu ҳ ˥ ˩	/ˈ	
	-	-

62.1.6 radius-server retransmit

æ ѝ RADIUS ѿ Ь Ы ˩ Л ɱ ˩ ˘ ѿ ћu ҳ
radius-server retransmit Â ћu ҳ **no** ˩ Â

radius-server retransmit *retries*

no radius-server retransmit

ˈ˥	ˈ˥	
	retries	RADIUS ˩ Â

˩ ѝ 3 Â

ћu ҳ ѿ Â

G AAA æ G Ю У э ɱ ɱ ѿ Ь Ы ˩ Â
″ ѿ Ь Ы ˩ ñ ѿ Ь Ы æ ˩ RADIUS ˘ ˩ ƺ Â

w R Ю R ˩ ѝ 4
Ruijie(config)# **radius-server retransmit** *4*

ћu ҳ	
radius-server host	ћ RADIUS ѿ Ь Ы ў
radius-server key	ћ RADIUS ″Ω м ˈ ҳ
radius-server timeout	ћ RADIUS Ы

˙

ћu ҳ ˥ ˩	/ˈ	
	-	-

62.1.7 radius-server timeout

ㄴ RADIUS ŏ ㄴ ˘ ŏ ђu ҙ

radius-server timeout Â ђu ҙ **no** ˘ ђ Â

radius-server timeout *seconds*

no radius-server timeout

ㄱ	
seconds	ˆ ´ Æ й ˜ Â ㄴ ђ ت й 1-1000 Â

5

ђu ҙ ŏ Â

G G ђu ҙ ㄴ Â

w R Ю R ђ й 10 '

```
Ruijie(config)# radius-server timeout 10
```

ђu ҙ	
radius-server host	ђ RADIUS ŏ ㄴ ў
radius-server retransmit	ђ RADIUS ㄴ
radius-server key	ђ RADIUS Ω м ㄱ ҙ

ㅅ

ㅅ	
-	-

62.1.8 radius set qos cos

radius Ю qos ђ й ㄱ cos ђ

radius set qos cos

no radius set qos cos

ㄱ	
-	-

qos ϧ dscp ϩ

Ъυ ϗ ѽ Â

G Ъυ ϗ˘ ϟ Л· Ю qos

radius attribute	صر /ا
radius set	qos ï ᴳ cos

ا

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62.2 RADIUS

62.2.1 debug radius

RADIUS ˜Ω Â ħu ϗ no ˜Ω RADIUS ˜Ω Â

debug radius [**event | detail**]

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

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ħu ϗ	EXEC Â
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RADIUS ⊧ ⅄ ŏ ৭ Â

show radius parameter

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G G ħu ३ radius ⊧ ⅄ ৭ Â

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

ħu ३	

ħu ʒ Â

G G ħu ʒ radius Ł ɲ ą Â

w R
```
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
```

ʹΩħu ʒ

ħu ʒ	
radius-server host	ħʃ RADIUS ώ Ł ɲ ў
radius-server retransmit	ħʃ RADIUS ɻ
radius-server key	ħʃ RADIUS ʹΩ м ʌ ʒ
radius-server timeout	ħʃ RADIUS

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ħu ʒ ˥ ʌ

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62.2.4 show radius vendor-specific

RADIUS ص Â

show radius vendor-specific

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G G ħυ 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
```

w R

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63 TACACS+

63.1 TACACS+

63.1.1 aaa group server tacacs+

ћu ҁ TACACS+ Ь Ы ˇ a ㄴ TACACS+ Ь Ы ,ˆ ˆ a ㄴ Â

aaa group server tacacs+ *group-name*

no aaa group server tacacs+ *group-name*

٩	
group-name	TACACS+ Ь Ы ㄴ

TACACS+ Ь Ы Â

ћu ҁ ѿ Â

G TACACS+ Ь Ы ˆ ˇ à à ㄴЛu G a ㄴ Ь Ы Â

w R Ю R У э ㄴ й tac1 TACACS+ Ь Ы ˇ з ج è У э 1.1.1.1 TACACS+ Ь Ы سم فذ'

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

ћu ҁ

ћu ҁ	
server	TACACS+ Ь Ы server "
ip vrf forwarding	TACACS+ Ь Ы VRF ㄴ

ㄴ

ћu ҁ ٦ ㄴ

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63.1.2 ip tacacs source-interface

ħu ϡ TACACS+ سم فخ Â

ip tacacs source-interface *interface*

no ip tacacs source-interface

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2.247 0 Td [(T)-10(A)-1(C35Tf -0.0j /C2>2 78 1 Tf 0 Tc 4.6>2 4 0 19C2>2 09B7>tacacs source-7.24>Tj /TT1

vrf-name	vrf ʲ

ʮ ʯ

G

ħu ʒ ɱˇ ħu ʒ **aaa group server tacacs+** ώ TACACS+ Â
TACACS+ Ł ɲ è Ł ɲ ﻓﺨ ﺳ ﻟ ˇ ﺟ ﷺ Юˇ **tacacs-server**
host ħu ʒ Ł ɲ Â
Ł ɲ è TACACS+ Ł ɲ ﻓﺨ ﺳ ﻟ ˇ У э Ł ɲ : ˇ ¸ ɻ Ю У э Ł
ɲ ɬ Â

W R

Ю R У э ɻ й tac1 TACACS+ Ł ɲ ˇ з ﺟ è У э 1.1.1.1
TACACS+ Ł ɲ ﻓﺨ ﺳ ﻟ '

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

ћu ҙ	ѽ Â
G	ѝ ѫ G TACACS+ AAA ѽ Ҿ ћѫ TACACS+ ѽ Ҿ Ы Â ҵ Ѧu G **tacacs-server** ћu ҙ ћѫ У ə ə TACACS+ ѽ Ҿ Ы Â
ѡ R	Ю R ћѫ У ə TACACS+ ѽ Ҿ Ы ў ' Ruijie(config)# **tacacs-server host** *192.168.12.1* Ruijie(config)# **tacacs-server host** *2001::1*
Ӫћu ҙ	ћu ҙ | **aaa authentication** | ћѫ AAA ` " **tacacs-server key** | ѽ ћѫ TACACS+ ѽ Ҿ Ы Ӫ м ^ ҙ **tacacs-server timeout** | ѽ ћѫ TACACS+ Ҿ Ы : Ы
^	

τ ὶ ə Ŀ ɣ a ɻ G˘ τ G host ħυ ϩ è key ˘
ɻ Ʌυ ώ key Ŀ ɣ У ə key Â

w R Ю R ⱷ TACACS+ ώ Ŀ ɣ Ώ ɱ ʌ ϩ ὶ aaaʹ
Ruijie(config)#**tacacs-server key** *aaa*

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ħυ ϩ	
tacacs-server host	ⱷ TACACS+ ώ Ŀ ɣ ў
tacacs-server timeout	ⱷ TACACS+ ɣ

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63.1.7 tacacs-server timeout

ħυ ϩ б TACACS+ Ŀ ɣ ˘ Ŀ ɣ ώ Â

tacacs-server timeout *seconds*

no tacacs-server timeout

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seconds	ˆ ´ Æ ὶ ˜ Â ɻ ḣ ت ὶ 1-1000 Â

5

ħυ ϩ ώ Â

G G ħυ ϩ : Â τ ὶ ə Ŀ ɣ a ɻ
˘ G host ħυ ϩ è timeout ˘ ɻ Ʌυ ώ
timeout Ŀ ɣ У ə timeout Â

w R Ю R ⱷ ὶ 10 '
Ruijie(config)# **tacacs-server timeout** *10*

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ħυ ϩ	

tacacs-server host	ћ TACACS+ ѡ ѣ ў
tacacs-server key	ћ TACACS+ ї ҷ ѵ ҙ

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63.2 TACACS+

63.2.1 debug tacacs+

TACACS+ ї Â ћu ҙ no ї TACACS+ ї Â

debug tacacs+

no debug tacacs+

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63.2.2 show tacacs

Ω ϳ TACACS+ Ŧ ϰ Ϟ ϯ ϙ Â

show tacacs

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G	G ħυ ϗ Ω ϳ TACACS+ Ŧ ϰ Ϟ ϯ ϙ Â

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

ΫΩħυ ϗ	ħυ ϗ	
	tacacs-server host	ϧϫ Ω ϳ TACACS+ Ŧ ϰ Ϟ ϯ ϙ Â ϓ ϙ ώ Ŧ ϰ ў

ϳ

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64 SSH

64.1 SSH

64.1.1 crypto key generate

Ł ⅄ Ὼ″Ω ˘ ج ώ Ю˘ Ђu ƒ'

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

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rsa	RSA
dsa	DSA

α Ю SSH Server Ὼ″Ω Â

Ђu ƒ ώ

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64.1.2 crypto key zeroize

ϔ SSH Ł ϰ ΏΌΩ ˘ ѫ ώ ЮΌ ħυ ϗ'

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

	ϟ	
ϟ	**rsa**	ϔ RSA
	dsa	ϔ DSA

ħυ ϗ	ώ
G	ħυ ϗ ϔ Ł ϰ ΏΌΩ Â ϔ Л˘ SSH Server ѝ ѝ DISABLE Â ΌΩ SSH Serverў **no enable service ssh-server** ħυ ϗ Â
w R	Ruijie# **configure terminal** Ruijie(config)# **crypto key zeroize rsa**

ΌħυϗΩ	ħυ ϗ	
	show ip ssh	SSH Server ϱϩ Â
	crypto key generate {**rsa|dsa**}	DSA б RSA Â

Л	˚ RGOS10.1 ЛυЭ

ħυ ϗ ϒ Л	Л	
	-	-

64.1.3 ip ssh authentication-retries

SSH Server ÂG ħυ ϗ no ѝ Â

ip ssh authentication-retries *retry times*

no ip ssh authentication-retries

ϒ	
retry times	Â

	Ю ŕ 3 Â ˅ G **no ip ssh authentication-retries** ħυ ϗ ≠ ˩ Лυ G ŕ ĥ Â
ħυ ϗ	ѽ
G	ħυ ϗ SSH Server Â SSH Server ˇ ÿ ╖ˇ ‡ ŕ Â G **show ip ssh** ħυ ϗ SSH Server ə Â

w R	ŕ 2ʹ
	`Ruijie# configure terminal`
	`Ruijie(config)# ip ssh ssh authentication-retries 2`

˜Ωħυ ϗ		
ħυ ϗ		
show ip ssh	SSH Server ɱ Â	

˅	RGOS10.1 ЛυЭ

ħυ ϗ ˥ ˅		
/ϒ		
-	-	

64.1.4 ip ssh time-out

SSH Server

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G ħυ ϗ SSH Server Â ÿ ↓ ˘ 120s ╖ ˘ ‡ ѝ Â G **show ip ssh** ħυ ϗ SSH server ə Â

ψ R

ѝ 100s˙

```
Ruijie# configure terminal
Ruijie(config)# ip ssh time-out 100
```

ΩħυϗΩ

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show ip ssh	ssh-server ɱ ə Â

↓ ˚ RGOS10.1 ЛυЭ

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64.1.5 ip ssh version

SSH server Â G ħυ ϗ no ѝ Â

ip ssh version {**1** | **2**}

no ip ssh version

↰

↰	
1	SSH Server Θ SSH1
2	SSH Server Θ SSH2

Ю ò SSH 1 Ո 2 Â Л˘ ↓ ↓ SSH ↓ Â G **no ip ssh version** ħυ ϗ ≠ ↓Лυ ѝ Â

ħυ ϗ ѽ

G ħυ ϗ ⁸ SSH Server SSH ˜ Â ą Ю˝ SSH Server ò SSH1 б SSH2˝ G SSH 1 SSH 2 ↓Лυ Â ₡ ↓ ■■■ SSH Â G

৺ ᴿ	৲ ᴳ 2ʹ Ruijie# **configure terminal** Ruijie(config)# **ip ssh version** *2*

ʺΩħυ ३

ħυ ३	
show ip ssh	SSH Server ɱ Â

৶ ˚ RGOS10.1 ЛυЭ

	Clear line vty *line_number*	ґґ VTY ˬ Â

Л	ˬ RGOS10.1 ЛЪЭ

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64.2.2 show crypto key mypubkey

SSH Server Ъ"Ъ Ъ ґ ą Â

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

	Ч	
Ч	**rsa**	RSA Ъ ґ
	dsa	DSA Ъ ґ

Ъу ъ

G	SSH Server Ъ"Ъ Ъ ґ ą Â ↑ ' à Л à Ъ ґ ё ą Â

w R	Ruijie# **show crypto key mypubkey rsa**

"ЪЪу ъ	Ъу ъ	
	crypto key generate {**rsa	dsa**}	DSA б RSA Â

Л	ˬ RGOS10.1 ЛЪЭ

Ъу ъ Ъ Л	Л	
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64.2.3 show ip ssh

SSH Server ґґ ą Â

show ip ssh

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SSH Server ɱ ə Â ' à ï SSH Server à à Â

~ . G ɷ SSH ˘ Ł ˘ ÿ SSH ŕ a ɹ Â

w R Ruijie# **show ip ssh**

ˇΩħυ ३

ħυ ३	
Ip ssh version {**1**	**2**}	SSH Server ə Â
ip ssh time-out time	SSH Server Â
Ip ssh authentication-retries retry times	SSH Server Â

ɻ ˚ RGOS10.1 ЛυЭ

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64.2.4 show ssh

SSH э ə Â

show ssh

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G SSH ə Â ' ´ VTY Λ à SSH à ╗
à à à ⅄ Â

w R Ruijie# **show ssh**

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Λ ˚ RGOS10.1 Λυ Э

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65 CPU

65.1

65.1.1 cpu-protect type packet-type pps pps_value

CPU ا ص Â

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

pps_value	ا	ا	

CPU

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G ƕ ɮ CPU ɱ ə Â

ƜO R S8610 CPU ɗ ə 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
...
```

ʹΩƕ ɮ

ƕ ɮ	
show cpu-protect slot *slot-num*	´ CPU ɗ ə Â

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ƕ ɮ ˥ ɻ

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65.2.2 show cpu-protect slot

´ CPP ə Â

slot_num	ɻ ɦ ت ɲ 1-16 Â

ƕ ɮ Â

ƕ ɮ ´ CPP ə Â

G

ƟO R ´ 2 CPU ɗ ə Â

```
Ruijie(config)# show cpu-protect slot 2
Type        Pps      Total    Drop
----------- --------- --------- ---------
arp         200      200       15
bpdu        200        8        0
dhcp        200        0        0
gvrp        200        0        0
ipv6-mc      200        0        0
dvmrp       200        0        0
igmp        200        0        0
ospf        200        0        0
pim         200        0        0
rip         200        0        0
vrrp        200        0        0
unknow-ipmc  200       0        0
ttl1         20        3        0
```

w R

ƕ ɮ	
show cpu-protect mboard	CPU ɗ ə Â

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65.2.3 show cpu-protect type

ɮ ص '

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

٩		
	slot_num	٧ ḣ تن ٪ 1-16 Â

ƫu ɮ Â

G ƫu ɮ ص ə٩ Â

ЛυЮ R G **show cpu-protect type bpdu** ƫu ɮ BPDU '

w R

```
Ruijie(config)# show cpu-protect type arp
Slot     Type        Pps      Total     Drop
-------- ----------- -------- --------- ---------
MainBoard bpdu         100        30        0
Slot-2    bpdu         100        30        0
```

ƫu ɮ	
show cpu-protect type *packet-type*	CPU ɗ ə٩ Â

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ƫu ɮ ٦ ٧	٨	
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~ CPP ƫu ɮ è"…" " w CPP ص Â

66 DoS

66.1

66.1.1 ip deny invalid-l4port

ὖ ╖ Â G ƕ ɾ **no** ˜Ω ╖ Â

ip deny invalid-l4port

no ip deny invalid-l4port

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	ɑ ƙŎ ╖ ˜Ω Â
ƕ ɾ	ŵ Â
G	

R 1' ₰ Э ὖ ╖ '

Ruijie(config)# **ip deny invalid-l4port** ˟ ƀ

ᴡ R

ŭ TCP ╖ Â G ƫu ɮ **no** ˜Ω TCP ╖ Â

ip deny invalid-tcp

no ip deny invalid-tcp

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ɑ ƙŎ TCP ╖ ˜Ω Â

ƫu ɮ ŏ Â

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w R

R 1' ₰ Э ŭ TCP ╖ '

```
Ruijie(config)# ip deny invalid-tcp
```

R 2' ₰ Э˜Ω TCP ╖ '

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

˜Ωƫu ɮ

ƫu ɮ	
show ip deny invalid-tcp	TCP P

ƕ ɮ	ŏ Â
G	
w R	R 1' ₰ Э ŭ Land ℸ ' Ruijie(config)# **ip deny land** R 2' ₰ Э ˜Ω Land ℸ ' Ruijie(config)# **no ip deny land**

˜Ωƕ ɮ	ƕ ɮ	
	show ip deny land	Land

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66.2

66.2.1 show ip deny invalid-l4port

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show ip deny invalid-l4port

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

protect against invalid l4port attack Off

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66.2.3 show ip deny land

Land Â

show ip deny land

67 DAI

67.1 VLAN DAI

67.1.1 ip arp inspection vlan

G ħυ ϗ˘ ϟ ʃυ ΰ *vlan-id* VLAN DAI ╖ Â ħυ ϗ no ϟ ʃυ
ϵΩ *vlan-id* VLAN DAI ╖ ˘ ϶ *vlan-id*ƍ ‡ ϵΩ VLAN
Э DAI ╖ Â

ip arp inspection vlan *vlan-id*

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

϶	
vlan-id	vlan /ϧ Â

67.2

67.2.1 ip arp inspection trust

γ ϰ ΐ ϟ ə ˘ G ϰ ħυ ϡ **ip arp inspection trust** Â ħυ ϡ **no** γ ϰ ὶ a ə Â

ip arp inspection trust

no ip arp inspection trust

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ħυ ϡ ϰ Â

G ə ϰ ∫ ARP ˚ DAI ˘ ϟ Ʌυ è ϟ ə · ˘ τ a ϰ ∫ ARP ˘ τ ʎ Â

G

NFPP(▪▪ ɖ) ɥ ɒ˘ 8 NFPP ˘ a Ạ

& DAI ˘ ɷ ˜Ωħυ ϡ **show ip arp inspection interface**

ϟ ϰ ə Â

ŭ Ş ˛ γ ʌ ɣ ‡ t У ʌ ˘

68 IP Source Guard

68.1 IP Source Guard

68.1.1 ip source binding

ج IP فخ سم è ╗ ə ˇ **no** ╛ Â

[**no**] **ip source binding** *mac-address* **vlan** *vlan-id ip-address* **interface** *interface-id*

٩		
٩	*mac-address*	╗ MAC فخ سم’
	vlan-id	╗ vlan id’
	ip-address	╗ IP فخ سم’
	interface-id	╗ ٩ Â

	╗ ˙ ! فخ سم Â
ħυ ϡ	ŏ Â
G	ħυ ϡ ┘Л υ ї ╜ ┘Л IP Source Guard ˇ a DHCP У ⁸ Â

ю У э ╜ ٩ 1 R ’

```
Ruijie# configure terminal
Ruijie(config)# ip source binding 0000.0000.0001 vlan 1 1.1.1.1
interface FastEthernet 0/1
Ruijie(config)# end
Ruijie# show ip source binding
MacAddress    IpAddress  Lease(sec)  Type    VLAN  Interface
------------- --------- ----------  ----    ----  ------------
0000.0000.0001 1.1.1.1   infinite   static   1  FastEthernet 0/1
Total number of bindings: 1
```

ΩħυϡΩ	ħυ ϡ	

	show ip source binding	IP ﻓﺬ ﺳﻢ ə٫

ﻤ

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	-	-

68.2 IP Source Guard

68.2.1 ip verify source

ﻤ Э IP Source Guard ╖ ˘ **no** ˜Ω ╖ Â

[**no**] **ip verify source** [**port-security**]

ﻤ	ﻤ	
	port-security	IP Source Guard ╖ ﺳﻢ ¥ IP+MAC Â

	˜Ω Â
ħυ ϗ	ﻤ Â
G	ħυ ϗ ﻤ IP Source Guard ╖ ˘ ⊿Ո ﺳﻢ ¥ IP ˘ ﺳﻢ ¥ IP+MAC ' IP Source Guard ╖ Θ Θ ﺟ DHCP Snooping ə٫ ﻤ Э ˘ ≠ ˘ ﺟ Trust ﻤ Ո ⊿ DHCP Snooping ⁸ ﻤ Э IP Source Guard ╖ ˘ IP Source Guard ╖ a Â
w R	Ю ﻤ 1 Э IP Source Guard ╖ '

```
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip verify source
Ruijie(config-if)# end
```

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68.3 IP Source Guard

68.3.1 show ip source binding

ħυ ३ IP فخ سم

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

⁄٦	
ip-address	ip
mac-address	mac ِ ٹ ’
dhcp-snooping	╟ پ
static	پ
vlan-id	vlan ِ ٹ ’

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ค่าเริ่มต้น

ค่าเริ่มต้นของ	ค่า
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cpu-protect sub-interface {*manage*|*protocol*|*route*} **percent** *percent_vaule*

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ʅ	
percent_vaule	ƚ ˘ ɻ ḣ ټ 1ƚ 100

(Manage)´ ă ʁ ƚ ὶ 30˝
ɻ (Route)´ ă ʁ ƚ ὶ 25˝
˜ (Protocol)´ ă ʁ ƚ ὶ 45 Â

ƫ ɂ ŏ

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ʁ ᴿ
```
Ruijie(config)# cpu-protect sub-interface manage percent 60
```

ʔΩƫ ɂ

ƫ ɂ	
cpu-protect sub-interface { *manage* | *protocol* | *route* } **pps**	ɜ ص ´ " ƚ

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69.3 ARP

69.3.1 arp-guard attack-threshold

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arp-guard attack-threshold {**per-src-ip** | **per-src-mac** | **per-port**} *pps*

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per-src-ip	ə IP فخ سم Â
per-src-mac	ə MAC فخ سم Â
per-port	ə ۸ Â
pps	[1,9999] تن ḣ ۷ ˘ Æ ´ ˘ Â

ə IP فخ سم Ո ə MAC فخ سم 8 ə˘ ə ۸ 200 ə Â

ħυ ҳ NFPP

G a ɣ Â

w R
```
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
```

ħυ ҳ	
nfpp arp-guard policy	Ո
show nfpp arp-guard summary	ҷ
show nfpp arp-guard hosts	۷ ў
clear nfpp arp-guard hosts	ў

ۺΩħυ ҳ

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ħυ ҳ ٦ ۷

69.3.2 arp-guard enable

ħυ ϡ ώ ARP ╖ Â

arp-guard enable

↰	
-	-

ARP ╖

ħυ ϡ NFPP

G

w R

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

ΩħυϡϡΩħυ ϡ	
nffp arp-guard enable	↰ Э ARP ╖
show nfpp arp-guard summary	ə

↙

ħυ ϡ ↿ ↙	
-	-

69.3.3 arp-guard isolate-period

ħυ ϡ ώ Â

arp-guard isolate-period {*seconds* | **permanent**}

↰	
seconds	˘ ´ Æ ˘ ↙ ḣ ىن 0 [30, 86400] Â
permanent	ⱵA

ώ ḣ Ơ . a Â

ħυ ३	NFPP
G	
ш R	Ruijie(config)# **nfpp** Ruijie(config-nfpp)# **arp-guard isolate-period** 180

ΩħU ३		
	ħυ ३	
	nfpp arp-guard isolate-period	ج ٨ Э
	show nfpp arp-guard summary	٩

٨	
ħυ ३ ٦ ٨	

٨	
-	-

69.3.4 arp-guard monitor-period

ħυ ३ Â

arp-guard monitor-period *seconds*

٩		
	٩	
	seconds	˘ ´ Æ ˘ ٧ ḣ ىں [180, 86400] Â

ḣ 600 Â

ħυ ३	NFPP
G	Â Ą˘ ẁ Ơ ˚ ˘ ẁ Â ج ˚ è˘ ẁ ḣ ˘ ╟ ˚ ٧ ˚ ˘ з ẁ Â ج ẁ 0 ą Ю Ⱨ Â Â ÿ ḣ ˘ Ω ٨ ˚ ˘ a ˚ Â
ш R	Ruijie(config)# **nfpp**

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

show nfpp arp-guard summary ə٩

ħυ ϩ ϒ ↓	/ſ	
	-	-

69.3.7 arp-guard scan-threshold

ѿ Â

arp-guard scan-threshold *pkt-cnt*

ſ	ſ	
	pkt-cnt	ḣ˘ ↓ ḣ تن [1,9999] Â

15˘ ´ Æ 10 Â

ħυ ϩ	NFPP
G	10 ¦ 15 ɜ ЛЪЭ ARP ˘ MAC فخ سم ثن IP فخ سم ↓ لا˘ ИЙ MAC فخ سم Ո IP ثن فخ سم IP فخ سم a ↓ لا˘ Â
ı w R	Ruijie(config)# **nfpp** Ruijie(config-nfpp)# **arp-guard scan-threshold** 20

clear nfpp arp-guard hosts [**vlan** *vid*] [**interface** *interface-id*] [*ip-address* | *mac-address*]

ϟ		
ϟ	*vid*	ϟ ϛϟ
	interface-id	ϟ ɻ
	ip-address	IP ϟϟϛ
	mac-address	MAC ϟϟϛ

ħυ ϛ

G a ϟ ˘ ў Â

w R VLAN 1 ϟ g 0/1 ў Â

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

ΩħυϛϞ	ħυ ϛ	
	arp-guard attack-threshold	ώ
	nfpp arp-guard policy	∩
	show nfpp arp-guard hosts	ɻ ў

ɻ

ħυ ϛ ϶ ɻ	ϟ	
	-	-

69.3.9 clear nfpp arp-guard scan

ARP Â

clear nfpp arp-guard scan

ϟ		
ϟ	-	-

ħυ ϡ

G

w R Ruijie# **clear nfpp arp-guard scan**

ΐΩħυ ϡ

ħυ ϡ	
arp-guard scan-threshold	ώ
nfpp arp-guard scan-threshold	
show nfpp arp-guard scan	ARP

ϰ

ħυ ϡ ϒ ϰ

ϰ	
-	-

69.3.10 nfpp arp-guard enable

ħυ ϡ ح ϧ Э ARP ╖ Â

nfpp arp-guard enable

ϧ

ϧ	
-	-

ϧ ARP ΐΩ ώ ΐΩ Â

ħυ ϡ ϧ

G ϧ ARP ΐΩ ΅I ɣ ώ ARP ΐΩ Â

w R
```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp arp-guard enable
```

ħυ ϡ	
arp-guard enable	ώ ARP ╖

ϻ

ħυ ϗ ϒ ϻ

ϻ	
10.4	ħυ ϗ

69.3.11 nfpp arp-guard isolate-period

ħυ ϗ ϫ ϰ Ɔ Â

nfpp arp-guard isolate-period {*seconds* | **permanent**}

ϰ

ϰ	
seconds	˘ ´ Æ ˘ ϻ ḣ ټ 0 [30, 86400] 0 a Â
permanent	ⱻ

ϙ ˘ ώ Â

ħυ ϗ ϰ

G

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

ΏħυϗΩ

ħυ ϗ	
arp-guard isolate-period	ώ
show nfpp arp-guard summary	ϑ

ϻ

ħυ ϗ ϒ ϻ

ϻ	
10.4	ħυ ϗ

69.3.12 nfpp arp-guard policy

ج ٨ Э Ո Â

nfpp arp-guard policy {**per-src-ip** | **per-src-mac** | **per-port**} *rate-limit-pps attack-threshold-pps*

٨	
per-src-ip	ə IP فخ سه Ո Â
per-src-mac	ə MAC فخ سه Ո Â
per-port	ə ٨ Ո Â
rate-limit-pps	˘ ٧ ḣ تن 1↑ 9999 Â
attack-threshold-pps	˘ ٧ ḣ تن 1↑ 9999 Â

٨ Ո ˘ ŏ Ո Â

ħυ ϡ ٨

G a ¥ Â

w R
```
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
```

ʹΩħυ ϡ

ħυ ϡ	
arp-guard attack-threshold	ŏ
arp-guard rate-limit	ŏ
show nfpp arp-guard summary	ə
show nfpp arp-guard hosts	٧ ў
clear nfpp arp-guard hosts	ў

٧

ħυ ϡ ˥ ٧

/١	
10.4	ħυ ϡ

69.3.13 nfpp arp-guard scan-threshold

ج ٨ Э Â

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

٩	
pkt-cnt	ḣ˘ ٧ ḣ تن [1,9999] Â

ѫ ¥ ٨ ARP ḣ˘ ѿ ARP ḣ Â

ħυ ϛ ٨

G

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp arp-guard scan-threshold 20
```

	pps	˘ ´ Æ ˘ ↓ ḣ تن [1,9999] Â

	ɘ MAC فخ سم 10 ɘ˘ ɘ ∧ 300 ɘ Â
ħυ ϡ	NFPP
G	

ψ R	Ruijie(config)# **nfpp** Ruijie(config-nfpp)# **dhcp-guard attack-threshold per-src-mac** *15* Ruijie(config-nfpp)# **dhcp-guard attack-threshold per-port** *200*

΅Ωħυ ϡ	**ħυ ϡ**	
	nfpp dhcp-guard policy	∩
	show nfpp dhcp-guard summary	ə
	show nfpp dhcp-guard hosts	↓ ў
	clear nfpp dhcp-guard hosts	↓ ў

↓

ħυ ϡ ˥ ↓	/!	
	-	-

69.4.2 dhcp-guard enable

ħυ ϡ DHCP ╖ Â

dhcp-guard enable

∧	∧	
	-	-

	∧ DHCP ΅˘ ώ ΅Ω Â
ħυ ϡ	NFPP
G	

w R

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

ΐΩħυ ҳ

ħυ ҳ	
nffp dhcp-guard enable	ᵭ ᵑ Э DHCP ℸ
show nfpp dhcp-guard summary	ᵋ

ᵑ

ħυ ҳ ˥ ᵑ

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-	-

69.4.3 dhcp-guard isolate-period

ħυ ҳ ѽ Â

dhcp-guard isolate-period {*seconds* | **permanent**}

ᵑ

ᵑ	
seconds	˘ ´ Æ ˘ ᵑ ḣ ټ 0 [30, 86400] 0 a Â
permanent	ⱻ

ѽ ḣ ơ . a Â

ħυ ҳ NFPP

G ƚ ṅ ѽ Ո ₥ ɣ ᵑ ˆ . ˜ Â ɣ ə ᵑ˘ ₥ ɣ ᵑ ˘ ₹ ѽ ’ ǐ ‡˘ ₥ ɣ ᵑ Â

w R

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard isolate timeout 180
```

ΐΩħυ ҳ

ħυ ҳ	
nfpp dhcp-guard isolate-period	ᵭ ᵑ Э

	show nfpp dhcp-guard summary	ə٩

⊀

ħυ ϛ ٦ ⊀		
	⊀	
	-	-

69.4.4 dhcp-guard monitor-period

ħυ ϛ Â

dhcp-guard monitor- period *seconds*

⊀		
	⊀	
	seconds	˘ ´ Æ ˘ ⊀ ḣ ىں [180, 86400] Â

	ѽ ḣ 600 Â
ħυ ϛ	NFPP
G	Â Ąˇ ѝ Ơ ˚ ˘ ѝ Â ج ˚ èˇ ѝ ḣ ˘ ╟ ˚ ⊀ ˚ ˘ ȝ ѝ Â ج ѝ 0 ą Ю Ⱶ Â Â ÿ ḣ ˘ ˁΩ ⊀ ╗ ˘ a ˚ Â
ѡ R	`Ruijie(config)# nfpp` `Ruijie(config-nfpp)# dhcp-guard monitor-period 180`

ħυ ϛ	

NFPP ħu ҳ

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

٩	
per-src-mac	ə MAC فذ سه
per-port	ə ٩
pps	ḣˇ ٧ ḣ تن [1,9999] Â

ə MAC فذ سه 5 əˇ ə ٩ 150 ə Â

ħυ ϡ NFPP

G

w R

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard rate-limit per-src-mac 8
Ruijie(config-nfpp)# dhcp-guard rate-limit per-port 100
```

ħυ ϡ

G a ϰ ˘ Â

w R VLAN 1 ϰ g 0/1 Â

```
Ruijie# clear nfpp dhcp-guard hosts vlan 1 interface g0/1
```

ΈΩħυ ϡ

ħυ ϡ	
dhcp-guard attack-threshold	ώ
nfpp dhcp-guard policy	Ո
show nfpp dhcp-guard hosts	ў

ϡ

ϡ	

69.4.9 nfpp dhcp-guard isolate-period

69.4.10 nfpp dhcp-guard policy

ج ٨ Э Ո Â

nfpp dhcp-guard policy { **per-src-mac** | **per-port**} *rate-limit-pps attack-threshold-pps*

٨	
per-src-mac	э MAC فذسم Ո Â
per-port	э ٨ Ո Â
rate-limit-pps	˘ ٧ ḣ ىتن 1↑ 9999 Â
attack-threshold-pps	˘ ٧ ḣ ىتن 1↑ 9999 Â

٨ Ո ˘ ŏ Ո Â

ħυ ϗ ٨

G a ¥ Â

w R
```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp dhcp-guard policy per-src-mac 3 10
Ruijie(config-if)# nfpp dhcp-guard policy per-port 50 100
```

ΏħυϗΩ

ħυ ϗ	
dhcp-guard attack-threshold	ŏ
dhcp-guard rate-limit	ŏ
show nfpp dhcp-guard summary	ٹ
show nfpp dhcp-guard hosts	٧ ў
clear nfpp dhcp-guard hosts	ў

٧

ħυ ϗ ٦ ٧

٨	
10.4	ħυ ϗ

69.5 DHCPv6

69.5.1 dhcpv6-guard attack-threshold

ώ ˘ . Ąˇ ϶ ϧ Â

dhcpv6-guard attack-threshold { **per-src-mac** | **per-port**} *pps*

ϟ		
ϟ	**per-src-mac**	϶ MAC فخ سم Â
	per-port	϶ ϟ Â
	pps	˘ ´ Æ ˘ ϳ ḣ تن [1,9999] Â

϶ MAC فخ سم 10 ϶ˇ ϶ ϟ 300 ϶ Â

ħυ ϡ NFPP

G

w R
```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcpv6-guard attack-threshold per-src-mac 15
Ruijie(config-nfpp)# dhcpv6-guard attack-threshold per-port 200
```

ˇΩħυ ϡ

ħυ ϡ	
nfpp dhcpv6-guard policy	Ո
show nfpp dhcpv6-guard summary	ə
show nfpp dhcpv6-guard hosts	ϳ ў
clear nfpp dhcpv6-guard hosts	ϳ ў

ϳ

ħυ ϡ ˥ ϳ

ϱ	
10.4	ħυ ϡ

69.5.2 dhcpv6-guard enable

ħυ ϡ DHCPv6 ╖ Â

dhcpv6-guard enable

ϟ

ϟ	
-	-

ϟ DHCPv6 ΎΩ ώ ΎΩ Â

ħυ ϗ NFPP

G

w R
```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcpv6-guard enable
```

ΎΩħυ ϗ

ħυ ϗ	
nffp dhcpv6-guard enable	ج ϟ Э DHCPv6 ℾ
show nfpp dhcpv6-guard summary	ϑ

ϡ

ħυ ϗ ϒ ϡ

ϱ	
10.4	ħυ ϗ

69.5.3 dhcpv6-guard isolate-period

ħυ ϗ ώ Â

dhcpv6-guard isolate-period {*seconds* | **permanent**}

ϟ

ϟ	
seconds	˘ ´ Æ ˘ ϡ ḣ تن 0 [30, 86400]ϳ 0 a Â
permanent	ΗΑ

ώ ḣ Ơ . a Â

ħυ ϗ NFPP

G ϯ ὶ ώ Ω ₩ ¥ ϟ ˆ . ˜ Â

¥ ɔ ˄˘ ⩳ ¥ ˄ ˘ ⋇ ώ ' ǐ ‡˘
⩳ ¥ ˄ Â

ѡ R

ħυ ҳ	
show nfpp dhcpv6-guard summary	ə
show nfpp dhcpv6-guard hosts	ʏ ў
clear nfpp dhcpv6-guard hosts	ў

ʏ

/ʏ	
10.4	ħυ ҳ

69.5.5 dhcpv6-guard monitored-host-limit

ħυ ҳ ʏ ў Â

dhcpv6-guard monitored-host-limit *number*

ʏ		
number	ʏ ў ˘ ʏ ḣ ىت и 1ĵ 4294967295

ʏ ў и 1000 э

NFPP

ʏ ў ĵ 1000 э˘ ˜ ʏ ў ɣ 1000˜ a˛ ĭ ʏ ў ˘ . ə ľ %ERROR' The value that you configured is smaller than current monitored hosts 1000˜ ʏ ў ~ ˘ please clear a part of monitored hosts. Ł ˜ ˘ ĭ ĵ ў Â

ʏ ў ˘ . ľ % NFPP_DHCP_GUARD-4-SESSION_LIMIT: Attempt to exceed limit of 1000˜ ʏ ў ~ monitored hosts. Ł ˜ Â

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

ħυ ҳ	
show nfpp dhcpv6-guard summary	ə

ﻝ

ħυ ҳ ٦ ﻝ

ﻵ	
10.4	ħυ ҳ

69.5.6 dhcpv6-guard rate-limit

ώ Â

dhcpv6-guard rate-limit { **per-src-mac** | **per-port**} *pps*

ﻵ

ﻵ	
per-src-mac	ə MAC فذسم
per-port	ə ﻵ
pps	ḣ˘ ﻝ ḣ تن [1,9999] Â

ə MAC فذسم 5 ə˘ ə ﻵ 150 ə Â

ħυ ҳ NFPP

G

w R
```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcpv6-guard rate-limit per-src-mac 8
Ruijie(config-nfpp)# dhcpv6-guard rate-limit per-port 100
```

ΏħυҲ

ħυ ҳ	
nfpp dhcpv6-guard policy	Ո
show nfpp dhcpv6-guard summary	ə

ﻝ

ħυ ҳ ٦ ﻝ

ﻵ	
10.4	ħυ ҳ

69.5.7 clear nfpp dhcpv6-guard hosts

˘ . Â

clear nfpp dhcpv6-guard hosts [*vlan vid*] [**interface** *interface-id*] [*mac-address*]

ϰ

ϰ	
vid	ѩ ϰ
interface-id	ϰ ɻ
mac-address	MAC ѫ

ƫυ ϗ

G a ϰ ˘ Â

w R VLAN 1 ϰ g 0/1 Â

```
Ruijie# clear nfpp dhcpv6-guard hosts vlan 1 interface g0/1
```

ʹΩƫυ ϗ

ƫυ ϗ	
dhcpv6-guard attack-threshold	ώ
nfpp dhcpv6-guard policy	∩
show nfpp dhcpv6-guard hosts	ў

ϡ

ƫυ ϗ ϒ ϡ

ϰ	
10.4	ƫυ ϗ

69.5.8 nfpp dhcpv6-guard enable

ƫυ ϗ ѧ ϰ Э DHCPv6 ╖ Â

nfpp dhcpv6-guard enable

ϰ

ϰ	
-	-

ϰ DHCPv6 ʹΩ˘ ώ ʹΩ Â

ħυ ϗ ʌ

G ʌ DHCPv6 ΈΩ ¨I ¥ ώ DHCP ΈΩ Â

w R
```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp dhcpv6-guard enable
```

ΈΩħυ ϗ

ħυ ϗ	
dhcpv6-guard enable	ώ DHCPv6 ℸ
show nfpp dhcpv6-guard summary	ə

ʎ

ħυ ϗ ˥ ʎ

ʌ	
10.4	ħυ ϗ

69.5.9 nfpp dhcpv6-guard isolate-period

ħυ ϗ ≈ ʌ Э Â

nfpp dhcpv6-guard isolate-period {*seconds* | **permanent**}

ʌ

ʌ	
seconds	˘ ´ Æ ˘ ˪ ḣ ىت 0 [30, 86400]˺ 0 a Â
permanent	ⱵA

ą ˘ ώ Â

ħυ ϗ ʌ

G

w R
```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# 5BP0Ⱶ30 5606ÆLÆqB)ŒSH”djfA7ǂðdXÂc`EÄ
```

dhcpv6-guard isolate-period	ѡ
show nfpp dhcpv6-guard summary	ҷ

ѧ

ѧ	

ϡ

ħυ ϩ ϒ ϡ

ϡ	
10.4	ħυ ϩ

69.6 ICMP

69.6.1 icmp-guard attack-threshold

ώ ˘ . Ąˇ ϳ ϳ Â

icmp-guard attack-threshold { **per-src-ip** | **per-port**} *pps*

ϟ

ϟ	
per-src-ip	ə IP فذ سم Â
per-port	ə ϟ Â
pps	˘ ´ Æ ˘ ϟ ḣ تن [1,9999] Â

ə IP فذ سم 1200 ə˘ ə ϟ 1500 ə Â

ħυ ϩ NFPP

G

w R
```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard attack-threshold per-src-ip 600
Ruijie(config-nfpp)# icmp-guard attack-threshold per-port 1200
```

ħυ ϩ

ƫυ ϗ ϒ ϡ	Ѧ	
	-	-

69.6.2 icmp-guard enable

ƫυ ϗ ICMP ϖ Â

icmp-guard enable

Ѧ	Ѧ	
	-	-

ICMP ϖ

ƫυ ϗ	NFPP
G	
ѡ R	Ruijie(config)# **nfpp** Ruijie(config-nfpp)# **icmp-guard enable**

ΩƫυϗƫΩ ϗ	ƫυ ϗ	
	nffp icmp-guard enable	ѽ Ѧ Э ICMP ϖ
	show nfpp icmp-guard summary	ə

ϡ	

ƫυ ϗ ϒ ϡ	Ѧ	
	-	-

69.6.3 icmp-guard isolate-period

ƫυ ϗ ώ Â

icmp-guard isolate-period {*seconds* | **permanent**}

Ѧ	Ѧ	

seconds	˘ ´ Æ ˘ ↓ ḣ ىں 0 [30, 86400]ˇ 0 a Â
permanent	ⱵA

ώ ḣ 0ˇ . a Â

ħυ ϡ NFPP

G ǰ ὶ ώ Ω ₦ ɣ ↑ ˆ . ~ Â
ɣ ɜ ↑˘ ₦ ɣ ↑ ˘ ϗ ώ ' ǐ ‡˘
₦ ɣ ↑ Â

ψ R

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard isolate-period 180
```

ħυ ϡ	
nfpp icmp-guard isolate-period	ج ↑ Э

ʺΩħυ ϡ

Â ج ˚ è˘ ѝ ḣ ˘ ╟ ˚

exceed limit of 1000ˆ ↓ ў ~ monitored hosts. Ł ˜ Â

69.6.8 clear nfpp icmp-guard hosts

ل ў ˘ ў ˘ Â

clear nfpp icmp-guard hosts [*vlan vid*] [**interface** *interface-id*] [*ip-address*]

٩	
vid	ﷺ ٨
interface-id	٩ ﻝ

	ʌ ICMP ʗΩ˙ ώ ʗΩ Â
ħυ ϗ	ʌ
G	ʌ ICMP ʗΩ ¨I ɣ ώ ICMP ʗΩ Â
w R	Ruijie(config)# **interface G0/1** Ruijie(config-if)# **nfpp icmp-guard enable**

ʗΩħυ ϗ

ħυ ϗ	
icmp-guard enable	ώ ICMP ℸ
show nfpp icmp-guard summary	ə

ʃ

ħυ ϗ ˥ ʃ

ʃ	
10.4	ħυ ϗ

69.6.10 nfpp icmp-guard isolate-period

ħυ ϗ ح ʌ Э Â

nfpp icmp-guard isolate-period {*seconds* | **permanent**}

ʌ

ʌ	
seconds	˘ ´ Æ ˘ ʃ ḣ ىتن 0 [30, 86400]ʗ 0 a Â
permanent	ⱵA

	ɑ ˘ ώ Â
ħυ ϗ	ʌ

G ˘ ύ } ط Ń ő = ľ

ħυ ३	
icmp-guard isolate-period	

NFPP ħu ҳ

show nfpp ip-guard hosts	↓ ў
clear nfpp ip-guard hosts	ў

↓

ħυ ϗ ↑ ↓	
10.4	ħυ ϗ

69.7.2 ip-guard enable

ħυ ϗ ώ IP ╖ Â

ip-guard enable

↑	
-	-

IP ╖

ħυ ϗ NFPP

G

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

ΏħυϗΩ	
nffp ip-guard enable	₂ ↑ Э IP ╖
show nfpp ip-guard summary	ə

↓

ħυ ϗ ↑ ↓	
10.4	ħυ ϗ

69.7.3 ip-guard isolate-period

ħυ ҳ ѽ Â

ip-guard isolate-period {*seconds* | **permanent**}

۷	
seconds	˘ ´ Æ ˘ ۷ ḣ ىت 0 [30, 86400] Â
permanent	ⱵA

ѽ ḣ Ơ . a Â

ħυ ҳ NFPP

G

w R

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard isolate-period 180
```

ħυ ҳ	
nfpp ip-guard isolate-period	ج ۷ Э
show nfpp ip-guard summary	ҽ

۷

/۷	
10.4	ħυ ҳ

69.7.4 ip-guard monitor-period

ħυ ҳ Â

ip-guard monitor-period *seconds*

۷	
seconds	˘ ´ Æ ˘ ۷ ḣ ىت [180, 86400] Â

ḣ 600 Â

ħυ ҳ NFPP

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Â ѧ ˚ è˘ ѝ ḣ ˘ ╟ ˚
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ҢЖ Â
Â ÿ ḣ ˘ ℃Ω ↓ ╕ ˘ a
˚ Â

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard monitor-period 180
```

Ћυ ҳ	
show nfpp ip-guard summary	ҽ
show nfpp ip-guard hosts	↓ ў
clear nfpp ip-guard hosts	ў

Л	
10.4	Ћυ ҳ

ard monitored-host-limit

↓ ў Â

d monitored-host-limit *number*

↓ ў ˘ . ľ % NFPP_IP_GUARD-4-SESSION_LIMIT: Attempt to exceed limit of 1000˜ ↓ ў ~ monitored hosts. Ł ˜ Â

	show nfpp ip-guard summary	ə

ip-guard trusted-host *ip mask*

no ip-guard trusted-host {**all** | *ip mask*}

۹	
ip	IP ﻓﺦ ﺳﻢ
mask	IP ﻓﺦ ﺳﻢ
all	Ո- no У G ˇ ĭ ۷ ҽ ў

۹

ħυ ҳ	
G	a ٨ ˘ ў Â
w R	VLAN 1 ٨ g 0/1 ў Â Ruijie# **clear nfpp ip-guard hosts vlan** *1* **interface** g0/1

˜Ωħυ ҳ	**ħυ ҳ**	
	ip-guard attack-threshold	ѽ
	nfpp ip-guard policy	∩
	show nfpp ip-guard hosts	↓ ў

↓	

ħυ ҳ ٦ ↓	/٨	
	10.4	ħυ ҳ

69.7.10 nfpp ip-guard enable

ħυ ҳ ѫ ٨ Э IP ╗ Â

nfpp ip-guard enable

٨	**٨**	
	-	-

	٨ IP ˜Ω˙ ѽ ˜Ω Â
ħυ ҳ	٨
G	٨ IP ˜Ω ¨I ɣ ѽ ˜Ω Â
w R	Ruijie(config)# **interface G0/1** Ruijie(config-if)# **nfpp ip-guard enable**

NFPP

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

۹	

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ħυ ϡ	NFPP
G	a ¥ Â
w R	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-redirect** *10*

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ħυ ϡ	
nfpp nd-guard policy	∩
show nfpp nd-guard summary	ə

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10.4	ħυ ϡ

69.8.2 nd-guard enable

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nd-guard enable

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ND ╖

ħυ ϡ	NFPP
G	
w R	Ruijie(config)# **nfpp**

Ruijie(config-nfpp)# **nd-guard enable**

ħυ ҳ	
nffp nd-guard enable	ج ٨ Э ND ℸ
show nfpp nd-guard summary	ҽ

69.8.3 nd-guard rate-limit

ѿ Â

nd-guard rate-limit per-port {**ns-na** | **rs** | **ra-redirect**} *pps*

٩	
ns-na	Ո ٰΩ˜
rs	Ⴑ
ra-redirect	Ⴑ ٰΩ˜ Ո ر
pps	ḣ˘ ٨ ḣ ىن [1,9999] Â

э ٨ /ٰΩ˜ 15 э˘ Ⴑ
15 э˘ Ⴑ ٰΩ˜ / ر 15 э Â

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*

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	show nfpp nd-guard summary	ə٤

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	10.4	ħυ ҳ

69.8.4 nfpp nd-guard enable

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nfpp nd-guard enable

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ħυ ҳ	٨
G	٨ ND ٹΩ ٬I ɣ ŏ ٹΩ Â

w R

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp nd-guard enable
```

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	ħυ ҳ	
	nd-guard enable	ŏ ND ╖
	show nfpp nd-guard summary	ə٤

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	ѵ	
	10.4	ħυ ҳ

69.8.5 nfpp nd-guard policy

ҽ ٨ Э ∩ Â

nfpp nd-guard policy per-port {**ns-na** | **rs** | **ra-redirect**} *rate-limit-pps attack-thresh old-pps*

ϟ	
PP **ns-na**	Ո· Ϣ˜

(oldgu)4(pa)]TJ/C2_0 1 Tc 147906 -0.006 Td1B0F07CF2208349316>62C809AA16>661038D70CC88F

	number	ă ʁ ˘ ´ Æ ˘ ˬ ḣ ىن [0,1024]

ă ʁ ѝ 256 Â

ħυ ϡ NFPP

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ʁ R

NFPP ă ʁ ѝ 50 Â

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# log-buffer entries 50
```

ħυ ϡ	
log-buffer logs number_of_message **interval** length_in_seconds	NFPP ÿ ă ʁ ˬ Â

show nfpp log NFPP ă ʁ

	number_of_message ϰ 1˜ *length_in_seconds* ħ ϰ 30 Â
ħυ ϡ	NFPP
G	
ϣ R	`Ruijie(config)# nfpp` `Ruijie(config-nfpp)# log-buffer logs 2 interval 12`

ΩħυϡΩ

ħυ ϡ	
log-buffer entries *number*	NFPP ă ϣ Â
show nfpp log summary	NFPP ă ϣ Â

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10.4	ħυ ϡ

69.9.4 logging

NFPP ف VLAN ϡ Â

logging vlan *vlan-range*

logging interface *interface-id*

ϡ

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vlan-range	VLAN ن ă ə ˘ ώ ľ 1-3,5 Ŀ Â
interface-id	ϡ ə Â

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ħυ ϡ NFPP

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ϔ ϡ VLAN 1 à VLAN 2 à VLAN 3 Ո VLAN 5 ˘ ЮЎ

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# logging vlan 1-3,5
```

ϡ R

ϔ ϡ ϡ G 0/1 ˘ ЮЎ

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# logging interface G 0/1
```

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ħυ ϗ	
show nfpp log summary	NFPP ă ϣ Â

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69.9.5 show nfpp log

NFPP Â

show nfpp log summary

NFPP ă ϣ ą Â

show nfpp log buffer [**statistics**]

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statistics	NFPP ă ϣ ə

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%NFPP_ARP_GUARD-4-DOS_DETECTED: Host<IP=N/A,MAC=0000.0000.0004,port=Gi4/1,VLAN=1> was detected.(2009-07-01 13:00:00)

NFPP ə 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 è 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 ЛЬЮ↓ ḣ'

Â ARP ARP ~

Â IP IP ~

Â ICMP ICMP ~

Â DHCP DHCP ~

Â DHCPv6 DHCPv6 ~

Â NS-NA ND è Ո Ω ~

Â RS ND è ϰ ~

Â RA-REDIRECT ND è ϰ Ω Ո ɹ ~

Reason ϰ ϟ 5 ϙ ḣ'

Â DoS ʃ Ɩ

Â ISOLATED ˚ ϖ ϻ

Â ISOLATE_FAILED

Â SCAN ʃ

Â PORT_ATTACKED ϙ

ΐΩħυ ϗ

ħυ ϗ	
clear nfpp log	NFPP ă ϣ

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10.4	ħυ ϗ

69.10 ARP

69.10.1 show nfpp arp-guard hosts

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show nfpp arp-guard hosts [**statistics** | [[*vlan vid*] [**interface** *interface-id*] [*ip-address* | *mac-address*]]]

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statistics	ϙ ў ə
vid	ϩ ϻ
interface-id	ϻ ɹ
ip-address	IP ϩ
mac-address	MAC ϩ

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```
Ruijie# show nfpp arp-guard hosts statistics
success   fail   total
-------   ----   -----
100       20      120
```

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ᴿ 2' ↓ ў ˇ ني " l' remain-time(seconds) Ŀ ⅓ м 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	↓ ў

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69.10.2 show nfpp arp-guard scan

ARP Â

show nfpp arp-guard scan [**statistics** | [[**vlan** *vid*] [**interface**

vid	ﷺ /ا
interface-id	

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arp-guard scan-threshold	ώ
nfpp arp-guard scan-threshold	
clear nfpp arp-guard scan	ARP

ΈΩħυ ҳ

ˆ 3˜ Rate-limit ѝˆ IP فخ سم / MAC فخ سم
/ ∧ ḣ˜ ˘ Attack-threshold ɔ Â ľ - Ŀ
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ћu ҙ	
arp-guard attack-threshold	ѽ
arp-guard enable	ѽ ARP ℸ
arp-guard isolate-period	ѽ
arp-guard monitor-period	
arp-guard monitored-host-limit	↓ ў
arp-guard rate-limit	ѽ
arp-guard scan-threshold	ѽ
[redacted]able	ج ∧ Э ARP ℸ
[redacted]late-period	
[redacted]licy	Ո

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Ruijie# **show nfpp dhcp-guard hosts statistics**

success fail total

------- ---- -----

100 20 120

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ν ў ˘ ني " ľ remain-time(seconds) Ł ⅓ м Â

Ruijie# **show nfpp dhcp-guard hosts**

If column 1 shows '*', it means "hardware failed to isolate host".

VLAN interface MAC address remain-time(seconds)

---- --------- ----------- --------------------

1 gi0/2 0000.0000.0001 10

*2 gi0/1 0000.0000.0002 20

Total' 2 host(s)

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clear nfpp dhcp-guard hosts	ν ў

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69.11.2 show nfpp dhcp-guard summary

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show nfpp dhcp-guard summary

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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
```

w R

ˆ 1˜ Interface ϧ Global ŏ Â

ˆ 2˜ Status ĭ ℸ Â

ˆ 3˜ Rate-limit ϧ IP فخ سم / MAC فخ سم / ϥ ḣ˜ ˘ Attack-threshold ɔ Â ľ - Ŀ Â

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ħυ ϡ	
dhcp-guard attack-threshold	ŏ
dhcp-guard enable	ŏ DHCP ℸ
dhcp-guard isolate-period	ŏ
dhcp-guard monitor-period	
dhcp-guard monitored-host-limit	ϟ ў
dhcp-guard rate-limit	ŏ
nfpp dhcp-guard enable	ج ϥ Э DHCP ℸ
nfpp dhcp-guard isolate-period	
nfpp dhcp-guard policy	Ո

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69.12 DHCPv6

69.12.1 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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ﻧ	
statistics	ﻝ ў ə
vid	ﻟ
interface-id	ﻧ ﻝ
mac-address	MAC

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Ruijie# **show nfpp dhcpv6-guard hosts statistics**

success fail total

------- ---- -----

100 20 120

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ﻝ ў ˇ ني " ľ remain-time(seconds)

```
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	↓ ў

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69.12.2 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
W R Global     Enable  300            -/5/150     -/10/300
Gi 0/1      Enable  180            -/6/-       -/8/-
Gi 0/2      Disable 200            -/5/30      -/10/50

Maximum count of monitored hosts: 1000
```

Monitor period՝ 300s

ˆ 1˜ Interface ѝ Global ѡ Â

ˆ 2˜ Status ї ╗ Â

ˆ 3˜ Rate-limit ѝ IP ف س / MAC ف س

/ ٨ ḣ˜ ˇ Attack-threshold ɔ Â ľ - Ŀ

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ђu ҳ	
dhcpv6-guard attack-threshold	ѡ
dhcpv6-guard enable	ѡ DHCPv6 ╗
dhcpv6-guard isolate-period	ѡ
dhcpv6-guard monitor-period	
dhcpv6-guard monitored-host-limit	↓ ў
dhcpv6-guard rate-limit	ѡ
nfpp dhcpv6-guard enable	ج ٨ Э DHCPv6 ╗
nfpp dhcpv6-guard isolate-period	
nfpp dhcpv6-guard policy	Ո

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69.13 ICMP

69.13.1 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 ҷ
vid	ش /١

interface-id	٨ ٫
ip-address	IP ف س

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Ruijie#**show nfpp icmp-guard hosts statistics**

success fail total

------- ---- -----

100 20 120

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w R

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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ħυ ϡ	
clear nfpp icmp-guard hosts	٫ ў

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10.4	ħυ ϡ

69.13.2 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

w R

Maximum count of monitored hosts: 1000

Monitor period 300s

ˆ 1˜ Interface ϧ Global ŏ Â

ˆ 2˜ Status ĭ ℸ Â

ˆ 3˜ Rate-limit ϧˆ IP ϡ ϕ / MAC ϡ ϕ /

ϰ ḣ˜ ˘ Attack-threshold ɔ Â ľ-Ŀ Â

ΩħυϡΩ

ħυ ϡ	
icmp-guard attack-threshold	ŏ
icmp-guard enable	ŏ ICMP ℸ
icmp-guard isolate-period	ŏ
icmp-guard monitor-period	
icmp-guard monitored-host-limit	↓ ў
icmp-guard rate-limit	ŏ
nfpp icmp-guard enable	ϡ ϰ Э ICMP ℸ
nfpp icmp-guard isolate-period	
nfpp icmp-guard policy	∩

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	10.4	ħυ ३

69.13.3 show nfpp icmp-guard trusted-host

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show nfpp icmp-guard trusted-host

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```
Ruijie# show nfpp icmp-guard trusted-host
```

w R

69.14 IP

69.14.1 show nfpp ip-guard hosts

ৰ ў Â

show nfpp ip-guard hosts [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*ip-addres s*]]]

৭	
statistics	ৰ ў ঌ
vid	ঋ ৯
interface-id	৭ ৱ
ip-address	IP ফ

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Ruijie#**show nfpp ip-guard hosts statistics**

success fail total

------- ---- -----

100 20 120

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w R

NFPP ħu ҳ

	ћυ ҙ	
	ip-guard attack-threshold	ѽ
	ip-guard enable	ѽ IP ℸ
	ip-guard isolate-period	ѽ
ѿ	**ip-guard monitor-period**	
	ip-guard monitored-host-limit	↓ ў
	ip-guard rate-limit	ѽ
	nfpp ip-guard enable	ѯ ∧ Э IP ℸ
	nfpp ip-guard isolate-period	

```
1.1.2.0         255.255.255.0
Total' 2 record(s)
```

‘Ωħυ ҳ	ħυ ҳ	
	ip-guard trusted-host	a ↓ ə ў

↓

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	10.4	ħυ ҳ

69.15 ND

69.15.1 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
```

w R

ˆ 1˜ Interface и Global ѽ Â

ˆ 2˜ Status ĭ ╗ Â

ˆ 3˜ Rate-limit ӣ /ЎЌ˜ / Ы

/ Ы ЎЌ˜ / Ы ~˜ Attack-threshold ы Â

Ї - Ł Â

w R ' Ї -/5/30 Ł ҷ ∧ G 0/2 Э /ЎЌ˜ ˘ Ы

5˜ Ы ЎЌ˜ / Ы 30 Â

ЎЌђu ҳ

ђu ҳ	
nd-guard attack-threshold	ѿ
nd-guard enable	ѿ ND ╗
nd-guard rate-limit	ѿ
nfpp nd-guard enable	ҷ ∧ Э ND ╗
nfpp nd-guard policy	Ո

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10.4	ђu ҳ

70 ACL

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	ŭ ЊЖ
id	" ḣ ɲ Â ɻ ىت IP ñ ACL' 1-99 1300-1999 IP ACL' 100-199 2000-2699 MAC ACL' 700–799 ж ACL' 2700–2899
name	ACL ɻ
sn	ACL ɲ (. ˝l ʜ ɒ)
start-sn	ɲ ḣ
inc-sn	ɲ
deny	ɿ ˘ ‡
permit	ɿ ˘ ‡ ĭ
prot	˜ ɲ˘ ɣ IPv6 ɻ ŕ ipv6 icmp˘ tcp˘ udp ɻ ḣ 0-255 ɣ IPv4 ɻ Лu eigrp˘ gre˘ ipinip˘ igmp˘ nos˘ ospf icmp˘ È ldp˘ Í È È ð % 0

precedence precedence	. ”I ⁞ˆ 0-7˜
range	نعي ٨ /١ تن
time-range tm-rng-name	Ш˘ ﻝ ѝ tm-rng-name
tos tos	ﻠ صر ˆ 0-15˜
cos cos	cos ḣ (0-7)
cos inner cos	ⷮ tag è cos
icmp-type	ICMP صر ˆ 0-255˜
icmp-code	ICMP صر ϗ ˆ 0-255˜
icmp-message	ICMP صر ﻝ
operator port[port]	Operator ѝ ɔ ˆ lt- ɣ˘ eq- ɣ˘ gt- ɣ˘ neq- a ɣ˘ range- تن˜ port ٨ /١˘ γ ɔ ч э ٨ /١ ˘ è ы ɔ ﻝ У э ٨ /١

	B	MAC	6	P	~ /ا	35
	C		12	Q	IP Ո-	36
	D	VLAN tag	14	R	ip فخ سم	38
	E	DSAP(ᒪ)	18	S	ip فخ سم	42
	F	SSAP(ᒪ)	19	T	TCP ٨ا	46
	G	Ctrl	20	U	TCP ٨ا	48
	H	Org Code				

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 ↑ ΰ Л∪ ص 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 У ҏ ˜ 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*

٩	٩	
	id	" ⁄٩ Â ٦ نتˆ 1-99˘ 100-199˘ 1300-1999˘ 2000-2699˘ 2700 – 2899˘ 700 - 799˜ Â
	Deny	٦ ˇ ‡ Â
	Permit	٦ ˇ ‡ ĭ Â
	Source	فخ سم ˆ ў فخ سم فخ سم ˜
	source-wildcard	فخ سم Â ٦ Л υ G a ˇ 0.255.0.32
	protocol	IP ˜ ⁄٩ˇ ٦ Л υ EIGRP àGRE àIPINIP àIGMP à NOS à OSPF à ICMP à UDP à TCP à IP è У э ˇ ≠ ٦ Л υ ȝ IP ˜ 0-255 ⁄٩ Â У ҷ ˜ ICMP/TCP/UDP ´ " Â
	Destination	فخ سم ˆ ў فخ سم فخ سم ˜
	destination-wildcard	فخ سم Â ٦ Л υ G a ˇ 0.255.0.32
	fragments	ǂ
	precedence	. ″I ⁞
	precedence	. ″I ⁞ ḣˆ 0-7˜
	range	ني ٩ ⁄٩ نتˆ
	lower	ني ٩ ⁄٩ نتˆ Ю
	upper	ني ٩ ⁄٩ نتˆ Э
	time-range	Ш
	time-range-name	Ш ɻ
	tos	ѣ صر
	tos	ѣ صر ḣˆ 0-15˜
	icmp-type	ICMP صرˆ 0-255˜
	icmp-code	ICMP صر ȝ ˆ 0-255˜
	icmp-message	ICMP صر ɻ
	operator	ɔ ˆ lt- ɣˇ eq- ɣˇ gt- ɣˇ neq- a ɣˇ range- نتˆ˜
	port [*port*]	٩ ⁄٩ˇ *range* ч э ٩ ⁄٩ ˇ ѐ ы ɔ ٩ У э ٩ ⁄٩ Â
	host *source-mac-address*	ў فخ سم Â
	host *destination-mac-address*	ў فخ سم Â
	VID *vid*	vid ٦
	ethernet-type	Л υ ˜ صر

match-all	ҁ *tcp flag* Æ
tcp-flag	tcp flag

ˑ ¦ ACL

ђu ҳ ѿ

ѝ ѫ G ‟ ˘ ″l ђu ҳ **access-list** ђѪУ ‟ ‟

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G

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

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Â ttl-exceeded
Â unreachable
Ю TCP ٨ ٱ ˘ TCP ٦ Л υ G ٨ ٱ ٨ ٨ έ E ٨'
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 ٨ ٱ ˘ UDP ٦ Л υ G ٨ ٱ ٨ ٨ έ E ٨'
Â biff
Â bootpc

Â bootps
Â discard
Â dnsix
Â domain
Â echo
Â isakmp
Â mobile-ip
Â nameserver
Â netbios-dgm
Â netbios-ns
Â netbios-ss
Â ntp
Â pim-auto-rp
Â rip
Â snmp
Â snmptrap
Â sunrpc
Â syslog
Â tacacs
Â talk
Â tftp
Â time
Â who
Â xdmcp

Л υ ˜ ص 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

R 1' IP ñ " R

Ю IP ﷺ " ï سم فخ ﻯ 192.168.1.64 - 192.168.1.127 ˘ è ы

'

```
Ruijie(config)# access-list 1 permit 192.168.1.64 0.0.0.63
```

R 2' IP " R

Ю IP " ï DNS Ո 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
```

R 3' MAC " R

Ю G R˘ MAC ﻯ 00d0f8000c0c ў ﻝ ص ﻯ 100 Лu

R a ъ ` ˜

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70.1.2 deny

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1˜ IP ñ ″

[*sn*] **deny** {*source source-wildcard* 1

[*sn*] **d**{] [(s)-8n(f3)d8)(Tu/C2)]5-J.T.0.0.7 T 3.0.0.6.0.1 **Td** (1)05 7 T.0 28(1 P)-4/.C2 [_ 3 7.4 8 6 0 T j 3 4 1 p T 6 0 m 0 3 2 d 0

destination-wildcard | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**time-range** *time-range-name*]

b) ˜ protocol

[*sn*] **deny protocol** [[**VID** [*out*][**inner** *in*]]] {*source source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any** } {*destinationdestination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**range** *lower upper*] [**time-range** *name*]

c) У ҿ ˜ 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	ACw1 T4 062 r824 Td(Sn)Tj/46C4 002486 Td[28 0.48 28 0.48Tc 2

192.168.4.12 **host** *0013.0049.8272* **any any**
Ruijie(config-exp-nacl)# **permit any any any any**
Ruijie(config-exp-nacl)# **show access-lists**
expert access-list extended 2702
10 deny tcp host 192.168.4.12 host 0013.0049.8272 any any
20 permit any any any any
Ruijie(config-exp-nacl)#
R 2 R21u75iTTƒOiTce0-{.85 51.9012n f 0013.00e4.x12p - n a c l #

ϩ ϰ 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
```

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show access-lists	"
ipv6 traffic-filter	ϑ ϰ Э IPV6 "
ip access-group	IP ACL ϰ
mac access-group	MAC ACL ϰ
ip access-list	IP ACL ЊЖ
mac access-list	MAC ACL ЊЖ
expert access-list	ж ACL ЊЖ
ipv6 access-list	IPV6 ACL ЊЖ
permit	ñ ЊЖħυ ϗ

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V10.0	˚ V10.0 ЛЪЭ˜ arp ϔΩ ϑ ˚ V10.2(3) ϤЛЪЭ Â

70.1.3 expert access-group

У э EXPERT ACL ϩ ϰ Â ᴳ ħυ ϗ **no** ϡ Â

expert access-group {*id* | *name*} {**in** | **out**}

no expert access-group {*id* | *name*} {**in** | **out**}

ϰ	
id	Expert " ϱ ϩ ϑ C ȯ0 ˝ ∧ AŸ

G ħu ҙ ⅃ Л **show expert access-lists** ħu ҙ Â

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Ю ᴿ ج fastEthernet0/0 Э " 120 ώ '

```
Ruijie(config)# interface fastEthernet 0/0
Ruijie(config-if)#ip access-group 120 in
```

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ħu ҳ	
access-list	Ⱨ " Â
show access-lists	"
show ip access-list	IP ǂ " ˆ 1-199˝ 1300 – 2699˝ 3000˙ 3199˜

ʬ R

R 1' … ñ 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)#
```

R 2 ' … ACL'

```
Ruijie(config)# ip access-list extended 123
Ruijie(config-ext-nacl)# show ip access-lists
ip access-list extended 123
```

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ħu ϧ	
show ip access-lists	IP "

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V10.0	˚ V10.0 ΛЪ Э

70.1.7 ip access-list resequence

ħu ϧ ip ص ACL ˘ … IPV6 ACL˘ ώ Â G ħu ϧ **no** ḣ

ip access-list resequence {*id* | *name*} **start-sn inc-sn**

no ip access-list resequence {*id* | *name*}

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Id	ACL ʃ
name	ACL ɻ
start-sn	ʃ ḣ
inc-sn	ʃ

start-sn 10

inc-sn 10

ħu ϧ ώ

G ħu ɂ ɻ Л **show access-lists** ħu ɂ 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
```

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show access-lists	"

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V10.0	˚ V10.0 Л Э

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G ACL ¥ ʎ Ɔˇ ¥ ʎ ώ ⁸ ÂG **show ipv6 traffic-filter** ƫu ʒ

wR ƗOR ¦ access-list v6-acl ¥ Gigabit ʎ 1 Ɔ'

```
Ruijie(config)# interface GigaEthernet 0/1
Ruijie(config-if)# ipv6 traffic-filter v6-acl in
```

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ƫu ʒ	
show access-group	ʎ Ɔ ACL Â

ʃ

ƫu ʒ ˥ ʃ

ʃ	
V10.0	˚ V10.0 ΛυƆ

70.1.9 ipv6 access-list

ƫu ʒ … IPV6 ACLˇ ώ Â G ƫu ʒ **no** ˉ ACL

ipv6 access-list *name*

no ipv6 access-list *name*

ʎ

ʎ	
name	ACL ɹ

ƫu ʒ

ʖΩħu ɤ	ħu ɤ	
	show ipv6 access-lists	IPV6 "

ɻ

ħu ɤ ˥ ɻ	ʃ	
	V10.0	˚ V10.0 ɅυƎ

70.1.10 list-remark text

ӈ ACL ╗ ə ˘ **no** ɱ ˥

list-remark *text*

ʅ	ʅ	
	Text	ə

ħu ɤ ACL

G ӈ ACL ╗ ə

```
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)#
```

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	V10.0	˚ V10.0 Л Ъ Э Â

70.1.11 MAC access-group

У э MAC ACL ĵ Л Â G Ћu ҳ **no** Л Â

mac access-group {*id* | *name*}{**in** | **out**}

no mac access-group {*id* | *name*} {**in** | **out**}

Л	Л	
	id	MAC " Л^ 700-799˜
Л	*name*	MAC " Л
	in	ώ Л
	out	ÿ Л A“O/ÁĞ&F#ŠŠ9eEBÝr AD¾

ħu ɮ … MAC ACL˘ ώ Â G ħu ɮ **no** ĩ ACL

mac access-list extended {*id* | *name*}

no mac access-list extended {*id* | *name*}

٩	
Id	MAC " /\^ 700-799˜
name	MAC " ɻ

MAC ACL

1) IP ñ "

[*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*]

У ҽ ~ 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* |

[*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*]

У Ҽ ˜ 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*]

У Ҽ ˜ 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*]

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ip access-group 102 in
Ruijie(config-if)#
```

R 3' Ю MAC ACL G R˘ ñ MAC й 0013.0049.8272 ў ч صй 100 Лu ˘ ĵ ∧ 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
```

R 4' Ю ip ñ ACL G R˘ ĭ IP й 192.168.4.12 ў ˘ ĵ ∧ 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
```

R 5' Ю IPV6 ACL G R˘ ĭ IP й 192.168.4.12 ў ˘ ĵ ∧ 1Â '

```
Ruijie(config)# ipv6 access-list extended v6-acl
Ruijie(config-ipv6-nacl)# 11 permit ipv6
host ::192.168.4.12 any
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
11 permit ipv6 host ::192.168.4.12 any
Ruijie(config-ipv6-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ipv6 traffic-filter v6-acl in
```

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show access-lists	"
ipv6 traffic-filter	∧ Э IPV6 "

ip access-group	IP ACL ϰ
mac access-group	MAC ACL ϰ
ip access-list	IP ACL ЂЖ
mac access-list	MAC ACL ЂЖ
expert access-list	ж ACL ЂЖ
ipv6 access-list	IPV6 ACL ЂЖ
deny	ЂЖ ACL

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V10.0	˚ V10.0 ЛЭ˘ arp ˚Ω ѫ ˚ V10.2(3) ϒ ЛЭ Â

70.2

70.2.1 show access-group

ϰ Э ACL

show access-group [**interface** <*interface*>]

ϰ

ϰ	
<*interface*>	ϰ

ħυ ϛ

G ϰ Э ACL˘ a ώ ϰ Э ACL

w R

```
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.
```

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ip access-group	ip " ㄱ
mac access-group	MAC " ㄱ
expert access-group	Expert " ㄱ
ipv6 traffic-filter	IPV6 " ㄱ

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V10.0	˚ V10.0 ɅЬЭ

70.2.2 show access-lists

ACL ɻ ACL

show access-lists [*id* | *name*]

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ɳ	
id	" ɻ
name	" ɻ

ħu ɮ

G acl˘ *id* *name˘* ‡ ACL

ɯ R

```
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 ħu ҳ

۹	
<interface>	۹

ħu ३

G ۹ ˜Ω IPv6 ACL˘ ۹˘ ‡ ۹ IPv6 ACL

w R

```
Ruijie# show ipv6 traffic-filter interface gigabitethernet 0/4
ipv6 traffic-filter v6 in
Applied On interface GigabitEthernet 0/4.
```

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ipv6 access-list	IPV6 ص ACL ₩

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[redacted]

group mm in

interface GigabitEthernet 0/3.

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st	MAC ACL ₩

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	V10.2	˚ V10.2 Лu Э

70.3.2 security global access-group

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security global access-group {*id*|*name*}

no security global access-group

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w R Ruijie(config-if)#**security uplink enable**

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show secu-acl	ώ

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V10.2	˚ V10.2 ΠυΘ

70.3.4 show security

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show secu-acl

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G ώ

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```
Ruijie(config-if)#show secu-acl
Ports     Type      access-group
---------- ---------- ------------
Fa0/4     security   50
Global    security   60
```

Fa0/6 uplink --

ЎΩЂU ҂

ЂU ҂	
security global access-group	ѽ ѽ ЂЖ
security access-group	∧ ѽ ЂЖ
security uplink enable	ѽ R ∧

ѵ

ЂU ҂ ˥ ѵ

Л	
V10.2	˚ V10.2 ЛЪЭ

71 VACL

71.1

Vlan access map ч э ~Ω ˘ ѐ è *map_name* ў ~Ω a ┘ ˘ *map_sn* ~Ω ˘ ┘Л Â ъ ┘ ┘ map^ У э э ~ Л ┤ ṁ ў map Â

1~ … **vlan access map** Э … У э map˘ a *map_sn* Ą˘ ѫ map ɱ з ┘ ų У э ў map map *map_sn* ѭ Э ╗ *10*

2~ a *map_sn* Ą˘ ╡ **vlan access map˘** ‡ ┘ *map_name* *Map_name*˳ ѿ ╡ ˘ . ў map ╡ ’

3~ map_sn Ą˘ ╡ **vlan access map˘** ‡╡ map’ map ў map a ѽ map Ą˘ ў map˳ ╠╡ ˘ ї ‡ a ˳ ’

4~ У э ў map ┘Л ѽ 6553 э map Â

no action redirect{GigabitEthernet | **Aggregateport** | **FastEthernet** } {***port_id*** }

৭	
actions forward	ħυ ३ ৭ ’
actions drop	ħυ ३ ৭ ’

acl_id	numbered acl;

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Config-access-map ˘ . vacl

~ + ˝Ω У э acl, ˝Ω 8 э acl Â

Â У э map ɱ ɻ ˝Ω ip acl map acl˝ ч ɻ è У˘ a ɻ ˝Ω ’

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VACL ħu ʒ

map_name	ў map ˜Ω Â
vlan_id	vlan id Â

ћu ҙ ѿ

G vlan access map ج ə vlan Э ˘ /ſ ˘ vlan ىن ﴿˘ ' vlan filter aa vlan-list 1-33˜ . map ج 1-33 Эvlan Э Â

W R Ю R ў map ѝ ff vlan access map ج vlan 5

G

R 1' Ю R **show vlan access map** У э '

```
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)#
```

w R

R 2' Ю R **show vlan access map** { *map_name* } У э '

```
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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71.2.2 show vlan filter

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show vlan filter

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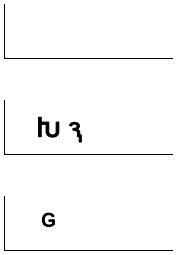

w R

CoS to DSCP

CoS ḣ	DSCP ḣ
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 ḣ	CoS ḣ
0	0
8	1
16	2
24	3
32	4
40	5
48	6
56	7

G

72.2

72.2.1 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*

ᴿ 4' … class-map,ħυ ♩ cm

```
Ruijie(config)# class-map cm
```

ᴿ 5' ˜Ω ACL

```
Ruijie(config-cmap)# match access-group me
```

ᴿ 6' class-map

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

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show mac access-lists	-

	show mls qos queueing	-

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72.2.4 mls qos cos

ʌ CoS ḣ

mls qos cos *default-cos*

no mls qos cos

ʌ	

dscp	↓ ḣ ت ŋ ң ҏ a ↓ a ↓
no	ḣ

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w R Ruijie(config)# **mls qo map cos-dscp** *8 10 16 18 24 26 32 34*

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show mls qos maps	dscp-cos maps,dscp-cos maps Ո ip-prec-dscp maps

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72.2.6 mls qos map dscp-cos

ӷ DSCP ḣ ʃ CoS ḣ

mls qos map dscp-cos *dscp-list* to *cos*

no mls qos map dscp-cos

^|	
dscp-list	↓ ḣ ت ŋ ң ҏ a ↓ a ↓
cos	↓ ḣ ت 0 7
no	ḣ

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w R Ruijie(config)# **0ls1q16 18_Eoβ-0os**

72.2.8 mls qos scheduler

"

mls qos scheduler [**sp** | **rr** | **wrr** | **drr**]

no mls qos scheduler

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cos	∧	Qos ə̣˙ ѝ CoS
dscp	∧	Qos ə̣˙ ѝ DSCP
ip-precedence	∧	Qos ə̣˙ ѝ IP-PRE
no		ḣ

a ə̣˙

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```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mls qos trust cos
```

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ƫυ ҳ	
show mls qos interface *interface-id*	-

ᒑ S8600 " ∧ **cos dscp ip-precedence**

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-	-

72.2.10 policy maps

… policy mapˇ ώ policymap

[**no**] **policy-map** *policy-map-name*

… policy map è G class-map ↾ , ώ ↾

[**no**] **class** *class-map-name*

è IP ipdscp ḣˇ ɣ IP a ɔ

set ip dscp *new-dscp*

no set ip dscp

8 Ո ѝ ↾ ╟ ɔ

police *rate-bps burst-byte*[**exceed-action** {**drop** | **dscp** *dscp-value*}]

no police

๑	

72.2.11 priority-queue

"

[**no**] **priority-queue**

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priority-queue	" ѝ SP
no priority-queue	" ѝ WRR

" ѝ WRR

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w R Ruijie(config)# **no priority-queue**

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w R Ruijie(config)# **priority-queue cos-map** *1 0 1*

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show mls qos queueing	-

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72.2.13 service-policy

policy map ʈ ʕ Э

service-policy {**input** | **output**} *policy-map-name*

no service-policy {**input** | **output**}

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ʕ	
policy-map-name	… policymap ɻ
no	policy map ح ʕ Э

ƕ ʒ ʕ

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w R
```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# service-policy input po
```

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ƕ ʒ	

show mls qos interface	-

ﻝ S8600 " ﻥ input output

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72.2.14 wfq-queue bandwidth

ﻩ G wfq ϙ ЮЎ ħυ ϗ ﻝ ə " Â

wfq-queue *queue-id* **bandwidth** *min max*

no wfq-queue *queue-id* **bandwidth**

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queue-id	" ﻝ
min	ɖ
max	ĭ

min ѝ ﻥ kbps

max ѝ ﻥ kbps

ħυ ϗ ﻥ

G ﻩ " G wfq ѩ Э˘ G ħυ ϗ ˩ Л υ ﻥ ɖ Ո ĭ Â

w R

" G wfq '

```
Ruijie(config)# mls qos scheduler wfq
Ruijie(config)# show mls qos scheduler
       ɖ    Ո    ĭ    '
Ruijie(config-if)# wfq-queue 2 bandwidth 10 10240
Ruijie(config-if)# wfq-queue 4 bandwidth 7 10240
Ruijie(config-if)# show running
```

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show mls qos scheduler	QOS

⊿	˚ RGOS10.1 Л∪Э

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72.2.15 wfq-queue sp

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wfq-queue *queue-id* **sp**

no wfq-queue *queue-id* **sp**

⊿	⊿	
	queue-id	" ⊿
	sp	ш . ˝I "

	a G sp
ћυ ϛ	ѿ
G	ѽ " G wfq ѫ Э˘ G ћυ ϛ ⊣ Л∪ " Л∪ sp+wfq Â

w R	" G wfq ' Ruijie(config)# **mls qos scheduler wfq** Ruijie(config)# **show mls qos scheduler** " 1 Ո 3 й ш " ' Ruijie(config)# **wfq-queue** *1* **sp** Ruijie(config)# **wfq-queue** *3* **sp** Ruijie(config)# **show running**

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	show mls qos scheduler	QOS

⊿	˚ RGOS10.1 Л∪Э

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72.2.16 wrr-queue bandwidth

WRR " R

wrr-queue bandwidth *weight1 ... weightn*

no wrr-queue bandwidth

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ϥ	*weight1...weightn*	ϧ n ϶ " ḣ˘ n ḣ ϟ ϰ ḣ ىن
	no	ḣ

weight1: ...: weightn = 1:...:1

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w R `Ruijie(config)# **wrr-queue bandwidth** *1 2 3 4 5 6 7 8*`

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	show mls qos queueing	-

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72.3

72.3.1 show class-map

class map ε ϕ̈

show class-map [*class-name*]

ϥ		
ϥ	*class-name*	class map ϳ

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72.3.3 show mls qos interface

ɲ QoS ə

show mls qos interface *interface-id* [**policers**]

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[redacted]	
interface-id	ɲ
policers	ɲ ˇΩ police

dscp-cos	dscp-cos maps
ip-prec-dscp	ip-prec-dscp maps

dscp-cos maps Ո dscp-cos maps Ո ip-prec-dscp maps

ħυ ३

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w R

```
Ruijie# show mls qos maps
```

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⁄	S8600 " ' cos-to-queue map,wrr weight,drr weight Â

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	⁄	
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72.3.6 show mls qos rate-limit

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show mls qos rate-limit [**interface** *interface-id*]

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	ʌ	
	interface	interface-id rate-limit ħυ ३ ʌ

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w R	Ruijie# **show mls qos rate-limit**

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w R Ruijie# **show mls qos scheduler**

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S8600 "

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-	-

73 WRED

73.1 WRED

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Queue1	Threshold1	CoS	0̃ 1̃ 2̃ 3̃ 4̃ 5̃ 6̃ 7
		WRED-drop	100%low̃ 100%high
		random-detectprobability	60%
	Threshold2	CoS	NONE
		WRED-drop	80% low̃ 100%high
		random-detectprobability	80%
	Threshold3	CoS	S86 à 96 " a
		WRED-drop	S86 à 96 " a
		random-detectprobability	S86 à 96 " a
Queue2	Threshold1	CoS	S86 à 96 " a
		WRED-drop	S86 à 96 " a
		random-detectprobability	S86 à 96 " a
	Threshold2	CoS	S86 à 96 " a
		WRED-drop	S86 à 96 " a
		random-detectprobability	S86 à 96 " a
	hreshold3	CoS	S86 à 96 " a
		WRED-drop	S86 à 96 " a
		random-detect probability	S86 à 96 " a

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& qЮ̃ " ∫ queue1 У ḣ˘ æ ḣ ¥ ḣ˘ з и 100%̃ WRED ╖ Â

73.2

73.2.1 wrr-queue random-detect max-threshold

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٨	
queue_id	٨ " ٨
thr1	У ḣ æ ḣ
thr2	ү ḣ æ ḣ
thr3	Ь ḣ æ ḣ

ћu ҳ ٨

У э WRED ٨ Ю ۷ ۾ э ٨ ÂWRED ٨ ҉ ˜ ٨
WRED ҽ ѿ ۷ Â ұ ۷ У ٨ ٨ э ٨

G

prob1	У ḣ x
prob2	ү ḣ x
prob3	Ь ḣ x ^ S86 " э ٧ ~

ħu ҷ ٧

G

У э WRED ٧ Ю ٤ ھ э ٧ ÂWRED ٧ ҿ ˜ ٧
WRED ą ŏ ٤ Â ų ٤ У ٧ ٧ э ٧ WRED ˜Ω
٧ ˇ ҿ٧ ≠ ٤ ɔ э ٧ è ы ˜ Â
S86 à 96 " У э ٧ У э ٧ Â
S86 à 96 " ٤ 2 x Â

w R

Ю R э ٧ 1 э " x '
Ruijie(config-if)#**wrr-queue random-detect probability** *1 61 62 63*

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73.2.4 wrr-queue cos-map

э threshold б cos ˇ ھ ٧ Ю ЮħuҷÂ ħu ҷ no
٨ э threshold Ո cos Â

wrr-queue cos-map *threshold_id cos1* [*cos2* [*cos3* [*cos4* [*cos5* [*cos6* [*cos7* [*cos8*]]]]]]]

٧

٧	
queue_id	٧ " ٨
cos_value	cos ḣ^ 1 э˘ 8 э˘ ىت 0~7˜ '

cos ḣ У ḣ Â

ħu ҷ ٨

G ٦ Л∪ DSCP-CoS Ո CoS-threshold ٿΩ DSCP б threshold Â
٨ Э CoS ↑ ٦ У ə threshold ˘ ٨ Э ŭ WRED RED Â

w R Ю R cos ḣ ѝ 1 à 6 ŭ γ ḣ˘ ↑ G γ ə x ^ ɣ cos ḣ б " ٿΩ ˘ ҷ ѿ Ю G priority-queue cos-map ħu ҷ ~ '

```
Ruijie(config-if)#wrr-queue cos-map 2 1 6
```

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73.3

73.3.1 show queueing wred interface

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show queueing wred interface<*interface*>

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Interface	٨ Л

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w R Ю R show queueing wred interface g0/1 '

```
-----  -----  -----  ------  -----  -----  ------
```

```
qid max_1 min_1 prob_1 max_2 min_2 prob_2 max_3 min_3 prob_3
-----  -----  -----  ------  -----  -----  ------
1   0   0   90    0    0    91    0   0   92
2   88  66  90    87   55   91    86  66  92
3   0   0   0     0    0    0     0   0   0
4   0   0   0     0    0    0     0   0   0
5   88  66  0     89   67   0     90  68  0
6   0   0   0     0    0    0     0   0   0
7   0   0   0     0    0    0     0   0   0
8   0   0   0     0    0    0     0   0   0
cos  qid  threshold_id
---  ---  ------------
0   1   1
1   2   1
2   3   1
3   4   2
4   5   1
5   6   3
6   7   2
7   8   1
```

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74

74.1

74.1.1 rgos-security compatible

ϙ ƘŎ Ꮋ ѡ ╖ ѝ RGOS ò ‵Ω ˘ ƙ ϗ **rgos-security compatible** ò ‵Ω ' RGOS ò ‵Ω ˘ G no ƙ ϗ '

rgos-security compatible

no rgos-security compatible

ϡ		

	ƘŎ Ꮋ ѡ ╖ ѝ RGOS ò ‵Ω
ƙ ϗ	ѡ
G	~ g ò ‵Ω ƙ ϗ ϧ ⁄˘ ů Ꮋ G
w R	R 1' ѡ ╖ ѝ RGOS ò ‵Ω ' Ruijie(config)#**no gos-security compatible**

‵Ωƙ ϗ	ƙ ϗ	

75 VRRP

75.1

75.1.1 vrrp authentication

ħu ҳ ŏ VRRP ↑ ╖ ˘ è **no** ˝Ω У ╖ Â

vrrp group authentication *string*

no vrrp *group* **authentication**

٨		
٨	*group*	VRRP /٨
	string	¥ VRRP s (a 8 э ˘ ٨ ҳ ٨ ҳ)

ąЮ˝ ҽ ٨ Э ŏ VRRP ╖ Â ғ ŏ VRRP ╖ ˘ ˙ ! ٨ ҳ Â

ħu ҳ	٨

G	ҽ ل У э VRRP è ل ٨ ҳ Â ٨ ҳ a ɖ ѿ ˘ ٨ / VRRP Â	
	~	IPv6 VRRP ɷ ╖ ˘ ҽ IPv6 Ы Э ɷ ħu ҳ˘ a˳ Â

ѡ R	Ю R й VRRP 1 ɷ ٨ ҳ Â `vrrp 1 authentication x30dn78k`

˝Ωħu ҳ	ħu ҳ	
	Ruijie(config-if)# **vrrp** *group ip ipaddress* [**secondary**]	ŏ VRRP ╖ IP فخ سس

ل

ħu ҳ ٦ ل	/٨	

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75.1.2 vrrp description

ћu ҳ ӣ VRRP У э ˘ è **no** Â

vrrp *group* **description** *text*

no vrrp group description

٩	
group	VRRP ٨
text	VRRP

ą ЮЎ ҽ ٩ Э ў VRRP ╖ Â ғ ў ą VRRP ╖ ˘ ≠ ˙ ¦ VRRP Â

ћu ҳ ٩

G ӣ VRRP ˘ ┘ Л ғ ɣ ѿ VRRP Â

Ю R è ҽ Л ٩ E0 Э VRRP 1 ӣ Building A – Marketing and Administration Â

ѡ R

```
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”
```

ћu ҳ	

ħu ҳ ҷ ٨ Э ŭ VRRP IP ѫ ˘ è **no** ٨ Э VRRP
╗ ٧ IP ѫ Â

vrrp *group* **ip** *ipaddress* [**secondary**]

no vrrp *group* **ip** *ipaddress* [**secondary**]

٨	
group	VRRP ٨
ipaddress	IP ѫ
secondary	IP ѫ

ą Ю˘ ҷ ٨ Э ŭ VRRP ╗ Â

ħu ҳ ٨

G a G secondary ٨ ˘ ѫ IP ѫ й ў IP ѫ Â
˘ VRRP G Л ٨ IP ѫ˘ ҷ G no ħu ҳ ٧ VRRP IP
ѫ˘ ¸ й ¢ ˘ ҷ й ҷ ѭ Э ҷ ч э ٫ IP ѫ Â

w R

ҷ Ю R è˘ ҷ Л ٨ 0 Э ŭ VRRP ╗ Â VRRP ٨ й 1˘
ў IP ѫ й 10.0.1.20˘ IP ѫ й 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
```

ˇΩħu ҳ

ħu ҳ	
Ruijie# **show vrrp** [**brief | group**]	ɱ VRRP

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ħu ҳ ٦ ٧

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75.1.4 vrrp ipv6

ħu ҷ ҷ ʌ Э ŭ IPv6 VRRP IPv6 ҷ ҳ ˘ è **no** ʌ Э VRRP ╖ ↓ IPv6 ҷ ҳ Â

vrrp *group* **ipv6** *ipv6-address*

no vrrp *group* **ipv6** *ipv6-address*

ʌ		
ʌ	*group*	VRRP ʌ
	ipv6-address	IPv6 ҷ ҳ

ą ЮЎ ҷ ʌ Э ŭ IPv6 VRRP ╖ Â

ħu ҷ ʌ

IPv6 VRRP б IPv4 VRRP Ѽ 1 255 ʌ Â У э VRRP ˘ IPv4 ҷ ҳ Ո IPv6 a Ѽ ˘ ѽ IPv6 ҷ ҳ ˘ a ї IPv4 ҷ ҳ ˘ Ѽ IPv6 ҷ ҳ ˘ ˘ ʌ IPv4 ҷ ҳ Â

G

У э ҷ ҳ ҷ ҳ ˘ ҷ ҳ ҷ ҳ ҷ è ҷ ҳ ˘ ʌ ˘ Â

ѡ R

ҷ Ю R è˘ ҷ Л ʌ FastEthernet 0/0 Э ŭ IPv6 VRRP ╖ Â VRRP ʌ й 1˘ IPv6 ҷ ҳ й FE80::1 Ո 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
```

Ѽħu ҷ	ħu ҷ	
	Ruijie# **show vrrp** [**brief | group**]	ґʌ VRRP

ʌ ʌ Â

ħu ҷ ˥ ʌ	ʌ	
	RGOS10.4	ħu ҷ ÿ RGOS10.4 Â

75.1.5 vrrp preempt

ħυ ϗ VRRP ¥ ´ ˘ è no VRRP ´ ╖ Â

vrrp *group* **preempt** [**delay** *seconds*]

no vrrp *group* **preempt** [**delay**]

↰	
group	VRRP ↰
delay *seconds*	↓ ↰ ˘ ↰ ĦѪ ɷ ñ ˆ Master ` ʒ ɱ Â ḣ ẋ 0 Â

ɑ ĦѺ ҽ ↰ Э ΰ VRRP ╖ Â ¥ ΰ VRRP ╖ ˘ VRRP

vrrp *group* **priority** *level*

no vrrp *group* **priority**

٩		
٩	*group*	VRRP ٨
	level	VRRP . ″I

ą ЮЎ ج ٩ Э ŭ VRRP ╖ Â У ŭ VRRP ╖ ˇ VRRP è . ″I и 100 Â

ħu ҳ ٩

G ħu ҳ ╟ VRRP . ″I Â

w R Ю R è VRRP 1 . ″I и 254 Â

```
vrrp 1 priority 254
```

ЎΩħu ҳ	ħu ҳ	
	Ruijie(config-if)# **vrrp** *group* **ip** *ipaddress* [**secondary**]	ŭ VRRP ╖ IP فخ سم
	Ruijie(config-if)# **vrrp** *group* **preempt** [**delay** *seconds*]	VRRP ɣ ´

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75.1.7 vrrp timers advertise

ħu ҳ ў ٤ VRRP ˆ ˇ è no Â

vrrp *group* **timers advertise** *interval*

no vrrp *group* **timers advertise**

٩		
٩	*group*	VRRP ٨
	interval	VRRP ˆ ٤ (Л∪ и´ Æ)

ąЮ˝ ҙ ∧Э ὖ VRRP ╖ Â У ὖ VRRP ╖ ˇ ў
ˋ ч ѝ VRR1/C2_0 1 Tf0 T006 Tc 7.14 60 Td[<0<2FA64>54</TT0 1 Tf0 Tc 2.01.988Td(

	⁄ˇ ¸ ÿ ў VRRP ˆ è ¯ VRRP ˆ ˩ ˇ Master ˇ a G ѕѫ VRRP ˆ ˩ Â ħu ϗ ˩ Л6 б Master VRRP ˆ ˩ ⅓ ⁄ Â
ѡ R	Ю R è ج VRRP 1 Э ў ⓠ ⅓ ¯ ╖ Â `vrrp 1 timers learn`

ŽΩħu ϗ	ħu ϗ	
	Ruijie(config-if)# **vrrp** *group* **ip** *ipaddress* [**secondary**]	ў VRRP ╖ IP فخ ѕѫ
	Ruijie(config-if)# **vrrp** *group* **timers advertise** [**msec**] *interval*	VRRP ˆ ˩

⁄

ħu ϗ ˥ ⁄	⁄	
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75.1.9 vrrp track

ў VRRP ⁄ G **vrrp** *group* **track** *interface-type number* ħu ϗˇ ў VRRP IP فخ ѕѫ ╖ ˇ G **vrrp** *group* **track** *ip-address* ħu ϗˇ **vrrp** *group* **track bfd** BFD IP˝ è **no** Žῼ ╖ Â ħu ϗ Ю'

vrrp *group* **track** [*interface-type number* | **bfd** *interface-type interface-number ipv4-addess*] [*priority*]

vrrp *group* **track** *ipv4-address [***interval** *interval-value] [***timeout** *timeout-value] [priority]*

vrrp *group* **track** {*ipv6-global-address* | {*ipv6-linklocal-address interface-type number*}} *[***interval** *interval-value] [***timeout** *timeout-value] [priority]*

no vrrp *group* **track** *interface-type number*

no vrrp *group* **track** *ipv4-address*

no vrrp *group* **track {***ipv6-global-address* | {*ipv6-linklocal-address interface-type number* }}

⁄	⁄	
	group	VRRP ⁄
	interface-type	⁄ صر
	number	⁄ ⁄

ipv4-addres	IPv4 سم فخ˘ ˘ bfd ˛ Â
ipv6-global-addres	IPv6 ώ ´ سم فخ
ipv6-linklocal-addree	IPv6 سم فخ سم فخ سم
interval-value	↵ Â´ Æ ϧ Â a ˘ ḣ ϧ 3 Â
timeout-value	↵ ʌ Â ǀ ɷ˘ ǀ ˘ ‡ ϧ a ↵ Â´ Æ ϧ Â a ˘ ḣ ϧ 1 Â
priority	∧ ↵ è VRRP ˛ ˝I ↵ Â a ˘ ḣ ϧ 10 Â

ɑ Ю˘ جھ ∧ Э ŭ VRRP ╖ Â ғ ŭ VRRP ╖ ˘
∧ à IPv4 سم فخ IPv6 سم فخ Â

ħu ϗ ∧

↵ ЛU G ħu ϗ ∧ ˘ ∧ ∧ ĭ Ь ↵
∧ (Routed Port ˘ SVI ˘ Loopback˘ Tunnel) Â

G ў ˘ ų IPv4 ⅄˘ ў IPv4 سم فخ’ ų IPv6 ⅄˘
ў IPv6 سم فخ Â

ў سم فخ سم سم فخ˘ ∧ Â

R 1' جھ Ю R è˘ VRRP 1 Routed Port Fa1/1 Â Fa1/1
˘ VRRP ˛ ˝I ˜ 30' جھ Fa1/1 ʌ˘ VRRP 1 ˛ ˝I Â

```
vrrp 1 track FastEthernet 1/1 30
```

R 2' Ю R ў 1000::1 ĭ ↵ǀ Â

```
vrrp 1 track 1000::1
```

R 3' Ю R ∧ VLAN 1 Э ў FE80::1 ĭ ↵ǀ ˘
∧ Â

```
vrrp 1 track FE80::1 vlan 1
```

ш R

```
# 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(vrA 3)Tj/TT1 1 T
```

```
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#
```

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Ruijie# **debug vrrp errors**	VRRP ʹΩ
Ruijie# **debug vrrp events**	VRRP Y˅ ʹΩ
Ruijie# **debug vrrp state**	VRRP ʹΩ

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75.2.2 debug vrrp errors

ħυ ϡ VRRP ʹΩ˘ è no ʹΩ ʹΩ Â

debug vrrp errors

no debug vrrp errors

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ɑ ЮЎ VRRP ʹΩ Â

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```
Ruijie# debug vrrp errors
```

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75.2.4 debug vrrp packets

ħυ ϡ VRRP ↑ ΎΩ˘ è **no** ΎΩ ΎΩ Â

VRRP: Grp 1 Advertisement priority 120, ipaddr 192.168.201.213

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75.2.5 debug vrrp state

ħu ɝ VRRP ʃΩ˘ è no ʃΩ ʃΩ Â

debug vrrp state

no debug vrrp state

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ɑ Ю˘ VRRP ʃΩ Â

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Ю R è˘ ɑ VRRP ʃΩ Â

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```
Ruijie# debug vrrp state
Ruijie#
%VRRP-6-STATECHANGE: FastEthernet 0/0 Grp 2 state Master -> Backup
%VRRP-6-STATECHANGE: FastEthernet 0/0 Grp 2 state Backup -> Master
Ruijie# config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# interface fastethernet 0/0
Ruijie(config-if)# no shutdown
Ruijie(config-if)# end
Ruijie#
%VRRP-6-STATECHANGE: FastEthernet 0/0 Grp 2 state Master -> Init
```

Ruijie#

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75.3

75.3.1 show vrrp

ħυ ३ VRRP ą Â

show vrrp [**brief** | *grou*p]

⁄	
brief	⊿ ⁄ ˘ VRRP ą
group	VRRP ⁄

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G a G ⊿ ⁄ ˘ VRRP

```
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
```

R 2' VRRP ą

```
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
```

ħu ϡ	
Ruijie(config-if)# **vrrp** *group ip ipaddress* [**secondary**]	Ŭ VRRP ╖ IP فخ سم

ϡ

type	∧ ص
number	∧ ∕∧
brief	⌟ ∧ Â G ϙ

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w R

	Ruijie(config-if)# **vrrp** *group* **ip** *ip address* [**secondary**]	ὖ VRRP ╖ IP فخ سم

76 BFD

76.1

76.1.1 bfd

ھ ٨ ЮO **bfd** ħu ϗ BFD ˬ ٨ ˘ ⅃ Л∪ **no** ħu ϗ ⫪ BFD ˬ ٨ Â

bfd interval *milliseconds* **min_rx** *milliseconds* **multiplier** *multiplier-value*

no bfd interval *milliseconds* **min_rx** *milliseconds* **multiplier** *multiplier-value*

clear bfd	ĩ BFD˛ Â
ip ospf bfd	G ĭ OSPF б BFD ╟ Â
ip rip bfd	G ĭ RIP б BFD ╟

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ʌ	
10.3(4b3)	ħu ҳ

76.1.2 bfd all-interfaces

ѯ router (RIP,OSPF)Ю **bfd all-interfaces** ħu ҳ G ʌ ~ б BFD ╟˘ G **no** ħu ҳ ˜Ω ╖ Â

bfd all-interfaces

no bfd all-interfaces

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ʌ	

a ĭ ʌ ~ б BFD ╟

ħu ҳ

ч ˩ Л∪ G ˜Ω ʌ ĭ ~ б BFD ╟'

G

У ' ѯ OSPF ∩ RIP Ю [**no**] **bfd all-interfaces** ħu ҳ G ˜Ω ʌ ĭ ~ б BFD ╟'

ү ' ˩ Л∪ ώ ʌ **ip ospf bfd** [**disable**] **ip rip bfd** [**disable**] ħu ҳ G ˜Ω ʌ ĭ OSPF RIP ~ б BFD ╟'

ѡ R

#ѯ Ю G ʌ ĭ OSPF ~ б BFD ╟ Â

```
Ruijie(config)# router ospf 123
Ruijie(config-router)# bfd all-interface
```

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bfd	BFD˛ ٧ Â
ip ospf bfd	G ï OSPF б BFD ╟ Â
ip rip bfd	G ï RIP б BFD ╟

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10.3(4b3)	ћu ҳ

BFD ƕ ҳ

BFD ƕ ҳ

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w R

```
#      slow-timer ѝ 14000      Â
Ruijie(config)# bfd slow-timer 14000
```

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ћu ҳ	
bfd echo	G BFD Echo ╖

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10.3(4b3)	ћu ҳ

76.1.6 ip ospf bfd

ѫ ѧ Ю **ip ospf bfd** ћu ҳ G ѧ ї OSPF ˜ б BFD ╠˘ **disable** Ўω ЎΩ G ˘ **no** ћu ҳ╕ Â

ip ospf bfd [**disable**]

no ip ospf bfd

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disable	(ѧ)Ўω ѧ Э ї OSPF ˜ б BFD ╠ Â

ώ **disable**ў ѝ G ѧ ї OSPF ˜ б BFD ╠

ћu ҳ ѧ

ч ѧ Л∪ G Ўω ѧ ї OSPF ˜ б BFD ╠'

G У ' ѫ OSPF Ю [**no**] **bfd all-interfaces** ћu ҳ G Ўω ѧ ї ˜ б BFD ╠'

γ ' ⊣ Л∪ ώ ∧ **ip ospf bfd [disable]**ħu ҳ G ˜Ω
∧ ï OSPF ˜ б BFD ╟'

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#ѫ Routed Port ∧ FastEthernet 0/2 Э˜Ω ï OSPF ˜ б BFD ╟.

```
Ruijie(config)# interface FastEthernet 0/2
Ruijie(config-if)# no switchport
Ruijie(config-if)# ip ospf bfd disable
```

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bfd	BFD˛ ∧ Â
bfd all-interfaces	G ∧ ˜ б BFD ╟

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10.3(4b3)	ħu ҳ

76.1.7 ip rip bfd

ѫ ∧ Ю **ip rip bfd** ħu ҳ G ∧ ï RIP ˜ б BFD ╟˘ **disable** ˜Ω ˜Ω G ˘ **no** ħu ҳ˥ Â

ip rip bfd [**disable**]

no ip rip bfd

∜

∜	
disable	(⊣)˜Ω ∧ Э ï RIP ˜ б BFD ╟ Â

ώ **disable**˘ ѝ G ∧ ï RIP ˜ б BFD ╟

ħu ҳ ∧

ч ⅃ Л ᴳ ˜Ω ∧ ï RIP ˜ б BFD ╟'

G

У ' ⱬ RIP Ю [**no**] **bfd all-interfaces** ħu ҳ ᴳ ˜Ω ∧ ï ˜ б BFD ╟'

ү ' ⅃ Л ώ ∧ **ip rip bfd [disable]**ħu ҳ ᴳ ˜Ω ∧ ï RIP ˜ б BFD ╟'

ш ᴿ

#ⱬ Routed Port ∧ FastEthernet 0/2 Э˜Ω ï RIP ˜ б BFD ╟ Â

```
Ruijie(config)# interface FastEthernet 0/2
Ruijie(config-if)# no switchport
Ruijie(config-if)# ip rip bfd disable
```

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bfd	BFD ∧ Â
bfd all-interfaces	ᴳ ∧ ˜ б BFD ╟

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ħu ҳ ˥ ⅄

⅄	
10.3(4b3)	ħu ҳ

76.1.8 ip route static bfd

ⱬ ώ Ю **ip route static bfd** ħu ҳ б BFD ╟˘ **no** ħu ҳ˺ 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∩ ٧ /١ Â
gateway	˜Ω IP˝ . ѝ BFD IP Â Ю У ѝ BFD ٧ ٧ Â
source *ip-address*	(٧) BFD˛ IP فخ سم , IP ѝ ąЮ˝ ٧ Â

б BFD ╟

ħu ҷ ѿ

G ~ ˝I ɖ ٧ BFD˛ ٧

G ˜Ω BFD ˇ BFD б 172.16.0.2 ٧ Â

w R

```
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
```

˜Ωħu ҷ

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bfd	BFD˛ ٧ Â

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ħu ҷ ٦ ٧

/١	
10.3(4b3)	ħu ҷ

76.1.9 ipv6 route static bfd

ج ŏ Ю **ipv6 route static bfd** ħu ҳ б BFD ╟ˇ **no** ħu ҳ╕ 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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vrf *vrf-name*	(ㄴ) ⅄ VRF ㄴ Â
interface-type interface-number	ヿ صΩ ヿ ヿ Â
gateway	˜Ω IP˘ . ѝ BFD IP Â Ю У ѝ BFD ㄴ ㄴ Â
source *ipv6-address*	(ㄴ) BFD˛ IP فذ سم, IP ѝ ą Ю˘ ヿ Â

б BFD ╟

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G ~ ˝I ɖ ヿ BFD˛ ヿ

G ˜Ω BFD ˇ BFD б *2001:1::2* ㄴ Â

```
Ruijie(config)# interface FastEthernet 0/1
Ruijie(config-if)# no switchport
Ruijie(config-if)# ip address 2001:1::1/64
Ruijie(config-if)# bfd interval 50 min_rx 50 multiplier 3
Ruijie(config-if)# ipv6 route static bfd FastEthernet 0/1 2001:1::2
Ruijie(config-if)# ipv6 route 2002::/64 FastEthernet 0/1 2001:1::2
```

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bfd	BFD˛ ヿ Â

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76.1.10 neighbor fall-over bfd

ﻩ router address-family ЮO, **neighbor fall-over** ħu ҳ BGP б BFD
╟ ﻝ ﻉ ╕ BGP , **no** ħu ҳ ˜Ω ╖

neighbor *ip-address* **fall-over bfd**

no neighbor *ip-address* **fall-over bfd**

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ip-address	BGP Â

BGP a ˜Ω BFD ╖

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G ~ ˝l ɖ[IP ﻧ BFD˛ ﻧ

G BGP ˜Ω BFD ˇ BFD б 172.16.0.2 ﻝ
Ruijie(config)# **router bgp 44000**
Ruijie(config-router)# **bgp log-neighbors-changes**
Ruijie(config-router)# **neighbor** 172.16.0.2 **remote-as 45000**
Ruijie(config-router)# **neighbor** 172.16.0.2 **fall-over bfd**
Ruijie(config-router)# **end**

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10.3(4b3)	ЂЦ ЄЂ

76.1.11 set ip next-hop verify-availability

ЄЄ Route-map ЮО **set ip next-hop verify-availability** ЂЦ ЄЂ G ЄЄЄ ЏЂ BFD TRACK IP ЛЦ ЮОУ ЇЇ Â **no** ЂЦ ЄЂ ЎΩ ЄЄ Â

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*]]

ЇЇ

ЇЇ	
vrf *vrf-name*	(ЄЅ) ЅЈ VRF Ѕ
next-hop-address	(ЄЅ)ЮОУ IP فخ سم
track	(ЄЅ) Track ЛЦ ″ ЮОУ ЇЇ
number	(ЄЅ)track ЅЇ
bfd	(ЄЅ) BFD
interface-type interface-number	(ЄЅ) Ї صر Ω- Ї ЅЇ
gateway	(ЄЅ) ЎΩIP˝ . ѝ BFD IP Â ЮОУ ѝ BFD Ї ЄЅ Â

a ЎΩ BFD ЄЄ

ЂЦ ЄЂ في

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~	″І ɖ IP Ї BFD˳ Ї

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

Multiplier: 3 - Length: 24

My Discr.: 2 - Your Discr.: 1

Min tx interval: 50000 - Min rx interval: 50000

Min Echo interval: 0

OurAddr	۰ سم IP فذ سم
NeighAddr	۰ IP فذ سم
LD/RD	۰ سم Ո۰

RH

Rx Count	˛ ѕѡ ˆ BFD э
Rx Interval (ms) min/max/avg	˛ ѕѡ ˘ ˘ ĸ
Tx Count	˛ ѕѡ ч ˆ BFD э
Tx Interval (ms) min/max/avg	˛ ѕѡ ч ˘ ˘ ĸ
Registered protocols	¨Ą˚ ˛ ~ ѓр
Uptime	˛ ɗ[UP
Last packet	˛ ѕѡ ˆ Л У э BFD ə¸

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77 RERP

77.1

77.1.1 rerp enable

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rerp enable

no rerp enable

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disable Â

ħu ϗ ŏ Â

G ٧ ŏ RERP ˘ è ٩ ɔ Â

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```
Ruijie(config)# rerp enable
```

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	rerp region	… RERP ﷺ

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77.1.2 rerp fail-interval

G ħu ϗ RERP ﺝ ÿ ٨ Э ў ٨ hello Â ٧ ≠ ų backup Ո transit master ﻓﺫ ﺴﻫ Â

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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77.1.4 rerp region

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rerp region *num*

no rerp region *num*

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num	ююе , тп 1-64

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```
Ruijie# rerp region 1
```

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rerp enable	RERP ѽ ћu ҳ

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77.1.5 ring

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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	̃ Ъ ϧ

77.1.6 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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Â

major-ring *num* **edge-ring-vlan** *vid*

↑		
↑	*num*	ў id
	vid	8 vlan

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G Ạ majory-ring ᴈ Â

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```
Ruijie# rerp region 1
Ruijie(rerp)# major-ring 1 edge-ring-vlan 100
```

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RERP ħu ҳ

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hO R hu ३ G :

```
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
```

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77.2.3 clear rerp statistics

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clear rerp statistics

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78 REUP

78.1

78.1.1 link state track

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link state track [*num*]

no link state track [*num*]

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	num	٨ ID

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```
Ruijie(config)# link state track 1
```

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	link state group	٧ ╗ ώ

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78.1.2 link state group

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link state group *num* {**upstream | downstream**}

no link state group

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num	ID
upstream	٩ è Э ٩
downstream	٩ è Ю ٩

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Ю ٩ fa 0/2 ╗ ώ˛ R '

```
Ruijie(config)# link state track 1
Ruijie(config)# interface fa 0/2
Ruijie(config-if)# link state group 1 upstream
```

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ЪU ₹	
link state track	ΰ

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ЪU ₹ ˥ ⁄

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78.1.3 mac-address-table move update receive

REUP MAC فذ سم ˜Ω Â

mac-address-table move update receive

no mac-address-table move update receive

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disable

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x Âй ѻ ˜ γ x ˘ Э Ц MAC ѳѵѽ Â
ѯ Э Ц Э MAC ѳѵѽ ˜Ω Â

ѡ R Ю MAC ѳѵѽ R '

```
Ruijie(config)# mac-address-table move update receive
```

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mac-address-table move update transit	Ц ч MAC ѳѵѽ Â

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Ruijie(config)# **mac-address-table move update transit**

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mac-address-table move update transit	Ӈ ˩ MAC ѳѯ ˇΩ Â

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78.1.5 mac-address-table update group

Ӈ MAC ѳѯ Â

mac-address-table update group [*group-num*]

no mac-address-table update group

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group-num	MAC ѳѯ ID

ID ѝ 1Â

˙ ¡ MAC ѳѯ Â

ħυ ҳ ˄ Â

G ѝ ѽ ˇ ҷ ѝ MAC ѳѯ ˇ ; Ӈ · ˇ ъ ╗ ѽ У ɜ MAC ѳѯ Â ˄ ˛ Э ˄ ╗ ѡ˛ ˄ У ɜ MAC ѳѯ è˘ ˛ Ю · ╗ Â

w R Ю ˄ ╗ ѡ˛ MAC ѳѯ R ˈ

Ruijie(config-if)# **mac-address-table update group** *2*

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ħυ ҳ	
show mac-address-table update group	Ӈ Э MAC ѳѯ ə Â

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78.1.6 switchport backup interface *interface-id*

REUP ˧ ` Â

switchport backup interface *interface-id*

no switchport backup

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interface-id	` ˤ ID Â

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ﾂ ˤ ŷ ŷ ˇ ˤ è interface-id ˤ ŷ ` ˤ Â ╟ ˧ ˩ˇ ` · Â

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Ю У э ˧ ` ˘ fa 0/1 ŷ ŷ ˤ ˇ fa 0/2 ŷ ` ˤ R '

```
Ruijie(config)# interface fa 0/1
Ruijie(config-if)# switchport backup interface fa 0/2
```

˜Ωþu ҷ	
show interface switchport backup	Ч Э ˧ ` Â

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78.1.7 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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٨	*interface-id*	` ٨ ID Â
	delay-time	´ Â

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´ ѝ 35 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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ٸ	
interface-id	` ٸ ID Â
vlanrange1	` ٸ VLAN تن Â
vlanrange1	ў ٸ VLAN تن Â

ąЮ ` ٸ VLAN Â

ħu ҳ ٸ Â

G ў ÿ ٸ ٨ vlan تن ҷ Â

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```
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	Ӈ Э ٤ ` Â

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78.2

78.2.1 show link state group

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show link state group *num*

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num	ID

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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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```
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
```

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```
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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79 RLDP

79.1

79.1.1 rldp detect-interval

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rldp detect-interval *interval*

no rldp detect-interval

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interval	˘ ٦ ḣ تن ٸ 2-15

3 Â

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rldp detect-max *num*

no rldp detect-max

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	num	, ٧ ḣ تن ẁ 2-10

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G	ђu ҳ Ո ٨ G ˘ ¥ Â
ѡ R	Ю У э ẁ 5 R ' Ruijie(config)# **rldp detect-max** *5*

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	rldp detect-interval	

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79.1.3 rldp enable

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rldp enable

no rldp enable

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G ۷ ώ RLDP ˘ ۷ RLDP Â

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```
Ruijie(config)# rldp enable
```

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rldp port	۷ RLDP ╖

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79.1.4 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	´ ۶ صر
bidirection-detect	۷ ۶ صر
loop-detect	صر
warning	ˆ
shutdown-svi	shutdown ۷ جھ svi
shutdown-port	shutdown ۷
block	ˇΩ ۷ ˜ ۷

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```
Ruijie(config)# interface fas 0/1
Ruijie(config-if)# rldp port loop-detect block
```

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rldp enable	ѽ rldp ħυ ३

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79.2

79.2.1 show rldp

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show rldp [**interface** *interface-id*]

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Interface-id	४

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79.2.2 debug rldp

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debug rldp [**packet | event | error**]

undebug rldp [**packet | event | error**]

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packet	٦ rldp ə Â
event	४ ٦ ע ə Â
error	è ٦ ə Â

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80 TPP

80.1

80.1.1 topology guard

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[**no**] **topology guard**

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ђu ҳ	ώ ђu ҳ
G	ℸ ˘ ⅃Ω ɖ ˘ Ωȯ ﻉ ⅃ Â б ђu ҳ **cpu topology-limit** ⅄ G Â
ѡ R	Ю R ¦ ὖ Ո ΎΩ ώ ℸ ' Ruijie(config)# **topology guard** Ruijie(config)# **no topology guard**

ΎΩђu ҳ	**ђu ҳ**	
	tp-guard port enable	G ٩ ℸ Â
	cpu topology-limit	CPU ¯ Â

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80.1.2 tp-guard port enable

TPP ħu ३

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```
Ruijie# show tpp
```

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topology guard	G ώ ℼ

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81 VSU

81.1

81.1.1 dual-active detection bfd

ѫ VSU ЮO dual-active dectection bfd BFD ヶ ў ╖ ˘ ヶ
Ѓυ no ħu ҳ ˜Ω BFD ヶ ў ╖ Â

dual-active detection bfd

no dual-active detection bfd

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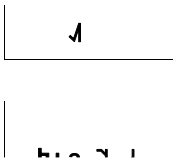
ヶ		
	ą ЮЎ BFD ヶ ў ╖ ˜Ω Â	
ħu ҳ	config-vs-domain	
G		
ѡ R	# BFD ヶ ў ╖ Ruijie(config)# **switch virtual domain** *1* Ruijie(config-vs-domain)# **dual-active detection bfd** #˜Ω BFD ヶ ў ╖ Ruijie(config)# **switch virtual domain** *1* Ruijie(config-vs-domain)# **no dual-active detection bfd**	
˜Ωħu ҳ	**ħu ҳ**	
	dual-active pair interface	У BFD ヵ
	dual-active exclude interface	ヶ ў R ヵ
	show switch virtual dual-active	ヶ ў ╖ ∩



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lst interface

tion dadp trust interface DADP ˜ ə

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81.1.3 dual-active exclude interface

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dual-active exclude interface Ъu ъ э ﻧ جھ a ˜Ω R ﻧ Â no
dual-active exclude interface Ъu ъ ﻝ Л‡ R ﻧ Â

dual-active exclude interface *interface-name*

no dual-active exclude interface *interface-name*

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interface-name	ﻧ صΩ ﻧ ﻝ

ą Ю˘ ﻉ ў R ﻧ

Ъu ъ config-vs-domain

G R ﻧ ﻧ˘ a VSL ﻧ Â
ﻝ Л∪ э R ﻧ Â

w R

```
#  ﻧ Gi 1/1/3 ɔ ѝ ﻉ ў  R  ﻧ
Ruijie(config)# interface GigabitEthernet 1/1/3
Ruijie(config-if)# no switchport
Ruijie(config-if)# ip address 3.1.1.1 255.255.255.0
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# dual-active exclude interface
GigabitEthernet 1/1/3
```

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Ъu ъ	
dual-active detection bfd	BFD ﻉ ў ╖ ˜Ω
dual-active pair interface	IP BFD ﻧ˘ ɣ ﻉ ў

interface *GigabitEthernet 2/1/1* **bfd**

ЎΩђu ҙ

ђu ҙ	
dual-active detection bfd	BFD ↰ ў ╖ ЎΩ
dual-active exclude interface	↰ ў R ↰
show switch virtual dual-active	↰ ў ╖ Ո·

↰

ђu ҙ ℸ ↲

↰	
10.4	ђu ҙ

81.1.5 switch

switch *num* ↲ Л∪ ѧ VSU ά ↰˘ no ↲ Л∪ ḣ Â

switch *num*

no switch

↰

↰	
num	ѧ VSU ά ↰˘ ↲ ḣ 1 2

↰ 1

ђu ҙ config-vs-domain

G

↰ ѧ è э ˜ ˘ ѧ VSU Ю˘ ↰ ↓ ÿ
ľ slot/port Ł и ľ switch/slot/port Ł˘ ѐ è ľ switch Ł ↰ Ч ↰ Â
ѧ w ў è˘ ч ↓ ў ˘ • ŭ ╟
˘ з ч ↲ Ч . ˝I ↲˘ ѫ ↰ и ў Â
↲ ѧ´ Ю ї g Ч ↰˘ a ї ѧ VSU Ю g Ч ↰ Â

w R

```
# Ч ѧ ↰ и 1 VSU è ↰ и 2
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# switch 2
```

ʼΩћu ҳ

ћu ҳ	
switch virtual domain	VSU Л
switch *number* **priority** *priority_num*	Ӌ ҷ VSU ӷ . ʼI
show switch virtual	Лˇ ЛЧ Л Л Ո

Л

ћu ҳ ˥ Л

Л	
10.4	ћu ҳ

81.1.6 switch convert mode

ћu ҳ ҷ´ Ո Ӡ ц Â

switch convert mode {virtual | standalone}

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ч	
virtual	ӣ Ӌ
standalone	ӣ´

ӷ ЮˇЖ Ӌ ҷ´ Ю ɔ Â

ћu ҳ

G switch convert mode virtual˺ ћu ҳ Лˇ ˚ ╠ ´ Ю ˚ ` ӣ “standalone.text”ˇ Л ˚ ˇ VSU ʼΩ ӈ˺ ˚ èˇ Л ŭ Ӌ Â

switch convert mode standalone˺ ћu ҳ Лˇ ў VSU ˚ ` ӣ “virtual_switch.text”ˇ Л ˇ Л ŭ Ӌ Â ҷ ў ˺ èˇ ÿ ˺ ӣ ў Â

ҷ ў Э switch convert mode standalone˺ ћu ҳ Лˇ Л VSU ˚ ` ӣ “virtual_switch.text”ˇ Л ˇ Л ŭ Â

```
#          ∧ Gi 1/1/1 ∩ Gi 2/1/1 ὶ DADP ˜      ə̣·     ∧
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)#
```

ѡ R

	priority_num	Ꮋ ⱨ VSU ᾳ . ″I ˇ ↓ ḣ ىں 1↑ 255

. ″I 100

ħυ ҳ config-vs-domain

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. ″I ḣ ˇ . ″I Â

ⱨ ѡ ў è˘ . ″I ѝ ў Â

ⱨ è ᵍ . ″I ˇ a˳ . ˇ ŭ Л ⅄ ˳ Â

ѡ R

```
# Ꮋ 1 . ″I ѝ 200
Ruijie(config)# switch virtual domain 1
Ruijie(config-vs-domain)# switch 1 priority 200
Ruijie(config-vs-domain)# exit
```

ˇΩħυ ҳ

ħυ ҳ	
show switch virtual	⅄˘ Л Ч ⅄ ⅄ Ո

⅄

ħυ ҳ ˥ ⅄

⅄	
10.4	ħυ ҳ

81.1.8 switch virtual domain

switch virtual domain ħυ ҳ VSU ⅄˘ è no ⅄ ḣ Â

switch virtual domain *number*

no switch virtual domain

ƅυ ҳ ѽ

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```
Ruijie#show switch id
Switch ID is 1
```

switch	Ꮋ ⁄
switch *num* **priority**	Ꮋ ₰ VSU ⁄ ″I
switch virtual domain	VSU ID

⁄

ħυ ३ ⁀ ⁄	
⁄	
10.4	ħυ ३

81.2.3 show switch virtual dual-active

ħυ ३ ⅂ ў ₰ Â

show switch virtual dual-active { bfd | dadp | summary}

⅂	
bfd	BFD ₰
dadp	DADP ₰
summary	⅂ ў ∩

ħυ ३

G

```
#    ⅂ ў          ∩
Ruijie# show switch virtual dual-active summary
DADP dual-active detection enabled: Yes
BFD dual-active detection enabled: Yes

Interfaces excluded from shutdown in recovery mode:
Gi 1/1/3

In dual-active recovery mode: No
```

```
#    DADP ㄴ ў              ə
Ruijie# show switch virtual dual-active dadp
DADP version: 1.0
Trusted interfaces configured:
Gi 1/1/1
Gi 1/2/1
Gi 2/1/1
Gi 2/2/1

#    IP BFD ㄴ ў              ə
Ruijie# show switch virtual dual-active bfd
BFD dual-active detection enabled: Yes
BFD dual-active interface pairs configured:
Gi 1/1/2
Gi 2/1/2
```

ΩħυҳҶ

ħυ ҳ	
dual-active detection dadp trust interface *interface-name*	¸ DADP ə˙ ㄴ
dual-active detection bfd	¸ BFD ㄴ ў Ω
dual-active pair interface	¸ У BFD ㄴ
dual-active exclude interface	R ㄴ

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ħυ ҳ ˥ Ҷ

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10.4	ħυ ҳ

81.2.4 show switch virtual link

VSL ə

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```
#       ⁄         ⁄˘       ∩.  ˝I
Ruijie# show switch virtual role
Switch   Switch  Status   Priority    Role
  Number          Oper(Conf)
---------------------------------------------
LOCAL    1       UP       100(100)     ACTIVE
REMOTE   2       UP       100(100)     STANDBY

In dual-active recovery mode: No
```

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˝Ωħυ ३

ħυ ३	
switch *num* **priority**	Ꮒ ⌀ VSU ⍰. ˝I
switch virtual domain	VSU ID
show switch virtual link	VSL ⍬

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82.1.2 auto-sync time-period

G h ч ы ђ м runing-config б startup-config ╠ы □ Â

auto-sync time-period *value*

no auto-sync time-period

ы	
value	╠ы □ ˘ ´ Æ й

╠ы ˘ з ╠ы □ й 1 ^ 3600 ~

h ч ђ м

G ˘ У G standard ы

R 1' Ю R Ө ы startup-config ˚

```
Ruijie(config)# redundancy
Ruijie(config-rdnd)# auto-sync time-period 60
Redundancy auto-sync time-period: enabled (60 seconds).
Ruijie(config-rdnd)# exit
```

R 2' Ю R ˚Ω ╠ы

```
Ruijie(config)# redundancy
Ruijie(config-rdnd)# no auto-sync time-period
Redundancy auto-sync time-period: disabled.
Ruijie(config-rdnd)# exit
```

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82.1.3 redundancy

ѧ ѿ Ю̆ G **redundancy** Ъυ ҳ ↓ Л̀υ ώ ŋ̈ м ˘ ŋ̈ м Ѯ Ω Â

redundancy

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Ђ ғ

G redundancy reload peer ˩ ˧˘ ج ÿ Æ a˳ ң ˩ è ˳ ə̨ x Â

ѡ R

```
Ruijie# redundancy reload peer
Reload peer? [confirm] y
Preparing to reload peer
```

Ђ ғ

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	reload	ў Æ Ьυ ҳ

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Ьυ ҳ ˥ ⁄	/ǀ	
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82.1.6 switchover timeout

ᵴ redundancy ЮЎ G **switchover timeout** Ьυ ҳ ⁄ Л υ switchover
Â ѝ ḣ˘ ⁄ Л υ ɔ Ьυ ҳ **no** Â

switchover timeout *timeout-period*

no switchover timeout

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82.2

82.2.1 show redundancy auto-sync

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82.2.2 show redundancy state

ㄱ Лυ ᇹ user EXEC privileged EXEC Ю G show redundancy ㄱ Лυ ɱ redundancy Â

show redundancy state

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states	Master Slave ӈ м

ḣ ẏ

Ьυ ҳ

G

```
Ruijie> enable
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie# show redundancy states
Redundancy stats:
          my state = 19 -Active
        peer state = 37 -Standby Hot
...
```

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82.2.3 show redundancy switchtimeout

ㄱ Лυ ᇹ user EXEC privileged EXEC Ю G show redundancy switchtimeout Ьυ ҳ ㄱ Лυ ɱ redundancy switchover Â

show redundancy switchtimeout

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```
Ruijie> enable
Ruijie# show redundancy switchtimeout
redundancy switch timeout is : 4000 ms.
...
```

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83

83.1.2 copy

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copy *source-url destination-url*

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source-url	˚ URL Â ˚ Э· Ю ╟ ↄ˘ э ѫ ƒ ⊣ Л υ ѫ Â
destination-url	˚ URL Â ˚ Э· Ю ╟ ↄ˘ э ѫ ƒ ⊣ Л υ ѫ Â

^

Ъυ ҳ

G copy Ъυ ҳ ⊣ Л υ я ⊣ ⊣ R ⊣ Л υ ε ˚

G

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

R 3' G xmodem Ю ˚

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

R 4' ˚ ĵ U

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

R 5' ˚ ĵ ÿ

*Ruijie#**copy** flash:/config.text slave:/config.text*

R 6' ˚ ÿ flash ĵ sd´

*Ruijie#**copy** flash:/rgos.bin sd0:/rgos.bin*

R 7' ˚ ÿ U ĵ sd´

*Ruijie#**copy** usb0:/config.text sd0:/config.text*

R 8' ˚ ÿ sd´ ĵ U

*Ruijie#**copy** sd0:/config.text usb0:/config.text*

ЎΩЪυ ҳ

Ъυ ҳ	
del	ĵ ˚
rename	˚ ĺ
dir	˚ "

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Ъυ ҳ ˥ ĺ

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83.1.3 delete

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delete *url*

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url	ĵ ˚ url Â

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R 1' ÿ Э ˚ ə

```
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.
```

R 2' ɱ Ю ˚ ə

```
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.
```

ʹΩЪυ ҳ

Ъυ ҳ	
pwd	ɱ
cd	˚ ɱ

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Ъυ ҳ ˥ ٧

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╟ ˚ ɻ ˚

rename *url1 url2*

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url1	╟ ˚ URL Â
url2	˚ URL

Ъυ ҳ

G э Ъυ ҳ˘ ɻ Лυ ҿ ɻ У э Ю ˚ ɻ˘ G э Ъυ ҳ ˚ ҿ a ɻ ÿ Ӯ è ╟ Â Л Ъυ ҳ Θ Θ ѫ ˚ ╟ Â a G ~ ˚ . ˛ Ł ɣ Э Â ₥ ' usb0/1, flash, slave Â

ѡ R

R 1' log.txt ╟˛ Э У , ɻ й config.txt'
Ruijie# **rename** *tmp/log.txt ../config.txt*

R 2' ÿ log.txt ╟˛ usb0 è'
Ruijie# **rename** slave:/log.txt usb0:/log.txt

R 3' ₥ ˚ log.txt ɻ й log.txt.bak
Ruijie# **rename** log.txt log.txt.bak
R 4' sd´ Э ˚ rgos.bin ╟˛ flash Э
Ruijie# **rename** sd0:/rgos.bin flash:/rgos_bak.bin
R 5' U ˚ test.txt ╟˛ sd Э
Ruijie# **rename** usb0:/test.txt sd0:/test2.txt

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Ъυ ҳ	
del	˝ ˚
copy	

83.1.7 rmdir

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rmdir *directory*

Ъυ ҳ

G ɱń ˚ Â

R 1' ЮO R ɱń ɔ ə Â Ruijie# **pwd** **flash:/**

Ъυ ҳ	
cd	˚ ɱń

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83.2.2 show file systems

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show file systems

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Ruijie#**show file systems**

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⅄	

Ъυ ҳ ᒣ ⅄

84

84.1 CPU

84.1.1 cpu-log

CPU ¯ ą ㄱ , ㄱ Ծ ᴳ **cpu-log** Â

cpu-*log* *log-limit low_num high_num*

˜Ωhu ϡ	hu ϡ	
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˩

hu ϡ ˥ ˩	˩	
	-	-

84.1.2 show cpu

CPU ¯ ə ˘ hu ϡ **show cpu** Â

show cpu

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	-	-

hu ϡ	Â

G hu ϡ ˩ Ʌu CPU ¯ ϙ˘ ↑ 5 ϙ à 1↑ ϙ à G hu ϡ ˩

S*Ũc№BA!/Đ2ĵÕ4;³X

```
 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
4t_daemon
4t_daemon
4t_dvmp_snp   17    0%  39    0%
```

```
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 ¯ Ѻ ↑ ШISR à HISR Ո ' ñ ' é €PU ¯ Ѻ ǀ
ą è ' У " ǖ Ⱨ Ѫ H

5Sec	ǖ ' Ł Ѽ 5 è CPU ¯
1Min	ǖ ' Ł Ѽ 1ǀ è CPU ¯
5Min	ǖ ' Ł Ѽ 5ǀ è CPU ¯

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ý bgp Â

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R 1' ЛЮw R ɷ ý BGP ý. ˝l ~ Â

```
Ruijie(config)# memory-lack exit-policy bgp
```

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show memory	ǫ̈ ą

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ð ƕƱ ˥ ʌ Ô

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10.3(4b3)	ƕƱ

84.2.2 show memory

ɱ ǫ̈ G ɑ ą ˘ ƕƱ **show memory** Â

show memory

˥	˥	
	-	-
ƕƱ	Â	
G	G ƕƱ ɻ Л ɱ ǫ̈ Ո ǫ̈ G ɑ˘ ↑ ǫ̈ ˘ Л ˥ ɱ à ǫ̈ ˜Ω ą Â	
ѡ R	Ю R **show memory** У э 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%
```

Э " è ą ↑ ŭ Ю ú э ĭ '

1. ↓ ą э ˘ У э ą й 4k ą Â

2. ą ḣ˘ Ю й ↓ ą Ж'

min	ą a ˘ Θ ą ˘ ĭ ˘ Э a ↓ Â
lower	ą ш a ˘ ĭ ˘ У э Э ~ ╟ ˘ ą Â ~ ⁸ ↰ **memory-lack exit-policy** ћ ҳ Â
low	ą a ˘ ĭ ˘ Э ~ ώ OVERFLOW ˘ Ю˘ a Ą ˉ Â ą a ˘ ⁸ ↓ a ї ћ ҳ Â
high	ą ĺ ˘ Л Э˘ ą ĺ ˘ ↓ ~ ÿ OVERFLOW ĭ Â

3. ą ˘ ↓ ą ˘ Л ↰ ą G Â

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↓

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84.2.3 show memory protocols

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show memory protocols

85

85.1

85.1.1 clear logging

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clear logging

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-	-

Ю ч

G Ю ч ч ф ă ш è ф Â a ə Â

ш R Ю R ф ă ш è ф Â
Ruijie# **clear logging**

Ю ч	
logging on	˜Ω
show logging	ă ш è
logging buffered	ə ↑ ф ă ш

ч

Ю ч ˥ ч	
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85.1.2 more flash

æ FLASH è ˚ ф ˘ æ Ю Ю ч'

more flash:filename

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Filename '	˚ ɻ

levell	ą ш ˇ ÿ 0ĵ 7 Â ˩ Л υ G ⋮ ˧ ˇ ≠ ˩ Л υ G Â

ă ѡ ѝ 4k Bytes Â

ą ш ѝ 7 Â

Ђu ҳ ѿ

ᾳ ă ѡ G ˇ ᾳ ѡ ῆ ˇ ‡ ą Â ᾳ ă ѡ ą ˇ G Ђu ҳ **show logging Â**

ᾳ ă ѡ è ą ï ˇ ὐ Ђu ҳ clear logging ˇ ă ѡ è ą Â ˇ ῆĵ FLASH ˩ Syslog Server Â

ą ĵ ѝ ЛЮ 8 э ⋮'

ʗΩ		
Emergencies	0	ᾳ ˇ a
Alerts	1	. ˩
Critical	2	ᾳ
Errors	3	ą
warnings	4	ˆ ą
Notifications	5	ص ˇ a ʗΩ ą
informational	6	ą
Debugging	7	ą

G

ḣ ˇ ⋮ ˇ . 0 ⋮ ą ⋮ ą Â ï ą ⋮ Л υ ˥ ˇ ¥ æ ¥ ḣ ⋮ ą ï Â

Ю R ˩ ï ⋮ ѝ 6 Л υ ˧ æ ¥ 6 ą ѯ ѝ 10000 ᾳ ă ѡ è'

ѡ R

```
Ruijie(config)# logging buffered 10000 6
```

Ђu ҳ	
logging on	ʗΩ
show logging	ă ѡ è
clear logging	ă ѡ è

ʗΩЂu ҳ

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ƫυ ȝ ˥ ȷ	ȷ	
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85.1.4 logging console

ĭ ѧ ⁸ ȷ Э ą ⁞˘ ѧ ѽ Ю ƫυ ȝ Â ƫυ ȝ no ѧ ⁸ ȷ Э . Â

logging console *level*

no logging console

˥	˥	
	level	ш ˘ ت ÿ 0⁞ 7 Â ȷ Л ᴳ ⁞ ȷ ˘ ≠ ȷ Л ᴳ Â ̃Ω ɣ ą ш ˘ ˥ 1 Â

	Debugging (7)
ƫυ ȝ	ѽ
ᴳ	У э ш Л ȷ˘ ѧ ḣ Э ɣ æ ɣ ш ⁞ ѧ ⁸ ȷ Э Â **show logging** ƫυ ȝ ȷ Л ̃Ω ˥ Ո Â
ᴡ ᴿ	Ю ᴿ ĭ ѧ ⁸ ȷ ą ⁞ ѝ б̆ `Ruijie(config)#` **`logging console informational`**

̃Ωƫυ ȝ	ƫυ ȝ	
	logging on	̃Ω
	show logging	ă ᴡ è ˘ Л ˥ ̃Ω ˥

ȷ

ƫυ ȝ ˥ ȷ	ȷ	
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85.1.5 logging count

Ћ ˘ æ ŏ Ю Ћυ ҳ Â ˝Ω
Ћ ˘ G Ћυ ҳ no Â

logging count

no logging count

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	¶	
	-	-

	˝Ω
Ћυ ҳ	ŏ
G	Ћυ ҳ Ћ Âÿ Ћυ ҳ Â **no logging count** Ћυ ҳ ˘ Ћ ˝Ω ˘ з Â
w R	Ћ ' Ruijie(config)# **logging count**

˝ΩЋυ ҳ	Ћυ ҳ	
	show logging count	è ѓ ж ə
	show logging	ж ы ə б ă ш è ə

ѓ		
Ћυ ҳ ˥ ѓ	ѓ	
	-	-

85.1.6 logging facility

ə hˇ æ ŏ Ю Ћυ ҳ Â Ћυ ҳ no ˘ ḣ и ḣ (23) Â

logging facility *facility-type*

no logging facility

٩	
facility-type	Syslog ḣ˘ ɛ E ḣ ٩ G ´ Â

Local7(23)

ЪU ҳ ѿ

ЮO ˆ 2˜ Syslog ٦ ḣ'

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)

G

	ħ ѝ (local7) 23 Â
w R	Ю Syslog ħ ѝ kerneľ `Ruijie(config)#` **`logging facility kern`**

˝Ωħυ ҳ	ħυ ҳ	
	logging console	ï ҷ 8 ⅄ Э ą ⁞

⅄

ħυ ҳ ˥ ⅄	⅄	
	-	-

85.1.7 logging file flash

ą ɖ ҷ FLASH è˘ ҷ ŏ Ю ħυ ҳ Â ⅄ ҷ FLASH è ą ˘ G ħυ ҳ no Â

logging file flash:filename [*max-file-size*] [*level*]

no logging file

⅄	⅄	
	Filename	˚ ⅃ Â a ˚ ѕ˘ ш ѝ txt ѕ Â
	max-file-size	˚ ħ Â ÿ 128K↑ 6M bytes˘ ѝ 128K Â
	level	ï ↑ ˚ è ą ⁞ Â ⅃ Л υ G ⁞ ⅃ ˘ ≠ ⅃ Л υ G Â ⫌↑ FLASH è ⁞ ѝ 6 Â˜Ω ¥ ą ⁞˘ ⅄ 1 Â

	a ą ↑ FLASH è Â
ħυ ҳ	ŏ
G	Syslog Server˘ ѫ ¥ ⅄ ŏ a ҷ è· ą ˘ ⅃ Л υ ą ɖ ҷ FLASH è Â ˚ ⅄ ѝ ш ѝ txt˘ ˚ ⅄ ⅃ Â

~	ə ĵ FLASHĭ ʌ FLASHĭ FLASHĭ logging file flash ╟ ˘ a ĭ Â
ѡ R	ЮO R ə æ FLASH è˘ ˚ ɹ ѝ trace.txtĭ ˚ ѝ 64K, ə ⁞ ѝ 6 Â Ruijie(config)# **logging file flash:trace**

ĭΩћu ҳ		
	ћu ҳ	
	logging on	ĭΩ
	show logging	ă ѡ è ˘ Лu ʌ ĭΩ ʌ
	more flash	FLASH è ə

ʌ

ћu ҳ ˥ ɹ		
	ʌ	
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85.1.8 logging monitor

ĭ æ VTY ʌ^ telnet ʌ å SSH ʌ ˜ Э ə ⁞˘ æ ѽ
ЮO ћu ҳ Â ћu ҳ no æ VTY ʌ Э . Â

logging monitor *level*

no logging monitor

ʌ		
	ʌ	
	level	ш Â ɻ Лu G ⁞ ɹ ˘ ≠ ɻ Лu G Â ĭΩ ¥ ə ш ˘ ʌ 1 Â

Debugging (7)

ћu ҳ	ѽ

æ VTY ʌ Э . ə ˘ ˝I ћu ҳ **terminal monitor** ĭ æ ɱ
G VTY ʌ . ə Â ĭ ə ⁞ ‡ **logging monitor** ⊮ Â
Logging monitor ⊮ ə ⁞ VTY ʌ Â

w R

Ю R ї VTY ʌ Э . ə ⋮ й б

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

ħυ ҳ	

logging	ә ї Syslog Server
logging file flash:	ә FLASH Э
logging console	ї 8 Э ә ⁞
logging monitor	ї VTY (telnet) Э ә ⁞
logging trap	ї Syslog Server ә ⁞

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85.1.10 logging rate-limit

8 ї ˘ 8 ў ї ә ˘ ћ ѓ Ю Ђ ї Â ЎΩ 8 ї ˘ G Ђ ї no Â

logging rate-limit {*number* | *all number* | *console* {*number* | *all number*}} [*except severity*]

no logging rate-limit

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ї	
number	ў ї ә ˘ ѕ й 1—10000
all	ә 8˘ ↑ 0—7 ә ’
console	ў ї ћ 8 Э ә ’
except	¥ ¥ ш ⁞ ә ˘ a 8’ ⁞ й error(3)˘ ¥ ¥ error ⁞ ә a 8’
severity	ә ш ⁞˘ ⁞ ˘ ш ˘ ѕ й 0—7

ў Ю˘ a 8 Â

Ђ ї ї ѓ

G Ђ ї 8 ә Â G Ђ ї˘ Л Л ә Â

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ά ї ą ^ ↑ debug˜ й 10 ˘ л warning ч ш

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

ΎΩħυ ҳ

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show logging count	è ѵ ж ą
show logging	ж ы ą б ă ш è ą

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R 2' Ю R У э IPV6 سم ف ى AAAA:BBBB::FFFF

```
Ruijie(config)# logging server ipv6 AAAA:BBBB::FFFF
```

ЎΩЪυ ϡ

Ъυ ϡ	
logging on	Ўω
show logging	ă ш è ˘ Лυ ч Ўω ч
logging trap	ї ч syslog server ą ⁞

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Ъυ ϡ ˥ ѵ

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85.1.12 logging source ip| ipv6

سم ف˘ ج ώ Ю Ъυ ϡ Â Ъυ ϡ no ѵ ч Â

logging source {**ip** *ip-address* | **ipv6** *ipv6-address*}

no logging source {**ip** | **ipv6**}

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ip-address	ѧ IPV4

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85.1.14 logging synchronous

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Ю Ђ ї Â ѓ ѕ б ф ѓ ї G Ђ ї no Â

logging synchronous

no logging synchronous

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	ґ Ю ѕ б ф ѓ ї ѓ Â
Ђ ї	
G	Ђ ї ѕ б ф ѓ ї ѕ Л ѕ Â

```
Ruijie(config)#line console 0
Ruijie(config-line)#logging synchronous
ѕ ѕ Ђ ї . ї UP-DOWN ф ‡ ѕ Ђ ї „ '
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        //     ѕ Ђ ї ф a
```

ѓ Ђ ї		
	Ђ ї	
	show running-config	ф

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85.1.15 logging trap

ї ↓ Syslog Server ə ⁞˘ æ ѽ Ю Ъυ ҳ Â Ъυ ҳ no ↓ Syslog Server Â

logging trap *level*

no logging trap

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level	ш Â ↓ Л υ G ⁞ ɹ ˘ ≠ ↓ Л υ G Â ˜ Ω ¥ ə ш ˘ ↰ 1 Â

Informational(6)

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G ə ↓ Syslog Server˘ ˝I G ѽ Ъυ ҳ logging Syslog Server Â ɻ˘ G logging trap ↓ ə ш ⁞ Â **show logging** Ъυ ҳ ↓ Л υ ˜ Ω ↰ Ո Â

Ю R ⁞ и 6 ə ↓ ѫ ф и 202.101.11.22 Syslog Server˙

w R
```
Ruijie(config)# logging 202.101.11.22
Ruijie(config)# logging trap informational
```

Ъυ ҳ	
logging on	˜ Ω
logging	ə ↓ Syslog Server
show logging	ă ѡ è ˘ Л υ ↑ ˜ Ω ↰

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Ъυ ҳ ˥ ɻ

85.1.16 service sequence-numbers

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service sequence-numbers

no service sequence-numbers

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G	Ъυ ҳ˘ ↓Л υ ˘ ᾱ ج ə ѐ ї ╗ ↓ Â

Ю R ج ə è ╗ 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)#
```

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msec	ɱɲ ˘ ' :ʃ : . R' Jul 27 16:53:07.299
year	ɱɲ ` ˘ ' ' ʃ ' R' 2007 Jul 27 16:53:07

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Ъυ ҳ ώ

G G Uptime ÿ Э ŭ ╟ʃ ɱɲ ˘ ´ Æ ɲ Â G Datetime ɲ ɱɲ ˘ · · ' ʃ ' Â

w R Ю R ŭ Log ą Ո Debug ą ˘ ɲ Datetime' ˘ з '

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

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logging on	˝Ω
service sequence-numbers	ŭ ą è Л

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85.1.19 terminal monitor

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terminal monitor

terminal no monitor

G

Ю R **show logging** У э '

```
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
```

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Trap logging	ч Syslog Server ф ¦˘ Л ч
Log Buffer	ж ф ă ш è

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logging on	˜Ω
clear logging	ă ш è

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85.2.2 show logging count

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show logging count

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logging count	ﻝ ﺯ
show logging	ﺭ ﻫ ﻩ ﻍ ﺩ ﻩ ﺭ
clear logging	ﺩ ﻫ ﻩ ﺭ

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86

86.1

86.1.1 install slot-num moduletype

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slot-num	Л
moduletype	ћ

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G ћ ғ ҷ Э ╠ ћ ╠ Â ʒ ʌ˘ ћ с Â G ћ ˘ ˩ Л ћ ˘ a x Â

ҷ 2 Э 24SFP/12GT ћ

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# install 2 24SFP/12GT
2006-04-22 09:26:00  @5-CONFIG:Configured from outband
Ruijie(config)# end
Ruijie# show version module detail 2
Device  : 1
Slot    : 2
User Status  : installed
Software Status: none
Online Module :
Type    :
Ports   : 0
Version :
Configured Module :
Type    : M8606-24SFP/12GT
Ports   : 24
```

W R

```
Type    :
Ports   : 0
Version :
Configured Module :
Type    :
Ports   :
Version :
```

ꞏ	ꞏ
install slot-num *moduletype*	ꞏ Ɔ ꞏ
show version slots	ꞏ

ꞏ

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86.1.3 remove configure module slot-num

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86.1.4 reset module slot-num

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slot-num	/

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w R Ruijie# **reset module** *4*

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86.2

86.2.1 show version module detail [module-num]

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module-num	ъ / ў ѕ

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```
Status
--- ----  -----------------   -----  --------------
1 1    none          none
1 2 M8606-24SFP/12GT M8606-24SFP/12GT installed none
1 3 M8606-2XFP M8606-2XFP uninstalled  cannot startup
1 4 M8606-24GT/12SFP M8606-24GT/12SFP installed ok
1 M1 M8606-CM  M8606-CM              master
1  M2                                 none
```

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87

87.1

87.1.1 lcd trap-number num

lcd trap-number *num*

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num	1-1000 ʖ У э

ϙ num ѝ 100 Â

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G ´ ⅃Л ң ˆ ə Âج ϙЮ ⅃Л ↑ ң 100 ˆ ə Â G Ћu ҳ˘ ⅃Л g ˆ Â

w R ЛЮ R ˘ ң 200 ˆ Â

lcd trap-num *200*

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-threshold num

memory-rate rising-threshold *num*

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88 USB/SD

88.1

88.1.1 show usb

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show usb

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G USB/SD ˘ ‡ ą ˘ ï ‡ Â

ЮO USB ą '

```
Ruijie# show usb
        Device: Mass Storage:
        ID: 0
        URL prefix: usb0
        Disk Partitions:
        usb0(type:FAT32)

        Size : 131,072,000B(125MB)
        Available size'  1,260,020Bˆ  1.2MB˜

        Device: Mass Storage:
        ID: 1
        URL prefix: sd0
        Disk Partitions:
        SD(type:FAT32)

        Size : 131,072,000B(125MB)
        Available size'  1,260,020Bˆ  1.2MB˜
```

Ю Э R è SD

```
Ruijie# usb remove 1
```

89

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89.1.4 Poe-power upper lower/no poe-power upper

upper	[55000-57000]


```
Ruijie# configure
Ruijie(config)# poe-power upper 56000
Ruijie(config)# end
```

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89.2

89.2.1 show poe interfaces

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```
Ruijie# show poe interface gigabitethernet 0/2
Interface : Gi0/2
Port power enabled : ENABLE
Port connect status : OFF
Port PD Class : no PD devices
Port max power : 15400 mW
Port current power : 0 mW
Port peak power : 0 mW
Port current : 0 mA
Port voltage : 48082 mV
Port trouble cause : normal
```

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89.2.2 show poe powersupply

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```
Ruijie# show poe powersupply
PSE Total Power : 379971 mW
PSE Total Power Consumption : 0 mW
PSE Available Power : 379971 mW
PSE Peak Value : 0 mW
PSE Min Allow Voltage : 45000 mV
PSE Max Allow Voltage : 57000 mV
PSE Disconnect Sense Mode : ac
```